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
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INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL ...

➢ Appointments ... Appt
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Name:

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(misc. 1994 documents)

FIGURE 3-2: Selected Results of Direct Physician Surveys of Negative Defensive Medicine[1]

SPECIFIC SURVEY QUESTION OR COMMENT: [2]	SURVEY POP./YEAR	PERCENT OF RESPONDENTS REPORTING THE INDICATED BEHAVIOR: [3]
National Surveys--All Specialties		
Physicians' Practice **Costs** *and Income Survey (PPCIS)-1986:* Stopped treating certain cases in the past year due to malpractice insurance costs (Rosenbach, 1986) [1]	PPCIS-1986	20%
National Surveys--Obstetrics Providers'		
AAFP-1987—F/GPs: Of respondents who had ever provided obstetric services, percent who discontinued or decreased obstetric services due to cost or availability of liability insurance (AAFP, 1987)	AAFP-1 987	27.5%
ACOG 1983, *1985, 1987, 1990, 1992-OB/GYNs:* "Which of the following changes, If any, have you made in your personal practice, as a result of the risk of malpractice?" Percent answering "yes" to at least one of the following: a. decreased gynecological surgical procedures b. no longer do major gynecological surgery c. no longer practice obstetrics d. decreased number of deliveries e. decreased level of high- risk obstetric care (Porter, Novelli, & Assoc, 1983; Needham, Porter, Novelli, 1985; Opinion Research Corp., 1988, 1990, 1992)	ACOG-1983 ACOG-1985 ACOG-1987 ACOG-1990 ACOG-1992	31.8% 37.1% 43.7% 41.8% 39%
National Surveys--Surgery		
ACS-1984: Limited practice by dropping certain operations due to malpractice risks (Bligh, 1984)	ACS-1984	24.7%
State-Level Surveys---All Specialties		
Chicago-1985.' Stopped performing certain high-risk procedures due to malpractice litigation or its threat (Charles et al., 1985)	Chicago-1 985	38.4%
Kansas-1984: "Do you believe problems associated with medical malpractice have affected your practice? If yes, do you limit your practice to less risky procedures?" (Kansas Medical Society, 1985)	Kansas-1984	51%
Maryland 1987: "In the last two years, have you made any changes as a result of the current malpractice climate? Yes--eliminated or cut back specific services" (Weisman et al., 1989)5	Maryland-1987	16.2%
New York-1989: See fewer patients or perform fewer clinical procedures today than dld ten years ago (Lawthers et al., 1992)6	New York-1 989	39.5%
Texas-1985: "Have you limited the procedures you perform in your practice due to professional liability insurance costs? Yes" (Texas Medical Association, 1985)	Texas-1 985	33%
Texas-1986: "Has the cost of professional liability insurance caused you to eliminate or limit the procedures you perform in practice? Yes--some procedures limited/eliminated" (Opinion Analysts Inc., 1986)	Texas-1 986	33%
Texas-1988: "Has the cost of professional liability insurance caused you to eliminate or limit the procedures you perform in practice? Yes--some procedures limited/eliminated" (Texas Med. Assn., 1988)	Texas-1 988	37%
West Virginia-undated: Limitation of practice due to professional liability crisis (West Virginia State Medical Association, undated)	West Virginia-undated	64%
Wisconsin-1987: Refer more cases due to threat of a malpractice claim (Shapiro et al., 1989)	Wisconsin-1987	41%

FIGURE 3-2: Selected Results of Direct Physician Surveys of Negative Defensive Medicine[1] (Cont'd.)

SPECIFIC SURVEY QUESTION OR COMMENT: [2]	SURVEY POP./YEAR	PERCENT OF RESPONDENTS REPORTING THE INDICATED BEHAVIOR: [3]
State-Level Survey---Obstetric Providers [4]		
Alabama-1985-F/GPs: Of respondents who had ever practiced obstetrics, percent who quit obstetrics in last five years and listed malpractice risk/fear as a reason for doing so (Alabama Academy of Family Physicians, 1986)	Alabama-1985	30.3%
Georgia-1988-OB/GYNs: Had quit obstetrics in the past three years solely because of malpractice (Georgia Obstet. & Gynec. Society, 1987) [7]	Georgia-1986	5.6%
Illinois-1987-OB/GYNs & F/GPs: Of respondents who had ever practiced obstetrics, percent who discontinued or planned to discontinue obstetrics and cited fear of a malpractice suit as a reason for doing so (Ring, 1987)	Illinois-1987	20%
Iowa-1985-F/GPs: "Have you made any recent changes in your practice because of medical liability insurance (either its cost or availability)– Yes–stopped doing obstetrics" (Iowa Medical Society, 1987)	Iowa-1985	15%
Kentucky- 1986-OB/GYNs & FIGPs: Of respondents who had practiced obstetrics any time during 1978-86, percent who had quit obstetrics and done so at least in part due to "liability problems" (Bonham, 1987)	Kentucky-1986	25.2%
Louisiana 1988-OB/GYNs: Practice changes resulting from malpractice crisis-stopped obstetrics (Begneaud, 1988)	Louisiana-1988	11%
Michigan- 1985-OB/GYNs: "Have you changed your method of practice because of medical-legal implications? Yes--avoid care of high risk patients" (Block, 1985)	Michigan-1985	48.7%
Michigan-1986--F/GPs: Of respondents who practiced obstetrics in 1986, percent who had quit or planned to quit and cited "malpractice liability risk" as a reason (Smith et al., 1989)	Michigan-1986	12.3%
Minnesota 1984-OB/GYNs: Had quit obstetrics due to litigation (Meader, undated)i	Minnesota-1984	1%
Rural Nevada-1985-OB/GYNs & F/GPs: Of respondents who had ever practiced obstetrics, percent that quit or had definite plans to quit and cited malpractice problem/cost/fear as a reason (Crow, 1985)	Rural Nevada-1985	36.6%
Oregon- 1986-OB/GYNs & F/GPs: Of respondents who had practiced obstetrics in past two years, percent restricting their practice in ANY way who cited "malpractice exposure too risky" as a reason (OR Med. Assn., 1986)	Oregon-1986	47.3%
Washington- 1985-F/GPs: Quit or limited obstetrics practice PRIMARILY because of malpractice concerns (either increased premiums or fear of lawsuits) (Rosenblatt and Wright, 1987)	Washington-1985	23.6%
Washington- 1988-OB/GYNs, F/GPs, Nurse Midwives: Of respondents who had ever practiced obstetrics, percent who limited or discontinued obstetrics PRIMARILY because of "fear of suit" (Rosenblatt and Detering, 1988)	Washington-I 986	9.6%

[1] See appendix I for 'ul c tations and descr ptions of surveys reported in this ' gure

2 If the actual' quest on was available it is given in quotation marks Otherwse a brie' descr pt on of reported behavior is prov ded

[3] Unless otherw se spec fied numbers are adjusted to reflect the percentage of ALL respondents who reported the indicated behavior

[4] F 'GP - family/general prac ce OB GYN obstetrics gynecology

5 Maryland 1987 survey inc uded only F GPs OB GYNs and interns ts

6 In the Lawthers survey phys c ans were asked to report practice changes made over the past ten years for any reason However the [illegible] uestion was asked in the context of numerous questions regarding ma practice

[7] In the 1985 Georgia survey respondents were given a choice between age health maintenance and [illegible]

SOURCE Off Ice of Technology Assessment 1991

FIGURE 3-3: Selected Results of Direct Physician Surveys of Positive Defensive Medicine[1]

SPECIFIC SURVEY QUESTION OR COMMENT:[2]

National Surveys--All Specialties

AMA, *Socioeconomic Monitoring Survey-3rd* quarter 1983: Percent of physicians reporting that they prescribed more tests and procedures in response to increasing professional liability risk (Reynolds et al , 1987)

AMA, Socioeconomic *Monitoring Survey-4th quarter* 1984: Percent of physicians reporting that they had prescribed more tests or treatment procedures *during the past* 12 months in response to the growth in malpractice claims (Reynolds et al., 1987)

National Survey s--Obstetrics/Gynecology

ACOG-1983, 1985: *"As a result of* your professional liability **claim** experience(s), has your practice changed the frequency with which any of the following activities are performed? Yes-Increased testing and diagnostic procedures" (Porter, Novelli & Assoc., 1983, Needham, Porter, Novelli, 1985)

National Surveys--Surgery

ACS-1984:Increased diagnostic testing as a result of the national rise in the number of malpractice suits (Bligh, 1984)

State-Level Surveys-All Specialties

Chicago-1985: Due to malpractice litigation or its threat, ordered more diagnostic tests that that clinical iudgment deemed unnecessary (Charles et al., 1985)

Kansas-1984:"Do you believe problems associated with medical malpractice have affected your practice? Yes--prescribe additional diagnostic tests" (Kansas Medical Society, 1985)

Maryland-1987; "In the last two years, have you made any changes in your practice as a result of the current malpractice climate? Yes--increased the use of tests or monitoring procedures" (Weisman et al., 1989)[4]

New York- 1989: Order more tests and procedures today than did ten years ago (Lawthers et al., 1992) [5]

Texas-1985:"Because of the threat of malpractice suits, do you feel compelled to order more lab tests? --Yes" (Texas Medical Association, 1985)

Texas-1986: "Because of the threat of malpractice suits, do you order more lab tests?" (Percent indicationg they sometimes or always order more tests) (Opinion Analysts Inc., 1986)

Texas-1988:"How much, if any, have you Increased [diagnostic testing] in your practice because of the threat of liability suits/claims?" (Percent indicating moderate or significant increase) (Texas Mad Assn , 1988)

West Virginia-undated: Increased testing due to professional liability crisis (West Virginia State Medical Association, undated)

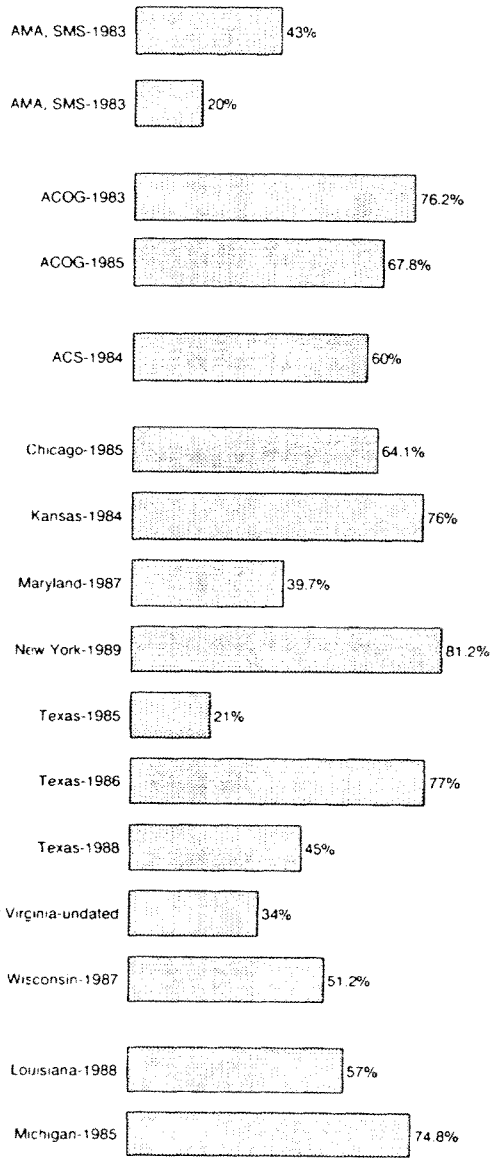
Wisconsin-1987: Order more diagnostic tests due to a malpractice claim or threat of a malpractice claim (Shapiro et al., 1989)

State-Level Surveys—Obstetrics/Gynecology

Louisiana-1988: Practice change resulting from malpractice crisis--order more diagnostic tests (Begneaud, 1988)

Michigan-1985: "Have you changed your method of practice because of medical-legal implications? Yes--ordered more tests" (Block, 1985)

SURVEY POP./YEAR — PERCENT OF RESPONDENTS REPORTING THE INDICATED BEHAVIOR: [3]



[1] See appendix I for full citations and descriptions of surveys reported in this figure

[2] If the actual question was available it is given In quotation marks Otherwise, a brief description of reported behavior IS provided

[3] Unless otherwise indicated numbers have been adjusted to reflect percentage of ALL respondents who reported the indicated behavior

[4] The Maryland 1987 survey Included only obstetrics gynecology, family/genera practitioners and internists

[5] In the Lawthers survey physicians were asked to report practice changes made over the past ten years for ANY reason However the question was asked in the context of numerous questions regarding malpractice

SOURCE Office of Technology Assessment 1994

Many of the reported surveys had poor response rates. In 18 of the 32 studies, 50 percent or less of the surveyed physicians responded; in another study, the response rate was not reported (see appendix I). Low response rates raise concern about possible response bias—i.e., physicians with greater concern about malpractice liability might be more likely to respond and would indicate greater levels of defensive medicine than truly exist in the study population. For example, in one study for which the response rate was 40.5 percent, respondents were more likely to have been sued (51 percent) than nonrespondents (36 percent) (1 23).

Survey-Based Estimates of the Cost of Defensive Medicine

Results of physician surveys occasionally have been used to develop quantitative estimates of the national cost impact of defensive medicine or of the malpractice system as a wholes The most widely quoted estimate of the net national cost of the medical malpractice system was published in 1987 by Reynolds and his colleagues at the American Medical Association (AMA) (194). More recently, researchers at Lewin-VHI, Inc., published a range of estimates for the aggregate cost of defensive medicine based largely on the Reynolds study (125).

Once created, estimates such as these tend to be quoted and requoted-and sometimes misquoted —in the press and political debates. Consequently, OTA assessed whether the methods these researchers used provide the basis for a reliable measure of the extent of defensive medicine. The estimates are reviewed briefly here and are critiqued in greater detail in appendix J of this report.

Reynolds' Estimate of the Net Costs of the Malpractice System

Reynolds and his colleagues (194) at the AMA sought to measure the total cost of professional liability for the health care system, not just the cost of defensive medicine. They estimated the net impact of the medical malpractice system on the 1984 cost of physicians' services. These costs included the direct costs to physicians of malpractice insurance premiums and defending against claims, and the indirect costs of practice changes made in response to increasing malpractice liability risk. Practice changes included, but were not limited to, increases in defensive medicine as defined by OTA.

The authors used two separate methods of estimation: one based primarily on a survey of physicians" reported behavior changes in response to malpractice risks; the other based on the statistical relationship between physicians' 1984 malpractice premiums and the prices and volumes of services they reported rendering in 1984. The resulting estimates were $13.7 billion and $12.1 billion, respective] y.

Although the authors acknowledged that "both of our methods rely on several assumptions and are necessarily less than perfectly precise," they concluded that the "similarity of the estimates increases confidence that they provide a reasonable sense of the general order of magnitude of medical [malpractice liability] costs" (1 94).

OTA reviewed each method for its validity as a measure of the total cost of t he malpractice system and for its ability to provide an estimate of the portion of these costs accounted for by defensive medicine. OTA concluded that the agreement between the two estimates does not increase confidence that they are reasonably accurate. The true costs of defensive medicine may be either higher or lower-and possibly substantially so-than the costs estimated by Reynolds.

The first of the two methods has several sources of inaccuracy, resting as it does on the results of a direct physician survey, and therefore provides very little useful information about either the true costs of malpractice liabilit y or the costs of defensive medicine. (See appendix J for details.)

[5] A report recently published by Lewin-VHI, Inc., summarizes these estimates (125).

The second estimate is based on well-known statistical methods, but the results may be sensitive to the way the statistical model was specified and the data available to estimate it. Without reliable corroborating evidence from the first method or from other estimates, it is impossible to know how much error the statistical method may include. Finally, even if it does give a reasonable estimate of the total costs of malpractice, the statistical method does not permit one to conclude anything about the cost of defensive medicine. The results are consistent with either very high or very low frequency of defensive medicine. (See appendix J for details.)

Lewin-VHI Estimate of Defensive Medicine Costs

Lewin-VHI, Inc. (1 25) took the Reynolds estimates as a starting point for its analysis of the national cost of defensive medicine. First, it averaged together the $12.1 billion and $13.7 billion estimates and updated them to 1991 constant dollars, which yielded a total cost of $18.8 billion in physician services in 1991. It added to the $18.8 billion in physician costs an additional $6.1 billion for hospital costs (using a method described in appendix J) to arrive at a preliminary total cost of $24.9 billion in 1991.

Then, because Lewin-VHI researchers believed the Reynolds number overestimated the cost of defensive medicine,[6] they reduced the $24.9 billion figure by three percentages (80, 60, and 40) to arrive at "low" ($5 billion), "medium" ($1 0 billion), and "high" ($ 14.9 billion) final estimates of the net costs of defensive medicine to the health care system in 1991.

In one respect, Lewin-VHI defined defensive medicine very restrictively compared with OTA's definition, including only those practice changes motivated **solely** by liability concerns. (Recall that OTA's definition allows other motivations as long as the avoidance of a malpractice suit is the primary reason.) On the other hand, Lewin-VHI's definition was broader in that it included certain practice changes not embraced by OTA's definition (e.g., extra documentation of care, more time spent with patients). Consequently, to the extent that it can be measured precisely, the defensive medicine estimate of Lewin-VHI does not necessarily describe defensive medicine as defined by OTA.

Recognizing the impossibility of precise measurement of defensive medicine, however defined, Lewin-VHI estimated a wide range of values. The question for OTA is whether the reported range of defensive medicine costs is reasonably accurate. OTA concluded that, due to the questionable accuracy of the Reynolds estimate, which Lewin-VHI used as a starting point, and the weak evidence for the assumptions applied in their adjustments, the Lewin-VHI estimate is not a reliable gauge of the possible range of defensive medicine costs (see appendix J for details).

■ Surveys of Physicians' Reasons for Ordering Tests and Procedures

A few studies have asked physicians about their reasons for ordering selected diagnostic tests or procedures without singling out liability concerns or focusing on clinical situations likely to involve them. Three such studies are reviewed in this section.

Epstein and McNeil (65) examined the frequency of and reasons for test ordering among 27 internists practicing at six community hospitals in the Boston area. They presented the physicians with a questionnaire about ordering four specific tests for patients with chronic hypertension and independently obtained data on the physicians' actual use of those tests in a sample of 324 patients who met the study's clinical criteria. For two of the tests—urinalysis and electrocardiography—physicians were asked to estimate the importance of various listed factors in their decision to test.

[6] The adjustments were made because Lew in-V HI researchers wanted to exclude that portion of defensive medicine not caused solely by liability concerns.

The reasons most frequently cited by respondents included (in decreasing order of importance): establishing a baseline, assessing prognosis, reassuring patients. and helping with treatment decisions. Minimizing risk of a malpractice suit was a relatively minor influence on test-ordering behavior (65).[7] Evaluation and management of hypertension is not a particularly high-risk area of practice and is not associated with high litigation rates: hence, the influence of malpractice liability concerns in these clinical situations might be expected to be low (73).

In a study of common diagnostic laboratory tests in a California medical training center, medical staff and residents were asked to indicate which of a list of reasons for testing had influenced their decisions (256). The most common] y cited reasons were diagnosis (37 percent of all cases), monitoring (33 percent), screening (32 percent), and previous abnormal test result (12 percent). Very few physicians cited educational purposes (2 percent) or medicolegal concerns (1 percent) as a contributing factor (256).

In another study, residents (N= 13) and faculty (N=53) in internal medicine at a university hospital and a random sample of community physicians (N=93) in the same area were asked about their perceptions of the major reasons for overutilization of diagnostic tests among their peers (258). Residents and faculty internists were asked about factors they thought influenced residents' overuse of diagnostic tests. Community physicians were asked about factors causing overuse of testing by physicians in practices similar to their own.

Residents cited the following as the top five of 19 reasons for test overuse: inexperience; pressure from peers or superiors: habit; confirming initial abnormal results; and correction of lab processing mistakes. delays, or duplications. Faculty internists cited the following as the top five of 19 reasons for test overuse by residents: inexperience: habit: pressure from peers or superiors; reliance on lab results to follow daily progress: and use of laboratory rather than good history and physical exam or clinical judgment. Both residents and faculty internists ranked malpractice concerns last out of 19 factors influencing test overuse. Community physicians cited routine screening, habit, malpractice concerns, compulsion to document or explain all abnormalities, and pressure from peers or superiors as the top 5 of 19 reasons for test overuse among their peers (258).

Clinical Scenario Surveys

Only one previously published study used clinical scenarios to assess malpractice-related issues (58). OTA expanded on this approach and conducted four clinical scenario surveys in cooperation with national physician professional organizations. Finally, OTA commissioned an additional clinical scenario survey of physicians in New Jersey. The results of all these surveys are reviewed below.

The Duke Law Journal Study

In a 1970 study by the Duke Law Journal (58), 827 randomly selected physicians in 10 specialties in California and North Carolina were sent specialty-specific questionnaires asking about the use of particular procedures in brief clinical scenarios. The scenarios were selected from a list of practices that a group of Duke University Medical Center physicians described as meeting the following criteria: 1) they are frequently followed. 2) they are prompted at least in part by concern about possible malpractice litigation. and 3) they are not of sufficient medical benefit to justify the added costs and risks. Recipients were asked to indicate:

1. how often they would follow the practice (with five responses ranging from "never" to "alWays");

[7] The reasons for ordering tests were rated on a 10-point scale ranging from "not important" to "very important." The mean rating for minimizing the risk of a malpractice suit was 2.6 for electrocardiogram and 3.0 for urinalysis, which tied for the lowest ratings along with "financial reimbursement (for doctor)."

2. whether the practice was of medical benefit to the patient (with five response categories ranging from "useless" to "useful and certainly worth the cost"); and
3. why they would have followed the practice described (with eight response categories, including "to add to a record which might be helpful in defense of a malpractice suit"—see table 3-1).

Significantly, the survey cover letter disclosed the malpractice liability-oriented purpose of the survey, because an earlier survey not stating this purpose had a very low response rate.

In three out of 17 clinical actions described in the Duke questionnaire,[8] over 20 percent of respondents cited "to add to a record which might be helpful in defense of a malpractice suit" as the most important reason for following the specified practice (see table 3-1). Yet, among the procedures for which malpractice liability concerns were cited most frequently as an important motivating factor, few respondents indicated they would follow the practice. Furthermore, in all but one of the 17 scenarios, the percentages of respondents citing medical reasons (namely, either "rule out undetected disease" or "facilitate further treatment") as the most important reason for following a practice were much larger than the percentages citing malpractice concern as most important.

The estimates of defensive medicine from the Duke study are questionable for a number of reasons, and it is impossible to say whether they are too high or too low. First, because respondents were aware of the purpose of the survey and were "prompted" by both the cover letter and the questionnaire to think about malpractice issues, they may have exaggerated their defensive responses.

Second, the wording of the question regarding reasons for choosing may have led some respondents to answer it as a hypothetical question. Some physicians who indicated they would not follow the practice may have nonetheless offered reasons for doing so, thereby inflating the apparent level of defensive response.

Third, other reasons listed on the Duke questionnaire (e.g., ● 'patient's peace of mind," "complete chart") might indirectly reflect some degree of malpractice liability concern, and their presence in the list of reasons may have led to an underestimation of defensive response.

Fourth, among physicians who cited "defense of a malpractice suit" as their chief reason for following the practice, many indicated they would follow the practice only some of the time. Thus, a simple frequency of citing defense of a malpractice suit as the most important reason does not translate directly into a "rate" of defensive practice.

Finally, both clinical practice and the medic: o-legal environment have changed dramatically since the Duke Study was conducted, possibly rendering the study results obsolete.

OTA Clinical Scenario Surveys

Goals and data collection

The leadership of three medical professional societies agreed to collaborate with OTA in the conduct of clinical scenario surveys of each society's members by mail during 1993.[9] The three associations were the American College of Cardiology (ACC), the American College of Obstetricians and Gynecologists (ACOG), and the American College of Surgeons (ACS).

Practicing physicians were selected through stratified random sampling of each association's membership roster. ACS agreed to conduct two separate surveys: one for general surgeons; the other for neurosurgeons.

[8] OTA eliminated from its review four scenarios (one each from dermatology, obstetrics/gynecology, psychiatry, and plastic surgery) that did not meet OTA's definition of defensive medicine. For example, one scenario read: "'A female nurse is present during all gynecological examinations of the patient.'"

[9] Jeremy Sugar-man, M. D., and Russell Localio, M. S., J.D., served as primary consultants to OTA on the design of the survey instruments and the survey analysis plans, respectively.

TABLE 3-1: Defensive Medicine Responses to 17 Clinical Scenarios Included in the Duke Law Journal Study, 1970[a]

Specialty/ Hypothetical clinical situation	Percent of respondents listing "defend against a possible malpractice suit" as most important reason for following practice [b,c]	Number in sample (N)
Dermatology		
1 Even though removed nevi appear clinically benign dermatologist orders a hlstopathological examination	31%	106
Internal medicine		
1 Upon entering the hospital with a preliminary diagnosis of carcinoma of the lung the patient undergoes certain routine tests One of these is "admissions hemistries " or the full battery of serum electrolytes	o	76
2 The patient is admitted to the hospital with nonspecific abdominal complaints On the day of admission he undergoes electrocardiography	0	74
3 Same situation as in 2 above Patient undergoes an upper gastrointestinal (GI) series	0	73
4 Same situation as in 3 above Patient undergoes a lower GI series	0	73
5 Same situation as in 4 above Patient undergoes proctoscopy	0	73
Neurology		
1 A student appears at campus health office with the complaint of headache for duration of three days Physician orders skull x-rays	5	56
2 In a work-up for probably Intra-cranial tumor, the patient has undergone skull x-rays cerebral arteriography, echoencephalography, and ventrlculography The neurologist orders an electroencephalogram	2	56
Obstetrics-gynecology		
1 The gynecologist performs a dilatation and curettage on a 20-year-old miscarriage patient who is otherwise healthy	5	112
Orthopedics		
1 After taking history and performing a physical examination the orthopedic specialist determines that the patient– a 20-year-old male in otherwise good health has bruised three ribs laterally He orders x-rays to confirm his diagnosis	18	107
2 A fracture of the tibia is reduced and cast applied The orthopedic specialist requests that the patint return the following day for a reexamination of circulation and sensation in the leg	9	108
Otolaryngology		
1 When the patient complains of dizziness present several months following trauma the otolaryngologist initially orders x-rays of the mastoids	11	71
2 In evaluating all forms of dizziess, the specialist initially performs audiograms	5	73
Pediatrics		
1 After making a preliminary diagnosis of "hyperkinetic child, " the pediatrician requests psychiatric consultation	1	99
Psychiatry		
1 Before prescribing psychoactive drugs, the psychiatrist performs a physical examination of the patient	29	85

(continued)

TABLE 3-1: Defensive Medicine Responses to 17 Clinical Scenarios Included in the Duke Law Journal Study, 1970[a] (Cont'd.)

Specialty/ Hypothetical clinical situation	Percent of respondents listing "defend against a possible malpractice suit" as most important reason for following practice [b,c]	Number in sample (N)
Urology		
1 The patient is to undergo renal arteriography. The urologist orders an intradermal skin test in order to evaluate whether the patient is allergic to the radio-opaque solution used	25	109
2 Following urinary bladder instrumentation, the urologist administers antibiotics to combat possible genitourinary system infection	5	109

[a] Percentages in this table reflect the proportion of all respondents from both California and North Carolina who reported the indicated reason.
[b] Scenarios were selected from a list of practices that a group of Duke University physicians described as meeting the following criteria: 1) are frequently followed, 2) are prompted at least in part by concern about possible malpractice litigation, and 3) are not of sufficient medical benefit to justify the added costs and risks. OTA eliminated from this table and from its review of the results of the Duke study four scenarios (one each from dermatology, obstetrics/gynecology, psychiatry, and plastic surgery) that did not meet OTA's definition of defensive medicine.
[c] All respondents were asked, "If you would have followed that practice, please answer why" and were then asked to choose, in order of importance, from a list containing the following reasons: "to add to a record which might be helpful in defense of a malpractice suit," "comply with routine practice," "peace of mind of patient," "rule out undetected disease," "facilitate future treatment," "complete chart," and "research purposes." Some respondents who indicated they would not follow the practice may have responded to this part of the questionnaire. The percentages in this table reflect the percentage of *all* respondents, regardless of whether they answered the question, who indicated defense of a malpractice suit as the most important reason.

SOURCE: U.S. Congress, Office of Technology Assessment, 1994, based on data presented in Duke Law Journal, "The Medical Malpractice Threat: A Study of Defensive Medicine," *Duke Law Journal* 1971: 939-993, 1971.

Introductory letters from both the society president and OTA's director described the surveys as a study of clinical decisionmaking, without mentioning malpractice or defensive medicine.

The high degree of cooperation provided by these physician associations resulted in response rates that were reasonably high for surveys of busy professionals, ranging from 56.6 to 62.3 percent. Nonetheless, these response rates leave open the possibility of response bias, Details of the survey methods are presented in appendix D and selected detailed results are presented in appendix E.

The clinical scenarios were developed by expert panels selected by each of the three physician associations. Panel members were asked to identify as many clinical scenarios as they could in a two-hour "brainstorming" session. They were instructed to identify scenarios in which defensive medicine was likely to play a major role. These candidate scenarios were then assessed, and two or three scenarios were selected for use in the final survey.

Panel members were then asked to create a '-control" version of each selected scenario by adding or deleting one or more key clinical indicators (e.g., a positive result from a laboratory or radiologic test) that would substantially reduce the likelihood that malpractice concerns would be cited as the primary reason for choosing a test or procedure. OTA staff and consultants revised the final questionnaires and, with input from association staff and panel members, selected one scenario in each survey that would have both a "case" and "'control" version.

Box 3-1 shows (he full text of all clinical scenarios used in the surveys. Figure 3-4 reproduces the questionnaire for a sample scenario. Questionnaire format differed Slightly across the four surveys.10

[10] All survey instruments are presented in a technical appendix that is available from OTA upon request.

BOX 3-1: Clinical Scenarios Used in OTA Surveys

ACC-1: Chest Pain Case

Patient history: A 42-year-old man arrives at the emergency room complaining of chest pain The pain is on the left side and is worse when he changes position While it is sore to the touch, he states that it feels "deep." The pain has persisted for one hour He has not experienced chest pain previously He jogs three times a week and does not smoke He had a normal routine physical examination a week ago

Physical examination: The patient is tense and anxious His BP [blood pressure] is 140/80 heart rate 80. The anterior chest wall is tender over the left sternal border Examination of the heart and lung is normal

Additional data: A 12-lead ECG [electrocardiogram] and CXR [chest x-ray] are normal Laboratory tests including a cbc [complete blood count], electrolytes and cardiac enzymes are normal

ACC-2: **Chest Pain Control**

Patient history: A 52-year-old man presents to the emergency room with retrosternal chest pressure There is no chest soreness The pain has been recurrent for the past three weeks, it comes on with physical activity and subsides with rest He smokes two packs of cigarettes a day He had a normal routine physical examination one week ago

Physical examination: The patient is tense and sweating BP is 160/1 00, heart rate is 95 There is no soreness on palpitation of the chest wall Examination of the heart and lungs is normal

Additional data: A 12-lead ECG shows T-wave flattening in the lateral leads Laboratory tests including a complete blood count, electrolytes and cardiac enzymes are normal

ACC-3: **Syncope (Fainting) Case:**

Patient history: A 50-year-old woman collapsed in a crowded, warm church in the summer Her husband states that she was unconscious for about two minutes and recovered quickly There was no seizure activity reported and no attempt was made to see if she had a pulse or respiration at the time of the event She has never had a similar episode The patient was taken to the emergency room by ambulance for evaluation The emergency room physician refers the patient to you for care

Physical examination: The patient appears well She is on no medication and was previously healthy Her BP is 150/80 sitting and 130/70 standing Her heart rate is 74 sitting and 85 standing Her exam is remarkable only for a 11/VI systolic murmur best heard at the left sternal border without radiation

Additional data: Monitoring in the emergency room reveals isolated PVCs [premature ventlcular contractions] Complete blood count, electrolytes panel, routine blood chemistries, chest x-rays and 12-lead ECG are normal

ACS-1: Breast Pain Case

History of present illness: A 38 year-old woman G2P2 [gravlda 2, para 2] is referred to you from her gynecologist for evaluation of left breast pain for one month She had her first child at age 29, and her second at age 31 She has been taking oral contraceptives subsequently Her gynecologist remarked that she has fibrocystic breast disease on annual routine examination. She has a family history of breast cancer A baseline mammogram done at age 35 showed no evidence of cancer She anticipates that her next menstrual period will begin in five days

Physical examination: Slight thickening in the upper outer quadrant of her left breast with some tenderness There are no nipple changes There is no axillary adenopathy

Clinical course: Following the exam you order a mammogram A radiologist's report states "There is dense, dysplastic breast tissue bilaterally Vague shadows bilaterally are consistent with possible

(continued)

BOX 3-1: Clinical Scenarios Used in OTA Surve

cysts No dominant masses or abnormal microcalcifications are present These breasts are very dense and difficult to evaluate Clinical correlation is Indicated "

ACS-2: **Rectal Bleeding Case**

History of present illness: A 35-year-old man comes to your office complaining of bright red blood per rectum Over the past four days he has observed a few drops of blood in the toilet and on the toilet paper after having a bowel movement He denies any recent change in bowel habits and has otherwise been in good health

Physical examination: Rectal examination reveals one small, external hemorrhoid which is not thrombosed. Otherwise the exam is within normal limits

Clinical course: Anoscopy reveals non-bleeding Internal hemorrhoids A hemoglobin, hematocrit, CEA [carcinoembryonic antigen], and flexible sigmoidoscopy are all within normal limits

ACS-3: **Rectal Bleeding Control**

History of present illness A 35-year-old man comes to your office complaining of bright red blood per rectum Over the past four days he has observed a few drops of blood in the toilet and on the toilet paper after having a bowel movement. He den es any recent change in bowel habits and has otherwise been in good health

Physical examination: Rectal examination is normal

Clinical course: Anoscopy reveals non-bleeding internal hemorrhoids A hemoccult is positive A hemoglobin, hematocrit, CEA, and flexible sigmoidoscopy are all within normal limits

ACS-4: **Neurosurgeons Head Trauma Case**

History of present illness: A fifteen-year-old boy fell from his skateboard after riding over a crack in the sidewalk. He hit his head, got up and skated home Thirty minutes after the fall he told his mother about the Incident and she brings him to the ER. In the ER, the patient admits to light-headedness and some tenderness at the site of impact.

Physical examination There is an area of tenderness and swelling at left parietal area Mental status and neurological exam are normal.

ACS-5: **Neurosurgeons Back Pain Case**

History of present illness: A 52-year-old man is seen by you in your office, He complains of back pain and numbness of his right great toe for the past week He attributes the injury to driving over a pothole in his pick-up truck He has been able to continue to work since the Injury.

Physical examination: The patient has decreased range of motion of his back There is lumbosacral spasm Straight leg raising produces right leg discomfort at 70 degrees Ankle jerks are slightly diminished bilaterally, however, there are no other motor or sensory deficits revealed on exam There are no bowel or bladder complaints The rest of the physical examination is normal.

ACS-6: **Neurosurgeons Back Pain Control**

History of present illness: A 52-year-old man is seen by you in your office, He complains of back pain and numbness of his right great toe for the past week He attributes the injury to driving over a pothole in his pick-up truck He has been able to continue to work since the injury

Physical examination: The patient has decreased range of motion of his back There is lumbosacral spasm He has decreased sensitivity along medial aspect of right lower leg Straight leg raising produces right leg discomfort at 70 degrees. Ankle jerks are slightly diminished bilaterally, however. there are no other motor or sensory deficits revealed on exam There are no bowel or bladder complaints The rest of the physical examination is normal

(continued)

BOX 3-1: Clinical Scenarios Used in OTA Surveys (Cont'd.)

ACOG-1: Breast Lump Case

History: A 31 -year-old nulliparous woman comes to your office complaining of a breast lump. Her last visit was 1 year ago At that time she had no complaints and her physical examination was normal Her last menstrual period was 3 weeks ago She is currently on oral contraceptives and has a family history of breast carcinoma

Physical examination: There is a 1 cm mass in the upper outer quadrant of her right breast that is tender to palpation The nipple is normal without retraction and there is no discharge There is no skin dimpling or axillary adenopathy The left breast and the remainder of the exam are normal

ACOG-2: **Complicated Delivery Case**

History: A 36-year-old primigravida presents at 39 weeks gestation after an uncomplicated pregnancy

Clinical course: The patient has had 12 hours of labor, and is now 3 hours into the second stage She has been receiving oxytocin augmentation for secondary arrest of dilatation since 7 cm She is completely dilated and effaced at +2 station, ROP [right occiput posterior position] There has been no change in the exam for over an hour Moderate variable decelerations have been present for the last 30 minutes with good beat-to-beat variability Estimated fetal weight is 75 lb and clinical pelvimetry is adequate The patient is fatigued and can no longer push

ACOG-3: **Perimenopausal Bleeding Case**

History: A 51 -year-old sexually active nulliparous woman reports that her last menstrual period lasted 2 weeks It was heavier than her usual periods and there were some clots Her previous menstrual period occurred approximately 3 months ago For the prior 2 years her periods had occurred every 2 to 3 months She is on no medications, and has not used any contraception in more than 10 years

Physical examination: Vital signs are normal She is markedly obese The general physical exam is otherwise normal The pelvic exam is normal, but it is difficult to outline the uterus due to the patients weight

ACOG-4: **Perimenopausal Bleeding Control**

History: A 51 -year-old sexually active nulliparous woman reports that her last menstrual period lasted 2 weeks It was heavier that her usual periods and there were some clots Her previous menstrual period occurred over 1 year ago For the prior 2 years her periods had occurred every 2 to 3 months She is on no medications, and has not used any contraception in more than 10 years

Physical examination: Vital signs are normal She is markedly obese The general physical exam is otherwise normal The pelvic exam is normal, but it is difficult to outline the uterus due to the patient's weight

KEY ACC - American College of Cardiologists ACS - American College of Surgeons ACOG - American College of Obstetricians and Gynecologists

SOURCE Office of Technology Assessment 1994

Each survey also included an attitude questionnaire comprising three attitude scales: malpractice concern, cost consciousness, and discomfort with clinical uncertainty. [11] Finally, the surveys asked for data on selected demographic and professional characteristics of the respondents (e.g., practice setting).

Results: extent of defensive medicine

OTA constructed six measures of defensive medicine based on specific patterns of reasons given for choosing selected clinical options. These six response patterns involved particular combinations of checkmarks for '-malpractice concerns" and other reasons (see figure 3-4).

This section reports the results for the measure that most closely fit OTA's definition of positive defensive medicine: ordering additional procedures primarily, but not necessarily solely, out of fear of malpractice liabili y risk. The measure corresponding to this definition required the respondent to double-check "malpractice concerns," but allowed single checks for any other reasons. Appendix E contains results for all six measures of defensive medicine, which span a range from nonrestrictive (requiring only a single check for malpractice concerns with single or double checks allowed for any other reasons) to highly restrictive (requiring that ● 'malpractice concerns" be the only reason checked).

Table 3-2 shows the extent of defensive medicine in the "case" scenarios (i.e., those scenarios designed to elicit high levels of defensive medicine). The proportion of respondents citing "malpractice concerns" as the most important reason for choosing to perform at least one clinical action in a scenario ranged from 4.9 percent (ACS back pain scenario) to 29.0 percent (ACS head trauma scenario). The relatively high percentage in the ACS head trauma scenario is noteworthy, especially in contrast with the relatively low percentage for the back pain scenario within the same survey.

Overall, these figures suggest that, if physicians actually practice as they say they would in these surveys, positive defensive medicine does exist-although not to the extent suggested by anecdotal evidence or direct physician surveys. They also suggest that defensive medicine varies considerably across clinical situations.

Across the scenarios, "malpractice concerns" was cited considerablyess frequently than ● *medical indications" as the most important reason for choosing procedures. [12] Moreover, the majority of respondents who ever cited "malpractice concerns" as the most important reason for choosing a procedure did so for only one procedure, and very few did so for several procedures in the same scenario (data not shown).

Table 3-3 further demonstrates how the citing of "malpractice concerns" varied across the specific clinical options given in the scenarios. Across all 54 of the '*interventionist" clinical actions (i.e., actions other than waiting or doing nothing), of those who would choose the action, the percentage who would do so primarily because of malpractice concerns ranged from O to 53, with a median of 8 percent.

Because these scenarios were specifically designed to increase the likelihood of defensive response by physicians, they are not generallyrepresentative of all diagnostic procedures. Thus, one would expect the percentage of *all* diagnostic 13 procedures done consciously for defensive reasons to be less than 8 percent.

Because not all physicians chose a given procedure, a *smaller* percentage of the clinical encounters described in the scenarios involved the performmance of a defensive medical procedure. For example, although 30 percent of surgeons who

[11] Items in the attitude scales were adopted from previously used scales developed by Goold and colleagues at the University of Michigan (77).

[12] These data are presented in a separate technical appendix that is available from OTA upon request.

[13] All of the scenarios involved diagnosis of a medical condition, with the exception of the complicated delivery case.

FIGURE 3-4: Example of Survey Form from OTA's Clinical Scenario Surveys

History:
A 31-year-old nulliparous woman comes to your office complaining of a breast lump. Her last visit was 1 year ago. At that time she had no complaints and her physical examination was normal. Her last menstrual period was 3 weeks ago. She is currently on oral contraceptives and has a family history of breast carcinoma.

Physical Exam:
There is a 1 cm mass in the upper outer quadrant of her right breast that is tender to palpation. The nipple is normal without retraction and there is no discharge. There is no skin dimpling or axillary adenopathy. The left breast and the remainder of the exam are normal.

QUESTION 1.

Would you choose the following option? (Circle Yes or No)			Reasons for Decision: Check ALL the *reason(s)* for your decision (check all that apply). DOUBLE CHECK (✓✓) the single most important reason, even if you answered NO.				
			Medical indications	Concerns about cost vs. benefit	Malpractice concerns	Patient expectations	Other reason:
Do nothing now, schedule follow-up after next menstrual period	Yes	No					

If you answered NO to Question 1, go to Question 2. Otherwise go to next page.

QUESTION 2.

If you answered No to Question 1 above, which actions(s) would you recommend now? Circle Yes or No for EACH Decision.			Reasons for Decision: Check (✓) ALL the reason(s) for your decision (check all that apply). DOUBLE CHECK (✓✓) the single most important reason for EACH decision, even of you answeded NO.				
			Medical indications	Concerns about cost vs. benefit	Malpractice concerns	Patient expectations	Other reason:
Breast sonography	Yes	No					
Mammography	Yes	No					
Needle aspiration	Yes	No					
Fine needle biopsy	Yes	No					
Open biopsy	Yes	No					
Refer to a surgeon	Yes	No					
Other (Specify):							

Comments:

SOURCE Off Ice of Technology Assessment 1994

TABLE 3-2: Extent of Defensive Medicine in the OTA Clinical Scenario Surveys: Percent of Physicians Citing Malpractice Concern as Primary Reason for Choosing One or More Clinical Actions, by Scenario[a]

Scenario[b]	Number	Physicians citing malpractice concerns as the primary reason for choosing one or more clinical actions: Percent of all physicians	95% confidence limits
American College of Cardiology			
Syncope	346	14.2%	(10.4, 18.0)
Chest pain	162	12.4	(7.2, 17.6)
American College of Surgeons			
General surgeons			
Breast pain	1,412	5.7	(4.5, 6.9)
Rectal bleeding	738	7.0	(5.0, 9.0)
Neurosurgeons			
Head trauma	503	29.0	(25.2, 32.8)
Back pain	252	4.9	(2.3, 7.5)
American College of Obstetricians and Gynecologists			
Breast lump	1,230	10.4	(8.6, 12.2)
Complicated delivery	1,230	7.8	(6.4, 9.2)
Peri menopausal bleeding	634	9.9	(7.5, 12.3)

[a] Results are weighted to reflect the total population of professional society members on which the survey sample was based (see appendix D for details).
[b] Numbers reflect responses to "case" versions of the scenario only. See text of chapter 3 for explanation.

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

would order a computed tomography (CT) scan in the ACS back pain case would do so for defensive reasons. only 3 percent of all respondents indicated they would order the CT scan. Thus, malpractice concerns led to CT scans in only 1 percent of all responses.

What do these results imply about medical practice? They support the large body of evidence (hat there is a great deal of variation in how physicians practice medicine. Furthermore, in these scenarios, beliefs about the medical appropriateness of procedures were far more influential in physicians' practice choices than were concerns about malpractice liability.

Case vs. control versions of scenarios

In each survey, a "case" version of one scenario was given to a random subgroup of respondents, and a "control" version of that same scenario was given to the remaining respondents. The two versions were identical, except that the control version contained one or more additional clinical features designed to increase the clinical appropriateness of an intervention and hence reduce the relative importance of malpractice concerns. Higher rates of intervention were thus expected in the control scenarios, and the frequency of defensive medicine was expected to be lower. (See box 3-1 for text of case and control versions of scenarios.)

OTA did find, generally, higher rates of use of tests and procedures in the control scenarios. Table 3-4 compares the percentage of physicians choosing each procedure in the case and control scenarios. Rates of use appeared to be higher in the control scenario, especially for more invasive procedures. For example, in the ACOG perimenopausal bleeding scenario, the percentage of respondents indicating they would perform an endometrial biopsy was virtually identical in the case and control versions. But much higher

TABLE 3-3: Extent of Defensive Medicine in OTA Clinical Scenario Surveys: Physicians Citing Malpractice Concerns as the Primary Reason for Choosing a Clinical Action[a]

Scenario/ clinical action	Percentage of *all physicians* who chose the clinical action: Percent	95% confidence limits	Percent of *all respondents* who chose the clinical action primarily for malpractice concerns: Percent	95% confidence limits	Of *clinical actions* chosen, the percent done primarily for malpractice concerns: Percent	95% confidence limits[b]
American College of Cardiology						
Syncope (N=346)						
Hospital admission	66.3%	(61.3,71.3)	7.2%	(4.4,10.0)	10.8%	(6.8,14.8)
Stress tests:						
Exercise ECG	29.8	(25.0,34.6)	2.1	(0.5,3.7)	7.1	(2.9,11.3)
Stress thallium	10.7	(7.3,14.1)	0.3	(0.0,1.5)	2.3	(0.0,7.1)
Echocardiograms:						
2 D/M mode	83.0	(79.0,87.0)	0.9	(0.0,1.9)	1.1	(0.0,2.3)
Doppler	67.0	(62.0,72.0)	1.4	(0.2,2.6)	2.2	(0.2,4.2)
Color flow doppler	56.2	(51.0,61.4)	1.8	(0.4,3.2)	3.2	(0.6,5.8)
Transesophageal echo	0.8	(0.0,1.6)	0.0	(0.0,1.1)	0.0	(0.0,7.6)
Holter monitor	83.5	(79.7,87.3)	2.8	(1.0,4.6)	3.3	(1.1,5.5)
Tilt table	39.6	(34.6,44.6)	0.0	(0.0,1.1)	0.0	(0.0,0.3)
Carotid doppler	26.5	(21.7,31.3)	3.6	(1.6,5.6)	13.7	(6.1,21.3)
EEG	23.1	(18.5,27.7)	3.4	(1.4,5.4)	14.9	(6.7,23.1)
Brain MRI	7.6	(4.6,10.6)	1.5	(0.1,2.9)	20.3	(3.9,36.7)
Chest pain (N=162)[c]						
Discharge home w/NSAID	67.8	(60.6,75.0)	0.0	(0.0,2.3)	0.0	(0.0,3.3)
Admit to hospital[d]	27.1	(19.5,34.7)	4.4	(1.2,7.6)	16.1	(4.3,27.9)
Admit and observe	8.8	(4.2,13.4)	0.8	(0.0,3.6)	8.7	(0.4,35.7)
Admit and obtain cardiac enzymes	21.5	(14.9,28.1)	3.0	(0.4,5.6)	13.9	(4.6,29.9)
Admit and obtain ECG	22.4	(15.6,29.2)	4.4	(1.2,7.6)	19.5	(8.3,36.0)
Stress tests:						
Exercise ECG	50.2	(42.2,58.2)	8.6	(4.2,13.0)	17.2	(9.7,27.2)
Stress thallium	8.5	(4.1,12.9)	0.8	(0.0,3.6)	9.0	(0.4,36.6)
Echocardiograms:						
2 D/M mode	18.8	(12.6,25.0)	1.4	(0.0,3.4)	7.6	(1.2,23.2)
Doppler	7.8	(3.4,12.2)	1.4	(0.0,3.4)	8.4	(2.9,49.4)
Color flow doppler	8.4	(4.0,12.8)	0.8	(0.0,3.6)	9.1	(0.0,36.9)
Transesophageal echo	0.6	(0.0,1.8)	0.0	(0.0,2.3)	0.0	(0.0,97.1)
Angiogram	0.6	(0.0,1.8)	0.0	(0.0,2.3)	0.0	(0.0,97.4)

(continued)

TABLE 3-3: Extent of Defensive Medicine in OTA Clinical Scenario Surveys: Physicians Citing Malpractice Concerns as the Primary Reason for Choosing a Clinical Action[a] (Cont'd.)

Scenario/ clinical action	Percentage of *all physicians* who chose the clinical action: Percent	95% confidence limits	Percent of *all respondents* who chose the clinical action primarily for malpractice concerns: Percent	95% confidence limits	Of *clinical actions* chosen, the percent done primarily for malpractice concerns: Percent	95% confidence limits[b]
American College of Surgeons						
General Surgeons						
Breast pain (N=1 ,412)						
Needle biopsy	13,3Y0	(11 5,15 1)	2.7%	*(1 .9,35)*	20370	(14 1,26 5)
Open biopsy	8 4	(7 0,9,8)	2 1	(1.3,2.9)	24.5	(16 5,32 5)
Other	145	(12 5,16 5)	1,0	(O 4,1 .6)	6 6	(2 8,104)
Rectal bleeding (N=738)[c]						
Air contrast barium enema	19,2	(16 2,22 2)	2 3	(1 3,3.3)	11.8	(6.2,1 7.4)
Colonscopy	26,2	(22.8,29.6)	5.0	(3 4,6.6)	19.0	(1 3.0,25.0)
Other	9.7	(7.5,1 1 .9)	0.3	(0.0,07)	2.8	(o 3,97)
Neurosurgeons						
Head trauma (N=503)						
Skull x-ray	337	*(29 9.37.5)*	100	(74,126)	29.6j	22.2,37.0)
C-spine x-ray	21,1	*(17.7,24.5)*	11.2	(8 6,13.8)	52,9	42.5,63.3)
CT of head	48.8	*(44.8,52.8)*	21.8	(18,4,25,2)	44.7	38.1,51.3)
Other	3.9	*(2.3,5.5)*	0.4	(0.0,1 .4)	9.3	(1.0,31.0)
Back pain (N=252)[c]						
Lumbosacral x-ray	24.4	(19.0,29.8)	*3.4*	1 2,5.6)	139	(4,9,22.9)
CT	3.4	(1 .2,5.6)	1 0	0.0,2.2)	298	(5.5.68.0)
MRI	12.6	(8.4,16.8)	2 0	0.2,3.8)	16.0	(5.8,33.3)
Other	9.4	(5.6,13.2)	0 0	0.0.1.5)	0 0	(0.0,14.4)
American College of Obstetricians and Gynecologists						
Breast lump (N= 1,230)						
Breast sonography	33.6%	21.2,26 0)	2.3%	(1 .5,3 1)	9 7%	(6.3,13.1)
Mammography	15.6	42.8,48.4)	5.6	(4,2,7.0)	12.3	(9.5,15.1)
Needle aspiration	24.6	21.8,27.4)	1.1	(0.5,1 .7)	4.5	(2.1 ,6.9)
Fine needle biopsy	7.0	(5.6,8.4)	0.5	(0.1 ,09)	6.5	(2.3,14.0)
Open biopsy	1 0	(0.4,1.6)	0.0	(0.0,03)	0.0	(0.0,26,0)
Refer to surgeon	29.2	26.6,31.8)	5.3	(4,9,7,7)	21.4	(17.0,25.8)
Other	2.0	(1.2,2.8)	0.0	(0.0,0.3)	0.0	(0.0,141)

(continued)

TABLE 3-3: Extent of Defensive Medicine in OTA Clinical Scenario Surveys: Physicians Citing Malpractice Concerns as the Primary Reason for Choosing a Clinical Action[a] (Cont'd.)

Scenario/ clinical action	Percentage of *all physicians* who chose the clinical action: Percent	95% confidence limits	Percent of *all respondents* who chose the clinical action primarily for malpractice concerns: Percent	95% confidence limits	Of *clinical actions* chosen, the percent done primarily for malpractice concerns: Percent	95% confidence limits[b]
Complicated delivery (N= 1,230)						
Continue pushing now	88	(7 2,104)	02	(o 00 4)	19	(O 2,66)
Rest for 30 minutes	81	(65 97)	02	(o 0,04)	21	(o 3,72)
Operative vaginal delivery	67.7	(65.1./0.3)	1.4	(0.8.2.0)	2.0	(1.0.3.0)
Caesarean delivery	23.8	(21.4.26.2)	6.0	(4.6.7.4)	25.0	(20.0.30.0)
Other	4.8	(3.6.6.0)	0.2	(0.0.0.4)	3.7	(0.5.12.1)
Perimenopausal bleeding (N=634)[c]						
Hematocrit/hemoglobin	734	(69 8,77 O)	13	(o32 3)	18	(O 8,35)
Pregnancy test	495	(45 5,53 5)	55	(3 7,73)	11.1	(7 5,147)
Endometrial sampling	854	(82 6,88 2)	16	(O62 6)	19	(o ***9,35)***
Pelvic ultrasound	543	(50 358 3)	42	(2 6,58)	76	(46, 106)
Hysteroscopy	143	(11 5,17 1)	06	(o 01 2)	44	(1 2,109)
D & C	42	(2 6,58)	05	(o 01 1)	109	(2 2,289)
Hysterectomy	02	(O 0,06)	00	(O 0,06)	00	(o 0,94.4)
Other	45	(2 9,6 1)	00	(O 0,06)	00	(o 0,121)

KEY C-spine = cervical spine CT = computed tomography D & C = dilation and curettage 2D/M Mode = two dimensional and !Ime-motion mode EEG = electroencephalogram, ECG = electrocardiogram, MRI = magnetic resonance image NSAID = nonsteroidal anti-mflammcitory drug

[a] Results are weighted to reflect the total population of professional society members on which the survey sample was based See appendix D for details

[b] The confidence Intervals for the "percentage of clinical actions' tend to be wide due to the small numbers of respondents who chose each procedure

[c] Numbers reflect responses to "case" versions of the scenario only See text of chapter 3 for further explanation

[d] 'Admit' was not listed in the questionnaire as an Isolated option This composite category reflects respondents who chose at least one of the three admit' options and did so primarily for malpractice reasons

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

TABLE 3-4: Comparison of Case and Control Versions of OTA Clinical Scenarios: Percentage of Physicians Choosing Each Clinical Action[a]

Scenario/ clinical action	Percentage of physicians who indicated they would take the action: Case	Control	Difference [[case] - [control])	95 % confidence limits
American College of Cardiology				
Chest pain	(N= 162)	(N=182)		
Discharge home with NSAID	67 8%	1 8%	66 0*	(58 4, 73.6)
Admit to hospital [b]	271	97 5	-70 4*	(-77 8,-63 O)
Admit and observe	8 8	87 8	-79 0*	(-85 6, -724)
Admit and obtain cardiac enzymes	215	93 3	-71 8*	(-79 2, -644)
Admit and obtain ECG	224	685	-461 *	(-55 6, -366)
Stress tests				
Exercise ECG	502	400	102	(-O 5, 20.9)
Stress thallium	8 5	272	-18 7*	(-26 6, -10.8)
Echocardiograms				
2 D/M mode	188	408	-22 0*	(-31 5, -12 5)
Doppler	7 8	129	-5 1	(-11 6, 1 4)
Color flow doppler	8 4	123	-3 9	(-10 4, 2 6)
Transesophageal echo	0 6	0 6	0 0	(-1 7, 1 7)
Angiogram	0 6	587	-58 1*	(-65 5, -50 7)
American College of Surgeons				
General Surgeons				
Rectal bleeding	(N=738)	(N=673)		
Air contrast barium enema	19270	26 5%	-7 3*	(-1 1 8,-2 8)
Colonoscopy	262	37 3	-11 1 *	(-16 0,-6 2)
Other	9 7	6 1	3 6*	(O 7,65)
Neurosurgeons				
Back pain	(N=252)	(N=251)		
Lumbosacral X-ray	24 4%	26 0%	-1 6	(-9 3,6 1)
CT	3 4	9 6	-6 2*	(-10 6,-1 8)
MRI	12 6	19 4	-6 8*	(-13 3,-0 3)
Other	9 4	8 5	0 9	(-4 2,6 0)
American College of Obstetricians and Gynecologists				
Perimenopausal bleeding	(N=634)	(N=596)		
Hematocrit/hemoglobin	73 4%	70 4%	3 0	(-2 1,8 1)
Pregnancy test	49 5	36 4	13 1*	(7 5,187)
Endometrial sampling	85 4	85 5	-0 1	(-4 1,3 9)
Pelvic ultrasound	54 4	50 7	3 7	(-2 0,9 4)
Hysteroscopy	14 3	22 8	-8 5*	(-12.9,-4 1)
D & C	4 2	11 5	-7 3*	(-lo 4,-4 2)
Hysterectomy	0 2	0 5	-0 3	(-1 0,0 4)
Other	4 5	3 0	1 5	(-o 7,3 7)

[a]Results are weighted to reflect the total population of professional society members on which the survey sample was based See appendix D for details

[b]"Admit' was not listed in the questionnaire as an isolated option This composite category reflects respondents who chose at least one of the three admit" options and did so primarily for malpractice reasons

* Statically significant at the p < 05 level

KEY CT - computed tomography, D & C - dilation and curettage, 2 D:MMode - two dimensional and lime-motion mode, ECG - electrocardiogram, MRI - magnetic resonance image

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

proportions of respondents in the control scenarios said the y would perform hysteroscopy or D&C (dilatation and curettage), both of which are more invasive procedures.

For the vast majority of procedures, OTA found no significant differences between case and control scenarios in the percentage of respondents who chose the procedure mainly for defensive reasons. However, the majority of procedures in the case scenarios were chosen by relatively few respondents. Therefore. the sample sizes on which to base comparisons of the frequency of defensive response were very low. The surveys were simply too small to detect such differences with adequate statistical confidence if they did exist. (Detailed results of case and control comparisons are available in a tcchnical appendix upon request to OTA.)

Open-ended vs. structured questionnaires

To assess how the structure of the questionnaire might affect responses, a supplemental sample of 600 general surgeons was given "open-ended"' versions of the same clinical scenarios used in the regular general surgeon survey. These scenarios listed the same clinical actions as in the regular survey but gave no printed "reasons" from which to choose. Insted, a blank space was provided beside each clinical action in which the surgeon could write out his or her own reasons for choosing it. Open-ended responses were coded by OTA study staff into the same categories of "reasons" as on the closed-ended questionnaire and were then compared with the closed-ended results.

Although the percentage of physicians who chose each action did not differ significantly in the open-ended and closed-ended surveys, a substantially lower proportion of respondents to the open-ended questionnaire cited malpractice concerns as the primary reason for choosing a given action (see table 3-5).

Two alternative explanations for this finding are possible. First, without the "prompting" effect of the closed-ended questionnaire, physicians' concern about malpractice liability might not enter as readily into their hypothetical clinical decisionmaking.

Alternatively. even though the open-ended questionnaire invited physicians to cite both clinical and nonclinical reasons for their procedure choices. the respondents may have viewed the format and content of the questionnaire as being similar to a medical board examination, Such an interpretation may have reduced the likelihood of citing such nonclinical factors as malpractice concerns. Indeed, most respondents to the open-ended questionnaire gave detailed clinical explanations for their choices of procedures. lending support to this interpretation.

These results highlight the Iimitations of surveys as a method of measuring the extent of defensive medicine. Questionnaire design can affect responses for reasons that are difficult to identify and specify.

Attitudes toward malpractice

OTA examined differences in attitudes regarding malpractice concern between respondents who cited "malpractice concerns" as the most important reason for choosing one or more clinical actions in each scenario and those who did not. The separate items in the attitude survey that addresscd the concerns about malpract ice were combined into a composite scale. (For details, see appendix D.)

OTA compared attitudes toward malpractice of respondcnts who had double-chccktxl "malpractice concerns" as a reason for choosing one or more clinical actions in four selected scenarios with the attitude scores of those who had not double-checked "malpractice concerns.[14] In only one scenario (ACS head trauma) did respondents who double-checked "malpractice concerns"' have statistically significantly higher malpractice concern scale scores than those who did not double-check "malpractice concerns ." In two scenarios (ACS breast pain and ACOG breast

[14] See appendix D for an explanation of how scenarios were selected for the analysis of attitude scores.

TABLE 3-5: Comparison of Open-Ended and Closed-Ended Versions of OTA Clinical Scenario Survey of General Surgeons[a]

Scenario/ clinical action	Percentage of *all physicians* who chose the clinical action[b]		Of clinical actions chosen, the percent done primarily for malpractice concerns				
	Open-ended	Closed-ended	Open-ended	Closed-ended	Difference[c]	Odds ratio (OR)	95% confidence interval for OR[c]
Breast pain	***(N=381)***	***(N=1412)***					
Needle biopsy	10 6%	1 3.3%	6370	20 .3%	-1 4 0	0 20'	(0.02, O 85)
Open biopsy	6 5	8 4	146	2 4 5	-9 9	0 02'	(o 002, 0 07)
Other	126	145	0 0	6 6	-6.6	0.0	(o 00, 1 03)
Rectal bleeding	***(N=381)***	***(N=738)***					
Barium enema	143	192	3.7	11 8	-8.1	0 2 5	(o 03, 1 11)
Colonoscopy	**2 5 0**	**2 6 2**	4 0	190	-1 5 0	0 21*	(O 05, 0 60)
Other	10,2	9.7	0 0	2.8	-2 8	0 0	(0. 00.6. 4)

[a]Results are weighted to reflect the total population of professional society members on which the survey sample was based See appendix D for details

[b]With one exception (barium enema), the proportions of respondents choosing a given clinical action were not statistically significantly different between open- and closed-ended versions of the scenario

[c]Confidence intervals were constructed for the odds ratio because of the small number of observations in the denominator and numerator of the calculated percentages

* = statistically significant at the p < 05 level

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

lump), malpractice attitude scores were statistically significantly lower among double-checkers compared with nondouble-checkers. 15 (Detailed results of the analysis are included in appendix E of this report).

Costs of selected defensive medicine procedures

Based on the results of the clinical scenario surveys, OTA estimated the potential national costs of positive defensive medicine for two scenarios for which incidence and cost data were readily available: the ACOG complicated delivery scenario and the ACS head trauma scenario. The rationale and methods for deriving these estimates, and their results, are detailed in appendix F.

The aggregate incremental cost of ● 'defensive" Caesarean delivery in the 46,896 cases nationally in 1991 that were similar to the ACOG scenario16 was $8.7 million.

The estimated aggregate cost of "defensive" diagnostic radiology of the head (skull x-ray, cervical spine x-ray, and CT scan of the head) for the roughly 530,000 minor head injuries estimated to occur annually among children and young adults aged 5 to 24 in the United States (i.e., cases similar to that described in the ACS head trauma scenario) was approximately $45 million.

While these estimated costs represent only a small share of total national health care costs, they are not trivial. It is inappropriate to generalize these estimated costs beyond the specific scenarios for which they were derived. Also, the scenarios were designed to be malpractice-sensitive and thus are not representative of clinical practice generally.

Glassman Scenario Survey of New Jersey Physicians

An OTA-sponsored study by Glassman and colleagues (73) conducted a clinical scenario survey in which five of the scenarios developed for OTA's surveys were adapted for use in this study.

The contractors surveyed 835 physicians covered by the Medical Insurance Exchange of New Jersey, which insures 70 percent of all New Jersey physicians. For each scenario, physicians reported the clinical actions they would take (e.g., tests, procedures, referral to other physicians).

Respondents were asked to estimate on a five-point scale (1 = extremely influential, 5 = not at all influential) how strongly their decisions had been influenced by various factors, including "the desire to reduce the possibility of malpractice litigation;"" the history, physical, and lab results;" "the standard of patient care in their community;" and "patient or family expectation s."

The physicians were also asked to estimate the probability that the patient had a life-threatening condition and the probability that further testing would identify the cause of the patient's symptoms. The survey also queried physicians about their general attitudes regarding malpractice liability, clinical uncertainty, and cost consciousness using a set of attitude scales similar, but not identical, to those used in the OTA clinical scenario surveys.

Depending on the scenario, between 2.3 and 6.4 percent of the respondents cited the "desire to minimize the possibility of malpractice litigation" as either an extremely or very influential reason for their clinical decisions and did not cite any

15 The only statistically significant difference on the other two attitude scales was in the ACC syncope scenario. Where the mean score for discomfort with clinical uncertainty was statistically significantly *lower* among respondents who double-checked malpractice concerns compared with those who did not.

16 Women aged 30 to 39 experiencing prolonged labor or dysfunctional labor (see appendix F for details)

TABLE 3-6: Percent of New Jersey Physicians Citing Concern About Malpractice Litigation as the Most Influential Factor in Clinical Decisionmaking

Scenario	Percent of physicians who cited "desire to minimize possibility of malpractice litigation" as the *most influential** reason for clinical decision
Cardiologists	
Syncope in 50-year-old woman	
Diagnostic testing	64-29.7%a
Clinical management	57-266
Nonspecific chest pain in 42-year-old man	
Diagnostic testing	57-329
Clinical management	43-310
Internists	
Syncope in 50-year-old woman	
Diagnostic testing	46-305
Clinicall management	53-295
Nonspecific chest pain in 42-year-old man	
Diagnostic testing	57-315
Clinical management	23-275
Surgeons	
Breast pain in 38-year-old woman	*32-241*
Head trauma in 15-year-old	*59-422*
Rectal bleeding in 35-year-old man	*42-289*

NOTE These numbers are based on responses to clinical scenario surveys completed by cardiologists (N- 157) internists (N- 188), and surgeons (N- 187) practicing in New Jersey Overall survey response rates were 49 percent for cardiologists 51 percent for Internists and 59 percent for surgeons

*In this survey respondents were not asked to rank their reasons, therefore It is impossible to infer the primary motivation in cases where a respondent listed two reasons as equally Important The percentages are presented as a range The lower bound of the range includes only those respondents who cited malpractice concerns as either extremely Influential" or "very Influenlal and cited no other reason as that Important The upper bound also includes respondents who cited malpractice concerns as either 'extremely influential or "veryj influential and listed another reason as equally but not *more* important

SOURCE PA Glassman RAND Santa Monica. CA unpublished data from a study prepared under contract with the Off Ice of Technology Assessment U S Congress Washington, DC, January 1994

other reason as equally or more influential (table 3-6). However, if respondents who cited malpractice concerns as extremely or very influential but also cited mother reason as equally important are included, the defensive response across scenarios could be as high as between 24 and 42 percent (see table 3-6). 17

In contrast, medical indications were cited as the most influential factor (i.e., very or extremely important, with no other reasons as important) by 42.8 to 60.9 percent of respondents, depending on the scenario (data not shown).

The study found no statistically significant relationships between physicians' tendencies to cite malpractice liability concerns as a factor in their decisions and either their malpractice attitude scale scores or their past malpractice litigation exposure (73).

[17] Unlike the OTA surveys. Glassman and colleagues' survey did not require respondents to rank reasons. Thus. for cases In Which respondents cited malpractice liabil ity concerns and medical indications as equall y important, it was not possible to infer w hich was the primary motivation. If one assumes that malpractice liability concerns were the primary motivation in those cases, however, the percentage 01" respondents displaying defensive behavior increases to between 24 and 42, depending on the scenario (see table 3-6).

Conclusions

The results of clinical scenario studies suggest that conscious positive defensive medicine does exist, although not to the extent suggested by anecdotal evidence or by some other physician surveys (see figure 3-3).

Despite using somewhat different methods and measures, the three clinical scenario studies found roughly comparable levels of defensive medicine: the percentage of respondents who cited malpractice concerns as the primary reason for ordering tests or procedures ranged from zero to over 30. However, all of the studies also found that this percentage was considerably lower than the percentage of respondents who cited clinical factors as the primary reason for choosing procedures-even though most scenarios were designed to enhance the probability y that the respondent would cite malpractice concerns. Because scenarios were also designed with the implicit assumption that conservative management was acceptable. these findings suggest that many physicians who choose to be more aggressive in diagnosis and treatment do so primarily because they believe it is medically appropriate, and not because they are conscious y concerned about liability.

In the OTA clinical scenario surveys, the median defensive response across 54 "interventionist" clinical actions was only 8 percent. Because the scenarios were designed to be malpractice-sensitive, the percentage of clinical actions arising from conscious defensive medicine is certainly lower than this figure.

The estimates of defensive medicine from clinical scenario surveys are still limited in that they are based on what physicians say they would do rather than what they actually do. Furthermore, reasons such as compliance with community standards and patient expectations, although not labeled malpractice liability concerns as such, may indirectly reflect potential liability concerns. To the extent that such reasons were listed alongside "malpractice concerns" as options in the questionnaires, they may have deflated the apparent influence of malpractice liability in these studies. On the other hand, the structured questionnaires may have prompted physicians to overreport true levels of defensive medicine.

Statistical Analyses of Defensive Medicine

Direct physician surveys and clinical scenario surveys examine the extent to which physicians report that fear of malpractice liability influences their behavior. Whether physicians actual] y do behave the way they say they do in surveys remains an open question, and the potential problems with such surveys argue for analyzing data on actual use of procedures to identify the frequency of defensive medicine.

Three past studies have tried to document the existence of defensive medicine through analyses relating physicians actual exposure to malpractice claims to their actual clinical practices. As part of this assessment of defensive medicine. OTA commissioned three additional studies of this type in the areas of both positive and negative defensive medicine.

The hypothesis common to such studies is that physicians with greater exposure to malpractice liability (either past personal experience or vicarious exposure through colleagues within a hospital or geographic area) will practice more defensive medicine than physicians with lower malpractice claims exposure. This section discusses the results of five studies of this type. [18] Three looked at positive defensive medicine: the other two examined negative defensive medicine in obstetrics-namely, the decision to withdraw from obstetrics

[18] OTA excluded two other studies on Caesarean deliveries – one in New York by Rock and colleagues (198) and another in Michigan by Goyert and colleagues (78) – because these studies did not control for clinical variables or had small sample sizes.

practice due to liability concerns. The studies used varying combinations of actual and self-reported data on malpractice claims exposure and physician practice patterns.

Studies of Positive Defensive Medicine

Caesarean deliveries in New York State, 1984

Localio and colleagues (128,129) examined the relationship bet ween malpractice l iabilit y risk and rates of Caesarean delivery in a sample of New York State hospitals in 1984. The study examined eight different measures of malpractice liability risk: malpractice premiums by region; physicians' perceived risk of litigation as measured in a survey, by region; three measures of actual physician malpractice claims experience aggregated to the hospital level; and three measures of actual malpractice claims experience of the individual physicians (129).

When patient severity and other factors known to affect the Caesarean rate were controlled, higher rates were associated with both higher area-level malpractice liability risk (premiums and perceived risk of litigation) and hospital-level malpractice claims risk. The estimated incremental effect of higher area- and hospital-level malpractice liability risk on the Caesarean delivery rate was quite large. For example, a patient in a hospital with a high frequency of physician obstetric malpractice claims was 32 percent more likely to undergo a Caesarean delivery than a patient in a hospital with a low claim frequency. The study did not find a statistically significant association between the physician's individual malpractice claim experience and his or her Caesarean rate (128).

Analyses of patients classified at various levels of expected risk of Caesarean delivery (based on clinical factors alone) showed that malpractice liability risk had the strongest influence in births with moderate clinical risk. For low-risk births (i.e., births in which clinical factors alone predicted a less than 5 percent chance of Caesarean), hospital- and premium-level malpractice liability risk measures were either slightly negatively or not statistically significantly associated with Caesarean delivery. For medium risk births (between 5 and 75 percent chance of Caesarean), they were positively associated with Caesarean delivery. For high-risk births (greater than 75 percent chance of Caesarean), they were also positively associated, but to a lesser degree than for medium-risk births. These findings suggest that malpractice liability risk may play a greater role in situations where clinical factors alone do not clearly point out the appropriate course of action (128).

Use of services in low-risk prenatal cases, Washington State, 1989

A study jointly funded by OTA and the Robert Wood Johnson Foundation and undertaken by Baldwin and colleagues examined the association between physicians' malpractice claims experience and their use of technology for low-risk obstetric patients (10). A stratified random sample of Washington State physicians was evaluated by linking both personal and area-level malpractice claims exposure data with data on physicians' use of services for their low-risk obstetric patients. 19 Utilization measures included:

- ultrasound early in pregnancy (prior to 20 weeks' gestation),
- ultrasound throughout pregnancy,
- type of delivery (vaginal or Caesarean),
- referral and consultation with specialists, and
- total prenatal care resource use.[20]

[19] The study sample included 54 **urban** obstetricians, 29 rural obstetricians, 59 urban family physicians, and 67 rural family physicians. **Patient** records were selected for up to 11 low-risk obstetric patients per physician. Patients were randomly selected from the case records of each physician, and those cases presenting with selected risk factors in their initial prenatal care visit were excluded from the analysis.

[20] The total prenatal care resource use for a case was based on a standardized average charge for specific prenatal services obtained from Blue Cross of Washington State.

Independent variables in the study included individual physicians' self-reported malpractice histories and the "malpractice defendant rate"21 in the county in which the physician practices. These rates were obtained from Washington's largest malpractice insurance carrier.

After controlling for both patient and physician practice characteristics, the researchers found no statistically significant differences in prenatal resource use or Caesarean delivery rates between physicians with higher and those with lower malpractice claims exposure (10). Table 3-7 shows the results of the analysis that used the county malpractice defendant rate as the independent variable of interest. There were no statistically significant associations between the county defendant rate and any of the five measures of resource use.

Use of clinical services in New Jersey, 1993

An OTA contract study undertaken by Glassman and his colleagues at RAND (73) used clinical scenarios to test whether New Jersey physicians' personal malpractice claims experience was associated with their reported use of resources.

The study population comprised 1,540 physicians[22] insured by the single largest malpractice insurance company in New Jersey. The insurance company provided data on individual physicians' malpractice histories from 1977 through 1992 (both open and closed claims). The great majority of physicians surveyed had at least one claim filed against them, with some specialties as high as 93 percent.

Study participants were asked to respond to two or three clinical scenarios (a total of five were used), rate their reasons for choosing among certain clinical choices, and answer a questionnaire on attitudes toward clinical uncertainty, malpractice, and cost consciousness.23 In relevant scenarios, physicians were asked to estimate the probability that the patient had severe disease. Physicians were blinded to the purpose of the study and were unaware that scenario results would be linked to their personal malpractice claims histories.

The researchers found no statistically significant associations between resource use in the five clinical scenarios and the physician's own malpractice claims experience.24 The only study variables consistently correlated with resource use were physicians self-reported attitudes toward cost consciousness (negative correlate, and physicians subjective estimates of the probability of severe disease (positive correlation). Physicians' self-reported attitudes toward uncertainty. cost consciousness, and malpractice were not consistently correlated with their persona] malpractice claims histories. The study did not utilize area- or hospital-level measures of malpractice claims risk.

Studies of Negative Defensive Medicine

Decision to withdraw from obstetrics, New York, 1980-89

An OTA contract study conducted by Grumbach and colleagues (81) examined whether New York physicians who experienced high absolute increases in malpractice insurance premiums between 1980 and 1989 were more likely than physicians with lower premium increases to withdraw from obstetrics practice during the same period. The study sample included obstetrician/gyncolo-

[21] The *malpractice defendant rate* in a county was defined as the number of physicians in that county who had been involved in malpractice claims divided by the total number of physician-years insured in the county by Washington's largest carrier.

[22] A total of 835 of the 1,540 eligible physicians (54.2 percent) responded to the survey.

[23] Scenarios for this study was modeled after scenarios developed for the OTA clinical scenario surveys (see above, appendix I)).

[24] Physicians' claims experience was measured in two ways" 1) categorically (no claims, any past claim without negligence or payment, any past claim with negligence or payment, one recent claim, and more than one recent claim), and 2) overall physician claims rates coil.ipwxl into tertiles.

TABLE 3-7: Factors Associated with Obstetric Resource Use in Low-Risk Patients in Washington State, 1989: Results of Linear Regression

Independent variable	Obstetric Resource Use Measure: Mean no. of early ultrasounds per patient	Total no. of ultrasounds per patient	Mean no. of consults or referrals per patient	Mean standardized resource use per patient ($)	Percent Caesarean deliveries (70)
	Regression coefficients				
County malpractice defendant rate	-23	-156	-79	***$-1,094***	-11%
Urban obstetrician	27*	15	02	***554****	004
Rural obstetrician	.42*	.53'	08	***335***	7
Rural family physician	15	**009**	-02	***158***	- 9
Urban family physician (ref.)	—	—	—	—	
% male	-04	-02	-05	-118	-2
Physician age	-003	-004	-003	-14	3
HMO practice	-19	-.46*	.25*	128	-3
Community clinic practice	-11	-24	04	-161	-7
Hospital practice	-07	-25	-08	-314	-6
Private practice (ref.)	—	—	—	—	
% high-risk patients	002	**.007***	0009	14	**.2***
% Medicaid patients	.002'	**.004***	0005	3	- 008
Obstetric volume	-001	-.0009	-0002	-1	- 04
Median county household income	-000005	.000002	.00001'	***03***	**-.0009***
Nursery care:b level i	-03	03	-11	***352***	7
Level II	-03	06	-03	196	-3
Level III (ref.)	—	—	—	—	
Consult available	05	03	-.13*	-83	-7
Distance to tertiary hospital	-001	-.004'	0001	-1	01
Physician is residency trained	15	12	-02	-62	13
Physician is board certified	22 —	07	-05	-14	14
Intercept	019	981	184	745	-21.4
Adjusted R^2	**.11***	**.18***	**.11***	**.25***	**.12***
Total no of MDs in sample	205	205	205	205	205
Mean value of dependent variable	50	1.1	14	1,563	15%

* - significant at p< 05

[a] County malpractice defendant rate analyzed as a continuous variable

[b] Level of nursery care available in hospital I=least technology III=most technology

[c] Obstetric consultant available within 10 miles of physician's practice

SOURCE L M Baldwin L G Hart M Lloyd et al Department of Family Medicine University of Washington, Seattle WA Malpractice Claims Exposure and Resource Use in Low Risk Obstetrics " prepared under contract to the Off Ice of Technology Assessment U S Congress Nov 21, 1993 unpublished data revisions provided 10 OTA by authors May 1994

gists **(OB,GYNs) and** family practitioners (FPs) who were active in obstetrics in 1980,

The main explanatory variable was the absolute change in malpractice insurance premiums for physicians practicing obstetrics in each specialty between 1980 and 1989 in each of New York's five premium rating areas. Dependent variables included complete withdrawal from medical practice and withdrawal from obstetric practice alone during the study period. Other factors associated with withdrawal from obstetrics practice (e.g., volume of deliveries in 1980. years since licensure) were controlled for in the multiple regression analysis (81).

Medical malpractice insurance premium increases were not associated with physician withdrawal from obstetrics practice for either OB/GYNs or FPs (81).25 Physician factors that *had a* statistically significant association with withdrawal from obstetrics included years since licensing (positive dissociation), " volumc of deliveries in 1980 (negative association), and specialty (FPs more likely to stop than OB/GYNS) (81).26

Volume of obstetric deliveries, United States, 1987

An unpublished working paper by Kington (112)27 examined the relationship between liability risk (measured at both the state and individual physician level) and OB/GYNs " volume of obstetrics practice. The analysis used self-reported data on obstetric volume, malpractice claims history. and physician characteristics from a 1987 national survey of members of ACOG: state -level data on liability insurance premiums: and a variety of independent factors such as socioeconomic and geo - graphic characteristics of the community in which the physician practiced.

The study looked at whether OB/GYNs reported that they were practicing obstetrics at all. and also at the volume of obstetric care they reported during 1986.

The study found that OB/GYNs in states with greater liability threats and who reported higher personal malpractice claims exposure were more likely to be practicing obstetrics and had higher volumes of obstetric care than their counterparts.

These findings are consistent with one of the study hypotheses; namely, that obstetrics services become more concentrated among OB/GYN specialists under a worsening liability climate because other providers of obstetric care (e. g.. family practice physicians and nurse-midwives) reduce their obstetric practices (112). This study, however, did not examine the effect of the liability climate on these other providers.

OTA Case Study of Low Osmolality Contrast Agents

Jacobson and Rosenquist undertook a contract case study for OTA to examine the diffusion and use of low osmolality contrast agents (LOCAs)—a recently developed alternative to traditional contrast agents for radiologic imaging procedurcs (105 **).28** LOCAs present an opportunity to examine the relationship between legal liability and the diffusion of a new technology into medical practice. A common perception, expressed informally at professional society meetings debating the use of LOCAs, is that the widespread use of LOCAs can be explained largely as a function of

[25] Premium differentials between OB GYNs who practice obstetrics and those who practice only gynecology were not instituted statewide until late in the study period. However, one carrier offered differential rates as early as 1982, and the largest carrier began offering them in 1984.

[26] Grumbach et al. also examined changes in access to obstetric services during the study period, as measured by changes in the distance traveled from a patients' residence to the hospital where delivery was performed and changes in the concentration of deliveries among physicians. They found no major changes in either measure, with the exception of an increased concentration of Medicaid patients among a smaller number of physicians in the Long Island area (81).

[27] This is a study in progress; thus, the model and findings may change on further revision.

[28] The full report of this case study will be made available as a separate document at a later date.

defensive medicine. The case study focused on the extent to which concerns over legal liability influenced the diffusion and use of LOCAs.

Description and Current Use of LOCAs

Radiologists and cardiologists use contrast agents to enhance a variety of radiologic imaging procedures, including angiography, intravenous urography, CT scans, and cardiac catheterization procedures. Traditional contrast agents have very high osmolality (that is, concentration of dissolved particles in solution) compared with normal body fluids, and have been associated with mild to moderate adverse reactions such as nausea and vomiting in some patients, as well as with rare but more serious adverse reactions in certain patients. The osmolality of LOCAs more closely approaches that of normal body fluids.

LOCAs were first approved for the U.S. market in 1986. LOCAs and traditional contrast agents are equally effective in enhancing diagnostic images. The primary benefits of LOCAs are greater comfort for the patient due to reduced risk of mild and moderate adverse reactions and, hence, potentially better patient cooperation in the procedure. It is not clear whether LOCAs reduce the risk of more serious, but far more rare, reactions.

The contractors surveyed hospitals in five regions. They found that use of LOCAs varied considerably across geographic regions and different kinds of hospitals. Some institutions reported universal use of LOCAs, while others reported using LOCAs for as few as 30 percent of patients. Some institutions had implemented selective use guidelines, although the particulars of the guidelines differed among institutions.

Costs of and Reimbursement for LOCAs

According to most reports and the survey information gathered for the OTA case study, LOCAs cost 10 to 20 times as much as traditional contrast agents. There has been only minimal change in the price ratio between them since LOCAs were introduced in the mid-1980s (95,104). The incremental cost of using LOCAs instead of traditional contrast agents for a specific procedure may amount to $150-$200.

Reimbursement for LOCAs varies widely. Hospital prospective payment systems give hospitals incentives to use less expensive alternatives on inpatients. Reimbursement for LOCAs used in outpatient diagnostic x-ray procedures varies by type of insurance coverage. Since January 1992, Medicare has reimbursed for outpatient LOCA use in selected high-risk patients.[29] Private insurers have had a more liberal reimbursement policy, generally reimbursing at close to the full invoice price of the agent, depending on type of coverage. The variation in reimbursement policies for LOCAs makes it difficult to systematically compare their importance with that of malpractice concerns in explaining LOCA diffusion or use.

Legal Issues Affecting the Diffusion of LOCAs

In the absence of established legal precedent or professional consensus, it would appear that hospitals and physicians are confronted with a difficult choice in how to utilize LOCAs: how to balance the high costs of universal LOCA use with potential legal liability for improperly limiting their use. However, despite the common perception that liability fears have been driving LOCA diffusion, actual liability claims or litigation involving contrast agents are very limited. OTA's contractors were unable to identify a single court case involving the issue of whether the use of a traditional contrast agent for a low-risk patient constitutes negligence or whether the availability of LOCAs as an alternative must be disclosed to the patient. However, because LOCAs are now used almost universally for certain high-risk patients, the failure to use LOCAs for these patients might be considered negligent. At the very least, the physician would have the burden of justifying the failure to use LOCAs.

[29] Medicare reimbursement policy is based on selective use guidelines published by the American College of Radiology (3,170).

Only a few of the health professionals interviewed by OTA's contractor-s were aware of any existing litigation regarding contrast agents. Only one had been sued or had a claim filed over the use or choice of contrast agents. None of the risk managers interviewed had received any claims, and two of them asserted that there was no good risk management rationale for universal LOCA use.

Survey Methods and Results

In an effort to gain a better understanding of physician decisionmaking regarding LOCAs, knowledgeable health care providers at a variety of different institutions in metropolitan areas in five different geographic regions of the country were interviewed about their reasons for- using LOCAs. Personal interviews were conducted with 46 indi - viduals—29 physicians (primarily radiologists and cardiologists) and 17 hospital administrators (including risk managers). Telephone interviews were conducted where the individual was not available in person. The trends reported are believed to reasonably reflect the current state of LOCA use.

The survey included questionnaires asking respondents to indicate the importance of 11 different factors thought to influence the decision between traditional contrast agents and LOCAs. When asked to rank the factors in descending order of importance, physicians ranked "legal concerns" 7th out of 11 factors, and administrators ranked them 5th (table 3-8). Physicians ranked '-reducing adverse reactions" as the most important factor in choosing between LOCAs and traditional agents, and administrators ranked "clinical indications" as the most important factor. 30"Cost of the agents" was ranked as the 4th most important factor by physicians and as the 3rd most important factor by administrators (table 3-8).

Thus, despite anecdotal information from the interviewees about the role of malpractice liability concerns in the decision to use LOCAs, their written responses suggest medical factors and cost considerations play a greater role than liability concerns in current decisions about the use of LOCAs. It is possible, however. that survey respondents underrated the influence of liability concerns because the y felt this was a more socially desirable response.

While liability considerations are important to radiologists and cardiologists and might explain some of the LOCA market penetration, factors relating to general technological] advances. such as enhanced patient safety and comfort, appear to be more important in explaining LOCA use. Due to the small number of respondents and other limita-

TABLE 3-8: Physicians' and Hospital Administrators' Perceptions of Factors Influencing the Choice Between Traditional and Low Osmolality Contrast Agents (LOCAs)

	Average relative rank of factor[a]	
	Physicians (N=29)	Administrators[b] (N=17)
Patient safety/comfort	1	1
Reductions in adverse reactions	1	3
Clinlcal indications	3	2
costs	4	3
Guidelines	5	7
Physician preference	6	5
Hospital policies	7	7
Legal concerns	7	5
Reimbursement policy	9	9
Competitive factors	10	10
Manufacturer marketing	11	11

a The question put to respondents was "What criteria did you use to make a decision on use of low- vs high-osmolar contrast agent s,? Can you rank each of the following [11] factors in order of importance? This column represents the mean rank assigned for each factor Where two factors bave the same mean rank they are given the same value
b Includes some hospital risk managers

SOURCE P D Jacobson and C J Rosencuist The Diffusion of Low Osmolality Contrast Agents Technological Change and Defers ve Medicine contract report prepared for the Office of Technology Assessment U S Congress Wdst'ir'glen DC November 1 '733

[30] Physicians were also asked to rate each of the 11 factors individually on a scale of 1 to 10 (1 = very important, 10 = not important). This process yielded similar results for the relative importance of factors in decisionmaking. For physicians, "legal concerns" still ranked 7th out of 11 factors, for administrators, however, "legal concerns" ranked 9th out of 11 factors.

tions of the case study design, however, these findings should be regarded as tentative.

CONCLUSIONS

Although direct physician surveys suggest that fear of malpractice liability is widespread among physicians and that many of them practice defensive medicine, the validity of these results is highly questionable for a number of reasons—in particular, the ● *prompting" of physicians to cite malpractice liability concerns and response bias due to low response rates. Consequently, the results of many of these surveys probably considerably overestimate the extent of defensive medicine.

Survey-based estimates of the national cost of defensive medicine advanced by researchers at several organizations are unreliable and potentially biased. The true costs of defensive medicine may be either higher or lower than predicted by such studies.

In clinical scenario surveys designed specifically to elicit a defensive response, malpractice concerns were occasionally cited as an important factor in clinical decisions; however, physicians' belief that a course of action is medically indicated was the most important determinant of physicians' clinical choices. These findings suggest that many physicians are more aggressive in diagnosis not because of fear of malpractice liability, but because they have come to believe that such practices are medically necessary.

One large, well-designed study found a statistically significant relationship between Caesarean delivery rates and hospital- and area-level measures of malpractice liability risk (based on malpractice insurance premiums and claims) in New York State. However, to date these findings have not been replicated in other clinical situations or geographic areas. Two smaller studies commissioned by OTA failed to find similar relationships between liability risk and increased resource use in other areas of clinical practice, although limits of sample size and study design may have precluded positive findings in these studies. Neither of the two empirical studies of negative defensive medicine found a statistically significant positive relationship between liability risk and withdrawal from obstetrics practice.

A major limitation of such statistical studies is that they cannot measure the overall level of defensive medicine; they can detect only incremental differences in defensive behavior between groups of physicians with higher and lower levels of malpractice liability risk.

Taken together, the findings from studies reviewed in this chapter suggest that defensive medicine is a real phenomenon that has a discernible influence in certain select clinical situations. OTA was able to document defensive practice in several isolated clinical situations, most notably the use of diagnostic radiologic examinations for young patients presenting with head injuries in emergency rooms (see table 3-3).

There are probably other clinical situations not studied by OTA or others in which defensive medicine plays a major role in physicians' diagnosis and treatment decisions. However, in the majority of clinical scenarios used in OTA's and other surveys, respondents did not report substantial levels of defensive medicine, even though the scenarios were specifically designed to elicit a defensive response.

Based on the limited evidence available, OTA estimates that a relatively small proportion of all diagnostic procedures-certainly less than 8 percent overall—is performed primarily due to conscious concern about malpractice liability risk. OTA did not attempt to make similar rough estimates of the proportion of therapeutic procedures performed for defensive reasons; in part because there was no outside information to draw on.

The studies reviewed in this chapter illustrate the great difficulty of accurately measuring the true extent of defensive medicine. Although it is possible to identify particular clinical situations in which defensive medicine plays a relatively major role, it is impossible in the final analysis to draw any conclusions about the overall extent or cost of defensive medicine.

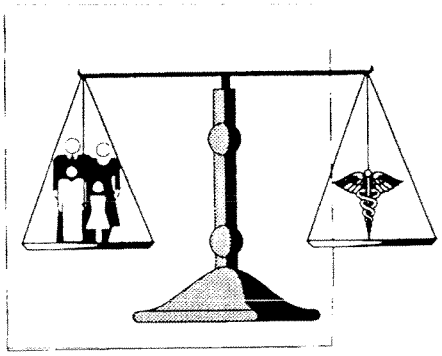
Impact of Malpractice Reform on Defensive Medicine

4

Although it is impossible to measure with much Precision the extent of defensive medicine, the evidence summarized in Chapter 3 implies that it is neither a trivial nor a major contributor to health care costs. This chapter examines how different approaches to reforming the medical malpractice system might affect the frequency of defensive medicine. The chapter examines the potential for tort reforms (i.e., changes in the legal rules for resolving malpractice claims) to reduce defensive medicine.

This is a limited policy analysis; other impacts of tort reform may be equally or more important, including:

- *Quality of care:* A principle objective of medical malpractice law is to deter physicians from rendering lower-quality care, but the effect of the malpractice system on quality of care has hardly been studied. Although there is reason to believe it may have some positive effect on quality (e.g.. increased investment in risk management and quality control), the scant empirical evidence available does not support the contention that the malpractice system as it is presently configured does improve quality of care. 1 Nonetheless, tort reforms that limit physicians' liability could adversely affect the quality of care.



[1]For example, in an attempt to estimate the deterrent effect of medical malpractice, researchers at Harvard University recently analyzed the relationship between the number of malpractice claims per negligent injury and the rate of negligent injuries in New York State hospitals in 1984. They failed to demonstrate a significant relationship between malpractice claim activity and the rate of negligent injury in a hospital (254). The analysis was limited by a small sample size (less than 50 hospitals) and a single year of data. Thus, the analysis may not have had sufficient statistical power to detect a deterrent effect if it did exist.

- *Plaintiffs' access to the legal system:* Evidence exists that the vast majority of patients injured by negligent medical care do not file a claim (130),2 and tort reforms could either make it easier or more difficult, especially for patients with limited financial resources;
- *Cost of compensating victims of malpractice:* Some reform proposals promise lower administrative costs (e.g., lower lawyers fees) but also would compensate a greater number of individuals. The Office of Technology Assessment (OTA) has not examined whether the overall impact of these changes would be to increase or to save costs.
- *Physician-patient relationships:* Physicians claim that their concern about malpractice liability causes their relationships with patients to suffer. Depending on its configuration, tort reform could either improve or hurt the physician-patient relationship.

More general discussions of the range of potential impacts of tort reforms are available in a number of review articles (12,2 1,37,122,208a). In this chapter OTA focuses mainly on the effects of malpractice reforms-both conventional approaches and new proposals-on defensive medic inc.

Since the first malpractice insurance crisis in the mid- 1970s, almost every state has reformed one or more aspects of malpractice law (22,236). The tort reforms implemented in the states were designed primarily to reduce malpractice insurance premiums by limiting the frequency of suits, payments per paid claim, or the cost of resolving claims. Conventional tort reforms us implemented in the states have maintained the malpractice liability system while tinkering with one of more aspects of the claim resolution process.

Newer reform proposals would substantially alter the process for resolving malpractice claims or would limit the physician's personal liability and substitute other quality control systems. Since most of these newer reform proposals have not been implemented, it is difficult to predict their impact on defensive medicine.

THE IMPACT OF CONVENTIONAL MALPRACTICE REFORMS ON DIRECT MALPRACTICE COSTS

Most of the traditional tort reforms retain the courts as the forum for resolvi ng malpractice suits but change certain legal rules, such as imposing limits on the time after an injury or its discovery in which a suit can be filed, or limiting the damages that can be awarded.

These "conventional" tort reforms have been labeled pro-defendant, because they often restrict plaintiffs' access to courts or limit the amounts plaintiffs can recover (254). For example, requiring a plaintiff to obtain a "certificate of merit''—an affidavit by a physician that the claim is valid—prior to filing a suit can make it more difficult for low-income plaintiffs to sue (see box 4-l) (166).3 Box 4-2 contains a brief description of the traditional legal reforms.

In a separate background paper, OTA reviewed the results of six multistate studies that used statistical techniques to estimate the impact of specific malpractice reforms on four indicators of direct malpractice costs: 1) frequency of suit, 2) payment per paid claim, 3) probability of payment, and 4) insurance premiums (236). The six studies were selected because they used the most methodologically rigorous approaches to isolating the impact of malpractice reform on malpractice costs.

OTA also identified several studies that either examined trends in malpractice activity in states with malpractice reforms or compared trends in such a state with those in other states without the same reforms.

The results of OTA's review of the six multistate study and of' the more compelling single-

[2] A recent study of New York State hospital stays revealed that approximately one in 50 negligently injured plaintiffs brought a malpractice claim (130).

[3] Low income plaintiffs are already' less likely to sue than more affluent plaintiffs (.? 1,230,239).

BOX 4-1: Impact of Maryland's Certificate of Merit on Low-Income Plaintiffs

Many tort reforms explicitly limit the amount the plaintiff or his or her attorney can recover from a malpractice case (e g caps on damages, collateral source offsets or limits on attorney fees) or increase the costs of bringing a suit (e g certificates of merit) Such reforms make filing a malpractice suit less attractive for all plaintiffs. Whether these reforms disproportionately affect people's ability to sue has not been studied

As part of this study OTA was asked to examine whether low-income obstetric patients are more litigious than privately Insured patients OTA issued a background paper on this issue which found that Medicaid and Medicare patients sue physicians less often than would be expected given their relative proportion of the population (Medicaid patients) or heavy use of health services (Medicare patients) (239) OTA also commissioned a study by Morlock and Malitz to examine the impact of Maryland's tort reforms on claim filings by Medicaid, Medicare and self-insured plaintiffs

In July 1986 Maryland Implemented a package of tort reforms

- a requirement that a certificate of merit be obtained within 90 days of filing a malpractice claim,
- a $350 000 cap on noneconomic damages,
- a provision for periodic payment of damages,
- a shortened statute of limitations for minors and
- administrative reforms to Improve the pretrial screening process

Of these reforms the requirement that a certificate of merit be obtained within 90 days of fiiling is most likely to pose a differential barrier based on the plaintiff's income. Obtaining such a certificate costs $600 to $1 000 and some attorneys may require that these costs be paid by the claimant in advance of settlement or other disposition

Morlock found a substantial drop in the number of claims filed by patients with no Insurance and by Medicaid patients following the Implementation of the Maryland reforms The following table shows the number of malpractice claims filed per 100000 hospital discharges in Maryland The rates are displayed by Insurance status of the Injured party A certificate of merit was required beginning in July 1986 but the legislation requiring the certificate was passed during the legislative session from January to April, 1986

Malpractice Claims Filed in the Legal System as a Result of Hospital Incidents per 100,000 Discharges in Maryland, 1979-89

Insurance Status	1979-1985 (Pre-reform)	Jan. '86 - June '86 (Transition)	July '86 - June '87 (Post-reform)	July '87 - Dec. '89 (Post-reform)
Total number of claims	401	599	**366**	**297**
Claims by **privately insured** patients	491	759	467	44 1
Claims by **Medicare** patients	289	51 9	326	263
Claims by **Medicaid** patients	291	671	395	7.4
Claims by **uninsured** patients	552	83	59	154

SOURCE L L Morlock and F E Malitz *Short-Term Effects of Tort and Administrative Reforms on the Claiming Behavior of Privately Insured Medicare Medicaid and Uninsured Patients* prepared for the Office of Technology Assessment U S Congress (Washington DC U S Government Printing Off Ice September 1993)

BOX 4-2: Traditional Tort Reforms

Aimed at the Number of Lawsuits:

1. Attorney *fee limits:* Plaintiff attorneys are paid on a contingency basis, that is, they are paid a portion of the plaintiff's damages as a fee but receive no fee when the plaintiff loses The typical contingent fee is 33-1/3 percent of the award Some states limit the contingency fee percentage in large damage cases

2 *Certificate of Merit* Some states require that a plaintiff obtain an affidavit from a physician or other expert attesting that the plaintiff's malpractice claim has merit prior to filing the suit

3 Costs awardable If a plaintiff files a claim that is subsequently judged to be without any merit, a judge may force the plaintiff to pay the defendant's court costs, and in some states the defendant's legal fees

4 *Pretrial* screening panels: As a prerequisite to filing a suit in a court, parties may be required to submit the malpractice claim to a hearing before a panel consisting of one or more attorneys and health care providers, and, In certain states, a judge or lay person. The panel will render a decision on liability and sometlmes damages The parties may choose to accept the panel's findings and settle the case or file a suit in court In some states, the panels findings may be entered into a subsequent legal proceeding Some states offer panels as a voluntary option.

5 Statutes *of* limitations: The statute of limitations prescribes the time period after the injury in which a legal claim may be brought In medical malpractice this time period is either measured from the date of the negligent treatment or from the date the injury could have reasonably been discovered (the "discovery rule') Some states have shortened the time period in which a claim can be brought or limited the application of the discovery rule

Aimed at Size of Recovery (Payment Per Paid Claim):

1 *"Caps" on* damages (noneconomic, total) Damages in medical malpractice consist of 1) economic damages, which are monetary awards for incurred and future costs arising from the injury (primarily medical and rehabilitative expenses and lost wages), and 2) noneconomic damages, consisting of monetary awards to compensate for the pain and suffering associated with the injury Certain states have placed limits (i. e , "caps") on the amount the jury can award for noneconomic damages, or for total damages (i e , economic and noneconomic damages)

2 *Collateral source offset (mandatory, discretionary,)* Certain states require or permit the jury to reduce the plaintiffs malpractice award by the amount the plaintiff is entitled to receive from collateral sources, such as health and disability insurers

3 *Joint and several liability changes:* Traditionally, when multiple defendants were responsible for a plaintiff's injury, the plaintiff had the right to collect from each defendant in the amount of their responsibility (jointliability) or the plaintiff could collect the entire amount from a single defendant (several liability), forcing that defendant to sue the other defendants for the amount that they were responsible for Some states have eliminated several liability, usually with respect to noneconomic damages only.

4 Periodic *payments of damages ("structured" awards)* Damages awarded to pay for future economic and noneconomic losses may be paid on a periodic basis, rather than in one lump sum

Aimed at Plaintiff's Difficulty (or Costs) of Winning:

1 *Expert witness requirements:* Expert witnesses are used to establish the standard of care in a malpractice trial Some states impose specific requirements on the expert's qualifications for example, requiring that the physician have practiced in an area of medicine that is related to the subject of the case

(continued)

BOX 4-2: Traditional Tort Reforms (Cont'd.)

2. Informed consent limits: Physicians must obtain informed consent from patient before performing a procedure. Some malpractice cases allege that the physician did not provide adequate information for the plaintiff to make an informed judgment The adequacy of the information provided can be judged on the basis of whether a reasonable patient would consider the Information provided adequate, or by looking at the practice o fother physicians The former standard is often characterized as pro-plaintiff, and some states restrict the use of this patient-oriented standard
3. *Res ipsa loquitur restrictions* In medical malpractice, when the incident causing the injury was under the exclusive control of the physician and it is obvious to an nonmedically trained person that the plaintiffs injury would not have occurred in the absence of negligence, a plaintiff will not be required to offer expert testimony of negligence Some states restrict the use of this doctrine

SOURCE S R Bovbjerg Legislation on Medical Malpractice Further Developments and a Preliminary Report Card *University of California Davis Law Review* 22 -199-557(1989) U S Congress Off Ice of Technology Assessment *Impact of Legal Reforms on Malpractice Costs* OTA-BP-H- 119 (Washington DC Government Printing Office 1993)

state studies are summarized below. (See appendix G for a complete summary of the single-state studies).

Statistical Studies Using Multistate Data

The six empirical studies reviewed in OTA's background paper examined the impact of a number of different reforms, but not every study examined the same set of reforms, The majority of the studies looked at the following reforms;

- shortening the statute of I imitations.
- limiting plaintiffs' attorney fees,
- requiring or allowing pretrial screening of' claims,
- caps on economic and noneconomic damages.
- amending the collateral source rule to require offsets for the portion of damages covered by health or disability' insurane, and
- periodic payment of damages.

Across all studies, only caps on damages and amending the collateral source rule consistently reduced one or more indicators of direct malpractice costs (236).

Shortening statutes of limitations and implementing pretrial screening showed inconsistent results across studies (236). Limits on attorney fees and periodic payments showed no statistically significant results in reducing one or more malpractice costs indicators (236).

Several of the studies looked at the impact of legislation authorizing agreements for voluntary binding arbitration. Only one found that arbitration reduced malpractice costs, but this finding is suspect because arbitration was not used often in the states studied (236).

Although each of the six studies reviewed by OTA suffered from methodological and data limitations, taken together their results suggest that malpractice reforms involving caps on damages or restricting payment when collateral sources have paid do. indeed, reduce the direct costs of medical malpractice. The effects of other reforms, as they have been implemented in the states, may have only modest effects on direct malpractice costs.

Single-State and Small Multistate Studies

The Indiana Study

Gronfein and Kinney studied the impact of Indiana's 1975 tort reforms on average payment per paid claim for large claims (those with paid damages of $100,000 or more) (79). Indiana passed a $500,000 cap on total damages and created a Patient Compensation Fund (PCF), a state-run insur-

ance fund that paid damages exceeding $100,000, up to the **$500,000** cap.[4]

Gronfein and Kinney found that the average payment per large paid claim was 33 and 40 percent higher in Indiana than in the neighboring states of Michigan and Ohio, respectively. This outcome probably resulted from the operation of the PCF, which gave the insurer an incentive to settle large claims when the issue of negligence was unclear, thereby shifting a portion of the liability to the PCF. On the other hand, Indiana had no payments over $500,000, whereas in Michigan and Ohio the few cases in which more than $1 million was awarded accounted for 21 and 14 percent of all malpractice payouts, respectively (79). Therefore, overall payments for malpractice may be higher in those states despite the fact the average payment is less.

The California Studies

Supporters of malpractice reform often point to Califomia as an example of the impact tort reform can have on malpractice costs. In 1975, California passed the Medical Injury Compensation Reform Act (MICRA), which included a $250,000 capon noneconomic damages, limits on attorney fees, discretionary collateral source offsets, and periodic payments for future damages in excess of **$50,000.**

Two studies concluded that MICRA significantly lowered malpractice insurance premiums or claims costs5 in California (32,34). One study found that the average malpractice insurance premium (adjusted for inflation) declined by over 60 percent from 1976 to 1991 (34), but this result in and of itself is inconclusive because 1976 marked a peak and 1991 a trough in the national cycle of malpractice premiums (236).[6] More compelling is evidence that California malpractice premiums declined at a compound annual rate of 0.4 percent between 1976 and 1991 compared with a national average annual rate of increase of about 12 percent over the entire period.[7] Although critics of MICRA point out that the average 1992 California malpractice premium was only slightly below the national average premium (200), California's average malpractice premium was 65 percent above the national average as recently as 1985 (261).

Not all of the relative savings can be attributed to MICRA, however, because a simple pre-post comparison does not control for other changes in the malpractice and health care markets in California over the study period. For example, physician-owned malpractice insurance companies replaced commercial malpractice insurers shortly after MICRA was passed. Also, the largest California health maintenance organization (HMO), Kaiser Foundation, with over 4 million enrollees (141), initiated arbitration for all medical malpractice cases in the early 1970s (236). California has experienced rapid growth in HMOs over the past 10 years.[8]

Still, it is likely that MICRA's stringent cap did reduce California malpractice insurance premiums to some extent. The observation that malpractice insurance premiums increased more

[4] The Indiana cap on total damages was raised to $750,000 in January of 1990 (79).

[5] Claims costs Include payments made to plaintiffs and the insurer's direct costs attributable to the claim (fees for investigative work, expert witness fees, and legal defense w ork).

[6] Trends in insurance premiums are characterized by cycles. These cycles are tied to some extent to the investment climate, because insurers earn part of their income from investing premiums in income-producing assets. As the interest rate expected from capital investments rises and falls, premiums are adjusted accordingly to assure a competitive rate of return to investors (2 1 ()).

[7] The comparison is based on premiums in current dollars. OTA calculated the change in California premiums from data reported in a study by the Coalition to Preserve MICRA (34). In that study the 1976 premium (adjusted for inflation to 1991 dollars) was $18,000 and the 1991 premium was $7,000, Using the consumer price index-unadjusted (CPI-U) for 1976 and 1991, the 1976 premium unadjusted for inflation is $7,427. The national estimate is based on increases in malpractice insurance reported by the U.S. Health Care Financing Administration (5 1 F.R. 28772, 28774, 57 F.R. 55903).

[8] Approximately 34.4 percent of the population is enrolled in HMOs in California, compared with 17.3 percent nationwide (141).

slowly in California after MICRA is consistent with the finding that caps on noneconomic damages lower malpractice costs. California has one of the lowest caps on noneconomic damages in the country, and it has not been adjusted since 1975 (236).

Pretrial *Screening Studies*

Five separate studies of pretrial screening panels (three of Arizona, one of Hawaii, and one of 15 different states including Arizona) found that most plaintiffs did not appeal adverse panel decisions, which may indicate that pretrial screening led to early resolution of cases (see appendix G). Because most of the studies failed to report claim frequency before and after the screening panel was initiated, however, it is possible that pretrial screening prompted filing of more nonmeritorious claims, which were dropped after adverse panel decisions. In add it ion, almost every study found that pretrial screening panels caused significant delays in claim resolution (see appendix G). These delays may have led some plaintiffs to drop or settle cases because of the added expense of the pretrial screening process.

The Impact of Changes in Direct Malpractice Costs on Defensive Medicine

The empirical literature discussed in chapter 3 suggests that physician behavior may be influenced in certain clinical situations by the strength of signals that the malpractice system sends about the risk of being sued. If tort reforms reduce the direct costs of malpractice, they may soften the signal and therefore also reduce defensive medicine.

The best evidence for this association comes from a single study of the impact of malpractice signals on Caesarean delivery rates in New York State (129, 131). Localio found a strong association between the strength of the malpractice signal (i.e., high claim frequency and insurance premiums) and Caesarean delivery rates (129). This study supports the hypothesis that malpractice reforms that reduce claim frequency and premiums reduce defensive behavior. Yet, it is not known whether Localio's findings for obstetricians and Caesarean delivery rates are generalizable to other procedures, other specialties, or other states. especially in light of the failure of other studies funded by OTA to find such a relationship (see chapter 3).

There are reasons to be skeptical that traditional tort reforms can reduce defensive medicine. Physicians may not react to mere reductions in malpractice risk. Instead, they may try to limit their personal risk of suit to as close to zero as possible. In the absence of any financial penalties for doing so, such an objective is a rational response to any level of malpractice risk.

The long-standing concern about defensive medicine suggests that traditional tort reforms may not do much to reduce defensive medicine. In the early 1970s, when direct malpractice costs were quite low and when the malpractice signals were much weaker than they are today, there was still considerable concern about defensive medicine (14,20,58,243).

IMPACT OF NEWER MALPRACTICE REFORMS ON DEFENSIVE MEDICINE

Recent reform proposals either expand on traditional reforms-for example, redefining the standard of care using practice guidelines-or call for more sweeping changes, such as removing medical malpractice from the judicial system, relieving the physician of malpractice liability or eliminating the fault-based malpractice system completely. These reforms all seek to make the claims resolution process more timely and less costly. Some of them would provide greater access to compensation for deserving plaintiffs. All seek to decrease the impetus for defensive medical practices. The new reform proposals fall into four categories:

- *Clinical practice guidelines as the standard of care.*. At present, clinical guidelines may sometimes be entered into malpractice trials as evidence of the standard of care along with expert testimony. Several states tire developing programs in which certain clinical guidelines will be used as the definitive statement of the stan-

dard of care, replacing expert opinion when applicable.

- *Enterprise liability:* Enterprise liability would retain the current malpractice system, but the physician would no longer be a named defendant. Instead, the enterprise in which the physician practices would assume the liability for medical negligence (1). As originally conceived, the enterprise would be the hospital or HMO in which the physician practices(1). Under a managed competition system, liability could rest with the health insurance plan (16 1).
- *Alternative dispute resolution:* Alternative dispute resolution (ADR) removes the claim from the legal system to reduce the time and money involved in its resolution and to make the proceeding less public and adversarial. In *binding* ADR the dispute is heard and decided through a nonjudicial procedure, and opportunities for appeal are very limited. Because state constitutions guarantee the right to trial, binding ADR to date has been a voluntary procedure, agreed to by both parties.
- *Selective no-fault malpractice compensation:* Proposals for a selective no-fault malpractice compensation system envision a process similar to workers' compensation. The leading proposal would designate certain adverse medical events that are generally avoidable as compensable under a no-fault system (221). More patients could receive compensation for medical injuries that are generally avoidable, even if there is no evidence that the injuries were caused by negligent care.

The potential impact of each of the proposed reforms on defensive medicine is examined below. OTA has not attempted to address in detail other potential benefits or limitations of these reforms, including the cost of implementing a reform compared with the present system, the impact on quality of care, or the potential impact on plaintiffs.

Clinical Practice Guidelines[9]

A handful of states has passed legislation to make it easier to introduce clinical practice guidelines or to increase their evidentiary status in medical malpractice litigation. These changes are recent and there is as yet no evidence of their impact on medical liability or practice. The Medical Liability Demonstration Project in Maine has become a model for such efforts (230,229,236).

In an ongoing demonstration project in Maine, selected guidelines can be used by physicians as an affirmative defense[10] in medical malpractice cases (24 M.R.S. Secs. 2971 *et seq* (1993)). Minnesota, Florida, and Vermont have also passed laws that change the role of guidelines in legal proceedings, and a number of other states have begun developing guidelines with an eye toward using them as legal standards.

The Maine project demonstrates how guidelines can be used to target defensive medicine. Maine developed guidelines to reduce the inappropriate use of procedures thought to be practiced defensively (e.g., Caesarean deliveries, cervical spine x-rays for minor head injury, and preoperative testing).

For example, one guideline provides emergency room physicians with explicit criteria for when it is *not* necessary to obtain a cervical spine x-ray. Under the demonstration project, if a physician did not do an x-ray on a patient who met those criteria, then that patient could not successfully sue the physician for failing to do the test—even if a fracture was subsequently discovered.

What impact on defensive medicine can we expect from increasing the evidentiary weight of guidelines in court? The impact will vary depending on how explicitly the guidelines can be writ-

[9]See appendix H for a more detailed discussion of the legal use of clinical practice guidelines, including a review of state initiatives in this area.

[10]An affirmative defense is a response by the defendant in a legal suit which, if true, constitutes a complete defense against the plaintiff's complaint.

ten. In cases where the criteria in the guideline are clear, it should reduce defensive medicine. For example, there is some early evidence that adoption of the Maine guideline has substantially reduced cervical spine x-rays in emergency rooms (11 5).

In cases where criteria for doing or not doing a procedure are less clear, the impact is more questionable. In Maine, for example, if a plaintiff proves that the guideline was not relevant given the clinical circumstances. the physician cannot use it as an affirmative defense. Because much of medical practice is subject to uncertainty, opportunities may be limited for developing guidelines explicit enough to be truly protective and to reduce defensive medicine.

Physicians have also expressed concern that, if given greater weight in courts. guidelines could be used against them by patients for whom they had decided not to perform certain procedures. This concern might be particularly valid in cases where the guideline itself left considerable room for phy - sician judgment—and many guidelines do. In these cases, the court would presumably defer to expert testimony to determine whether the physician exercised fair judgment.

Maine addressed this concern by including a provision that specifically denies plaintiffs the right to introduce guidelines developed under the demonstration project as evidence of the standard of care. Some critics have questioned the constitutionality of this provision and the feasibility y of actually preventing plaintiffs from introducing the guidelines as evidence (155.1 79).

In the absence of specific legislation to give guidelines more evidentiary weight. the continued development of guidelines will probably help to make practice in certain areas of medicine more uniform and hence help to clarify the legal standard of care (236). Recent evidence that guidelines are playing an increasing (though still small) role in medical malpractice litigation supports this conclusion (see appendix H) (100). Howe\'er. there are a number of factors that could limit their impact on medical liabi1ity and defensive medicine (see box 4-3).

A major limitation is thc ability to write sufficiently explicit guidelines. Many clinical conditions involve so much medical uncertainty that specific recommendations on appropriate use of technology will not be possible. For example, the National Cancer Institute (NC I) recommends routine mammography screening for women over 50 years of age but notes that "[e]xperts do not agree on the role of routine screening mammography for women ages 40 to 49" (172). Thus. the appropriate frequency of mammography screening for women under age 50 is left to physician judgment. Indeed, the majority of clinical practice guidelines written to date--including those developed by the federal Agency for Health Care Policy and Research—list several diagnostic and therapeutic options for addressing specific medical conditions, leaving consider-able room for physician judgment.

A guideline that leaves substantial room for physician judgment may be no more helpful in defining the proper standard of care than expert witnesses. In addition. in the absence of specific legislative changes such as those in Maine (i e., where only certain guidelines are afforded elevated legal status), juries may choose to disregard guidelines or may be asked to make judgments about conflicting guidelines, just as they are now sometimes presented with conflicting expert testimony.

Despite the limitations of guidelines, they offer several potential advantages over other malpractice reforms. Tort reforms are predicted to alter physician behavior because the> dull the tort signal and therefore allow physicians to make clini - cal judgments with less anxiety about the risk of being sued. Yet. with a reduced malpractice signal, there could be a reduction in beneficial defen - sive medicine as well as defensive medicine that has less clinical value. Softening the tort signal will also changc only those practices that are consciously motivated by fear of liability.

Guidelines, on the other hand, can selectively target defensive medicine that does not improve the quality of care. Also. guidelincs present an opportunity for experts to reevaluate clinical practices that are performed routinely but with little evidence that they make a real difference to patient car-e. Therefore, guidelines have the potential to

BOX 4-3: Factors That May Limit the Extent to Which Guidelines Influence Defensive Medicine

Guidelines factors

- Extent to which guidelines are targeted to address defensive medical practices
- Comprehensiveness of guidelines (i.e., how much of medical practice is now or can be expected in the near future to be addressed by guidelines?)
- Ability of guidelines to keep pace with advances in medical technology and practice
- Existence of multiple conflicting guidelines
- Criteria and process used in guidelines development (e g , medical effectiveness versus cost-effectiveness; broad consensus versus expert opinion)
- Source of guidelines (e g , national medical specialty society, state or federal government, Insurance company)

Legal system factors

- Extent to which practice guidelines are admitted as evidence in medical malpractice litigation
- Evidentiary weight accorded to guidelines in litigation process
- Court's willingness to accept cost-effectiveness and other measures of social utility as basis for the legal standard of care

Physician factors

- Physicians' awareness of guidelines
- Physicians' perceptions of the impact of guidelines on their professional liability (i e., their confidence in the protective effect of guidelines)
- Physicians' willingness to adopt guidelines into practice

Patient factors

- Patients' awareness of guidelines
- Patient demand for services

SOURCE: Office of Technology Assessment, 1994

get at both conscious and unconscious defensive medicine.

Alternative Dispute Resolution

ADR can take many forms, but its basic characteristic is that disputes are heard by one or more arbitrators or mediators rather than by a jury. The arbitration proceeding is often less formal, less costly, and less public than a judicial trial. In *nonbinding* ADR, if a party is not satisfied with the result, he or she can continue to pursue the claim through the legal system. Therefore, nonbinding ADR may not eliminate physicians' anxiety about a potential malpractice trial. *Binding* ADR may be the most effective approach to eliminating the physician's anxiety about a trial. The two leading binding ADR proposals are: voluntary binding arbitration under pretreatment contracts between patient and providers (or health plans), and the American Medical Association/Specialty Society Medical Liability Project's (AMA/SSMLP's) fault-based administrative system, which would remove all malpractice cases from the judicial system.

Voluntary Binding Arbitration

To implement voluntary binding arbitration, the parties must agree to waive their right to trial and instead retain one or more arbitrators to render a decision. In medical malpractice the patient and

[1] In addition, nonbinding ADR may not lead to reductions in direct "malpractice costs" (i.e., the costs directly associated with resolving a malpractice claim) because of the potential for two proceedings (42,75,209).

physician (or insurer) may agree to arbitrate either after an injury has occurred or before the treatment is even provided. An agreement made before treatment is rendered is called a pretreatment arbitration agreement. From the physician perspective, pretreatment arbitration agreements can provide upfront assurance that the case will be arbitrated. After an injury has occurred, the physician-patient relationship may not be conducive to negotiation of an arbitration agreement.

Arbitration has several potential advantages. Arbitration replaces the lay jury with professional decisionmakers, who may have previous experience with malpractice cases. Many arbitrators are ex-judges or otherwise legally trained individuals. Though there is no good empirical evidence that jury decisions are worse than or very different from arbitration decisions, 12 physicians may perceive this to be the case. Arbitration proceedings are also less public and often may be scheduled sooner than trials.

Binding arbitrat ion has not been used frequently in malpractice cases, but it is used extensively in commercial settings. Companies claim significant savings in legal costs (2 16). The very limitcd data available on malpractice arbitration indicates that arbitration may be less costly for resolving disputes. [13]

Arbitration may be infrequent in medical malpractice for several reasons. Some plaintiff and defense attorneys believe that the jury is an appropriate dispute resolver, especially when factual issues are involved (159). Yet the reluctance to accept arbitration may also result from a lack of experience with arbitration. [14] Attorneys familiar with arbitration also claim that arbitrators tend to reach compromise decisions in which the physician is held partially responsible (42, 158, 185). Because physicians take malpractice claims so personally, compromise decisions may not satisfy their desire to "vindicate their conduct" (159). On the other hand, arbitrators are very unlikely to award large damages, as juries sometimes do. This may be seen as a disadvantage to arbitration for plaintiffs (42, 158, 185).

Pretreatment arbitration agreements also have limitations. Some states permit the patient to revoke the pretreatment agreement within a certain time after signing the contract usually 30 to 60 days) (23 1). In states without such statutory rules, the enforceability of pretreatment contracts is governed by case law. The courts often closely scrutinize such contracts, because the health care provider may have superior bar-gaining power (236). 15 For example, a health care provider could refuse to enter into a physician-patient relationship unless the patient relinquished his or her right to a trial. 16 Statutes that allow patients to revoke pretreatment agreements and court scrutiny of such contracts render pretreatment contracts of uncertain value, especially to health care providers.

Whether arbitration would reduce defensive medicine depends upon the extent to which the threat of a court trial drives physicians to practice

[12] For a review of the strengths and weaknesses of juries as decisionmakers, including a review of the empirical literature on this subject, see works by Litan and Saks (127,202).

[13] A comparison of 65 arbitrated malpractice claims with more than 400 litigated malpractice claims (claims filed in court) in Michigan found that the mean time to resolution for an arbitrated claim was 26 months (median, 19 months), compared with a mean of 37 months (median, 35 months) for a litigated claim. The average payment was $135,591 for arbitration (median $43,120), compared with $148,862 for litigated claims (median $69,500) (233). However, because the decision to arbitrate is voluntary, it is possible that smaller claims or less difficult claims were self-selected for arbitration (see app. G).

[14] In a recent study of mandatory nonbinding arbitration in federal courts, the overwhelming majority of attorneys found the process to be fair, and 37 percent of attorneys who had gone through arbitration preferred an arbitrator over a jury or judge (157). A RAND study surveyed attorneys who had just gone through nonbinding arbitration for small personal injury cases (damages < $15,000) arising from automobile accidents. Attorneys were almost evenly split on the question of whether arbitration or a judicial trial was fairer, but most attorneys agreed that arbitration is much more efficient than either a jury or judge-only trial (139).

[15] See, e.g., *Madden v. Kaiser Foundation Hospitals*, 552 P.2d 1178 (CA. 1981).

[16] *Broemmer v. Abortion Services of Phoenix, Ltd.*, 840 P.2d 1013 (Az. 1992).

defensive medicine. If the small risk that a suit will proceed to trial drives physicians to practice defensively, then ADR should reduce defensive medical practices. If the real driver of defensive medicine is the desire to avoid any process that judges the physician's actions, then arbitration may not affect physician behavior. It is also possible that pretreatment arbitration provisions might increase the frequency of suits, because plaintiffs may prefer arbitration over a jury trial.][7] Plaintiffs who would otherwise have settled their case because of the expense of trial may also decide to arbitrate.[18] The resulting increase in malpractice liability proceedings could lead to more defensive medicine.

AMA/SSMLP Administrative System

The AMA/SSMLP proposed a mandatory administrative system to replace the civil jury system for malpractice claims. The AMA/SSMLP administrative system would be part of the state medical licensing organization and would be run by a seven-member state medical board, which would include at least two physicians and possibly another health care professional.

Damages awarded under this system would be limited to economic damages as determined by guidelines and reduced by collateral sources, and noneconomic changes limited to an amount equal to one-half of the average annual wage in the state multiplied by the life expectancy of the plaintiff (approximately $700,000 for a person with a 70-year life expectancy and $150,000 for someone with a 15-year life expectancy) (9).

Plaintiffs would not need an attorney to file a claim. If a claim were found to have merit by a claims examiner, the plaintiff would be provided an attorney for further proceedings. If the claims examiner were to reject the claim, the claimant would have the right to appeal to one member of the medical board. If the claimant prevailed, an attorney would then be provided to him or her. If at any subsequent point in the process the claim is determined not to have merit, the plaintiff would have to obtain his or her own counsel and a certificate of merit to appeal the adverse decision.

Because the proposal contemplates limiting damages, the requirements of personal counsel and a certificate of merit would discourage appeals of adverse decisions, and many cases would probably be eliminated with a single review by a claims examiner or one member of the medical bow-cl.[9]

For physicians, the AMA/SSMLP proposal promises quicker claim resolution, with few claims decided in a formal proceeding resembling a trial, or even in an arbitration process.

The AMA/SSMLP also proposes a number of legal changes, including: moving from the customary standard of care to a standard that accepts a physician's action if it is "within a range of reasonableness;" adding new requirements for expert witnesses; admitting practice guidelines and medical literature without requiring that an expert witness validate its usefulness; changing informed

[17] Much is made in the malpractice literature about the impact of the trial on a physician, but many plaintiffs may also find the prospect of a legal battle unappealing. Indeed, this prospect has been found to be one factor that discourages plaintiffs from filing suits (145).

[18] In Michigan, 811 claims were filed for arbitration and 247 (30 percent) went to an arbitrator (233). Only 10 to 20 percent of litigated claims typically go to trial (171,222,235).

[19] Claims proceeding beyond the initial review would be subject to peer review by an expert retained by the board in the health provider's field of expertise. If the first expert decided the claim had no merit, a second expert would be retained. If two independent expert reviewers determined that the claim did not have merit, it would be dismissed. If the claim were determined to have merit by a health care provider, the parties would proceed through a settlement procedure with the assistance of a hearing examiner (9). To promote settlement, the system would include financial penalties for parties refusing a settlement offer that a hearing examiner determines is reasonable (9). Very few claims would get a full hearing before the medical board.

consent law; and limiting noneconomic damages. The new standard of care would also be amended to take into account the resources available to the physician, a factor not explicitly considered today (9,23).

Though many claims would be resolved with minimal physician involvement, the proposal would increase patients' access to compensation. Thus, physicians may find themselves subject to more claims. Some experts believe, however, that claims might not increase without a consumer outreach program (23).

The proposal retains the negligence standard and establishes a stronger link between malpractice claims and professional licensing. Each finding of negligence would be investigated by the medical board. This investigation might consist merely of a review of the file maintained by the medical board on that physician (e.g., previous liability determinations, settlements, disciplinary actions) to determine if a disciplinary investigation were warranted. The proposal also requires malpractice insurers to report to the medical board all cancellations, terminations, and decisions not to renew coverage (9).

It is difficult to predict how physicians' behavior might change in response to such an administrative system. The elimination of trials (indeed, the limits on any type of formal hearing) might reduce physicians' anxieties about being sued. Physicians should also have greater confidence in the fairness of the system, because it would be run by a medical board with substantial physician representation. Yet a large increase in claims could dampen physicians' enthusiasm for the proposal, and stronger links between malpractice decisions and disciplinary actions could create additional pressure to practice defensively.

Enterprise Liability

In a system of enterprise liability, the physician would no longer be personall y liable for his or her malpractice. Instead, the institution in which he or she practices. or the health plan responsible for paying for the services, would assume the physician liability. Although some hospitals and staff-model HMOs already assume liability for their physicians' malpractice claims, few health care institutions today are fully liable for all claims originating within their organizations.

Enterprise liability would eliminate the costs associated with multiple defendant suits and thereby facilitate settlement. It would promote stronger quality control within institutions and health plans while relieving physicians of some of the psychological burdens of a malpractice suit. Institutions bearing the liability risk would have a greater incentive to evaluate physicians' performance. Institutional quality control programs may be a more effective deterrent to poor quality of care than the current malpractice system, because the vast majority of negligently injured plaintiffs do not sue (130).

A model of an enterprise liability program exists today at the hospitals owned and operated by University of California. Under California law, university hospitals are liable for the actions of physicians practicing within their hospitals. When a claim is filed against a staff physic i tin, the general counsel office requests the plaintiff attorney to drop the physician as a party to the suit and make the Regents of the University of California the sole defendant (137). In virtually all cases this request has been granted. Consequently, the physician does not play as great a role in the pretrial discovery process, but if the case goes to trial the physician is the primary witness and is required to defend his or her actions (1 37). Other institutions, particularly some teaching hospitals, have similar arrangements (74),

Some large teaching hospitals have an arrangement known as "channeling," in which the institution and the physicians practicing in the hospital are insured under the same malpractice insurance policy. The physician pays the hospital for the insurance and is often required to agree to a joint defense. In return, the physicians receive favorable malpractice insurance rates and often high coverage limits (108, 142,197). Therefore, even without true enterprise liability, some of the administrative efficiencies of a joint defense already exist in these settings.

The impact of enterprise liability on physician practice is difficult to predict. Because enterprise liability retains the fault-based system and still calls upon physicians to defend their actions, it is unclear whether the psychological benefits of not being personally named in a claim would lead physicians to practice less defensively. To the extent that enterprise liability induces greater oversight of outcomes of care or review of malpractice claims by the enterprise, physicians may still feel pressure to practice defensively so as to avoid at all costs a poor outcome or a claim. To the extent that physicians are good judges of how to improve outcomes, this kind of defensive behavior would be beneficial to patients, though it might also be very costly.

The medical profession has not seized the opportunity offered by enterprise liability to be excused as a party to malpractice suits. Some critics claim that enterprise liability threatens professional autonomy (148,149). Others doubt that physicians' autonomy is really threatened by enterprise liability, because physicians have a great deal of influence over hospital and HMO policies, especially with respect to clinical practices (46).

Yet if enterprise liability were implemented at the insurance plan level, the quality control function would be one step removed from the institution in which care is provided. The insurance plan would need to understand the quality control issues at many different institutions. Physicians might resent the suggestions or dictates of "'outside" insurers. Finally, insurers would not be as aware of the physician abilities, skills, and other contributions to the institution, possibly leaving physicians feeling unfairly judged.

Enterprise liability could increase the number of suits if patients felt more comfortable suing a corporate enterprise rather than physicians (148, 149). In return for no personal liability, physicians might therefore find themselves witnesses in a greater number of cases and subject to greater scrutiny from the enterprise in which they provide care. It is difficult to predict the resulting impact on practice.

No-Fault Proposals

Some malpractice reform proponents seek to replace the fault-based system with a no-fault system, because they consider the current malpractice system ineffective in reaching its two primary goals: deterrence of poor quality care and compensation of victims of negligent injuries. Presently, very few injured patients receive compensation, and judgments about negligence can be costly and time-consuming. Certain no-fault proposals promise more equitable compensation and create other mechanisms for quality control. Other no-fault proposals address compensation issues only.

Limited no-fault systems for birth-related injuries already exist in Florida and Virginia. The Virginia and Florida programs provide compensation for a limited number of obstetric injuries; they do not focus on improving the quality of care. In part this is because many injuries removed from the malpractice system by the Florida and Virginia programs may not be preventable by better quality care.

A selective no-fault proposal that would cover a broader range of medical practices is in development. This proposal, which is as yet untested, would use certain adverse medical outcomes called *avoidable classes of events* (ACES) as a mechanism for determining liability for selected injuries. ACES could be used both to promote high-quality care and to quickly and objectively determine which patients should be compensated. When an ACE occurred, the patient could be quickly compensated through a nonjudicial insurance process, so ACES are also known as *accelerated compensation events.* (221).

The Virginia and Florida Birth-Related Injury Compensation Programs

Virginia and Florida have implemented an accelerated compensation program for a selected set of severe neurological birth related injuries. 20 The Virginia program was conceived out of necessity when Virginia malpractice insurers stopped writing any new obstetric policies following a Virginia Supreme Court decision upholding an $8 million obstetric award (236). Florida initiated its program shortly thereafter. Both programs came about in part because high malpractice insurance rates were thought to be responsible for a decline in the availability of obstetric services, especially for low-income people (57).21

Severe neurological injuries were chosen because the issue of causality was so muddled and malpractice insurers were frustrated by the difficulty of defending against allegations that the injury resulted from the physician's actions (or inactions) during the delivery. Many of these claims involve very large damages.

Both programs stop short of being true no-fault systems. In both states, there must be evidence that the injury resulted from deprivation of oxygen or a mechanical cause during delivery (Va. Code Sec. 38.2-5008 (1989); Fla. Stats. Sec. 766.302 (1991)).22

The Virginia and Florida programs have been operational for approximate] y 5 years. Many more claims have been brought under the system in Florida than in Virginia, probably because Florida promotes its program more aggressively (174, 236).23 Malpractice insurance for obstetricians is now readily available in both Virginia and Florida; at least in Virginia, the program can be credited with keeping malpractice insurers in the market.

The impact on malpractice insurance premiums is unclear (57,90). No studies have documented whether these programs have increased the availability of obstetric care, but the Virginia act successfully required participating physicians to work with the commissioner of health to develop a program to provide obstetric services to low-income patients (Code of Va. Sec. 38.2-5001 (1987)).24

Because the subset of injuries that falls under these programs is so small and the link between these injuries and physician practices so unclear, removing personal liability for the specified birth-related injuries probably has very little impact on defensive medicine and may have little impact on the quality of care as well.

Accelerated Compensation Events

Under this system, medical experts would identify categories of medical injuries that are generally avoidable when a patient receives good medical care. Patients experiencing an ACE would be automatically compensated through an administrative system. Compensation would be paid either by the physician's insurer or another responsible organization.

Because ACES would not account for all claims, the ACE proposal would have to operate within a larger injury compensation system, which could be the existing fault-based malpractice system or some alternative fault-based approach. Non-ACE claims could be resolved through the tort system or ADR (220).

[20] For a detailed description of the Florida and Virginia no-fault programs, see OTA's background paper (236).

[21] *Cox v. Florida Birth-Related Neurological Injury Compensation Plan*, 595 So.2d 943 (Fla. 1992).

[22] There is debate in the medical literature as to whether deprivation of oxygen during the delivery is always the cause of severe neurological impairment (236).

[23] Florida had approximately 92 claims in the first 5 years of operation, compared to eight claims in Virginia (174).

[24] A plan was developed by obstetricians and endorsed by the commissioner of health in 1988 (44). It delegates the responsibility for program implementation to local health departments. A number of local health departments have implemented programs that provide low-income women with obstetric care by private physicians. However, some of the impetus for the programs also came from increased Medicaid reimbursement for obstetric care (44).

Experts have developed 146 ACES for general surgery, orthopedic surgery, and obstetrics, but the list is still being revised.[25] Examples of ACES include:

- complications secondary to anticoagulant therapy in preparation for surgery,
- consequences of misdiagnosis of breast malignancy,
- complications from failure to diagnose and treat hypoglycemia in a newborn,
- complications to infant(s) from syphilis during pregnancy that was unrecognized during prenatal care,
- complications to infant(s) from fetal distress (including brain damage) that was unrecognized or untreated during attended delivery, and
- certain complications or injuries resulting from surgical procedures, including failing to remove a foreign body from the surgical site (221).

In a sample of 285 hospital obstetric claims in 24 states, the obstetric ACES accounted for 52 percent of claims, with a disproportionate number of serious injury claims and paid claims involving ACES (25).

The primary benefit of ACES may be to promote predictability and consistency in the disposition of claims. ACES are developed by medical experts using epidemiologic concepts of "relative avoidability" on a population basis (221). In conventional malpractice cases, negligence is based on a lay jury's judgment about an individual incident. It is quite possible that the same adverse outcome will be compensated by one jury but not by another because juries will differ on whether the standard of care was met.

Under a system using ACES, the primary analysis would be whether a covered adverse outcome occurred as a result of certain clinical actions (e.g., the patient is blind following the occurrence of air embolism during a surgical procedure to remove acoustic neuroma). Compensation would be provided once a factual finding was made that certain clinical events have occurred. There would be no judging of whether an individual physician's actions were clinically acceptable or met a standard of care.

Use of ACES should allow a greater number of injured patients to be compensated more quickly and for less administrative expense[26] (221). It would not be necessary to determine anew in each case the proper standard of care and to evaluate the physician's behavior against this standard. The proposal also contemplates limiting noneconomic damages, which are often high and sometimes inconsistent because of (he difficulty of assigning monetary values to injuries such as pain and suffering (236). Limiting these damages would decrease the open-endedness of damage awards and perhaps ease physicians' anxieties about medical malpractice (see chapter 2).

ACES could also have an impact on defensive medicine. ACES could relieve physicians of the psychological burden of a process that retrospectively judges their actions. Using ACES would eliminate the process of finding that the physician's actions did not meet the standard of care. Without the threat of a trial in which personal blame is assigned by a finding of negligence, there could well be less motivation to practice defensive medicine in the clinical situations surrounding ACES.

Because ACES are based largely on the occurrence of bad outcomes in certain clinical situations, physicians should have little incentive to perform tests or procedures that they know will not improve outcomes but merely document care

[25] The unpublished list of research ACES were provided to OTA for review only; OTA was not permitted to publish the list or any ACES that have not been published previously.

[26] According to one estimate, $0.50 to $0.60 of every dollar spent on the malpractice system goes to administrative expenses, the majority of which are legal expenses (106). The elimination of a proceeding to establish fault and causation should lead to a significant reduction in administrative costs.

in these cases (221). Thus, ACES should reduce the occurrence of certain wasteful defensive medi - cal procedures.

ACES could also promote good defensive medicine (i.e., defensive medicine that improves outcomes). Implicit in the development of ACES is the judgment that the injury could probably have been prevented with good medical care. Thus, physicians and institutions would have incentives to change their practices and implement quality control systems to prevent the occurrence of such events. Because ACES are based on outcomes, however, they might not always provide the physician with upfront guidance on the clinical decisions necessary to avoid these outcomes. In addition, because ACES are based on statistical avoidability y, a single ACE event would not necessarily be a sign of poor care.

The authors of ACES say that use of the concept would not stimulate defensive medicine, because most ACES do not involve adverse events that can be avoided by diagnostic testing (20.2 18). Indeed, one of the criteria for- designation of certain adverse medical outcomes of an ACE is that doing so will not distort medical practices or lead to unnecessary testing.

Yet some ACES developed to date do involve omissions of care, including missed diagnosis. For example, complications resulting from misdiagnosis of early breast malignancy has been specified an ACE. In designating this situation tin ACE, the developers of the proposal made an explicit judgment that physicians should have strong incentives to diagnose breast cancer. even if there are many false negatives.

Any determination that such an ACE occurred implies that the doctor omitted necessary procedures: thus, the physician may still feel personally responsible.27 In such situations, some physicians may feel compelled to do tests of marginal medical benefit to reduce the risk of an adverse outcome to as close to zero as possible. On the other hand, if the physician is already practicing defensively because he or she believes that any adverse outcome might lead to litigation. then having this situation removed from the fault-based liability system might reduce some of this concern. In other words. if physicians are more comfortable with an ACE compensation system than with the tort system, designation of complications from certain missed diagnosis as an ACE could relieve some anxiety about potential liability.

Finally. the impact of ACES on defensive medicine might depend upon how they fit into the larger system of compensation for medical injuries. ACES will not cover all medical practices. If an ACE compensation system were layered onto the existing malpractice system, physicians might not know whether particular clinical situations could result in ACE liability or tort liability.

More importantly, ACES might not address the clinical situations that trigger the most defensive medicine. Since the claims that remain in the tort system might still trigger defensive medicine, the developers of ACES have suggested that an ADR system for the remaining cases would eliminate some aspects of the tort system that may drive defensive behavior+. g., adversarial proceedings, juries. or potential] y large damage awards (24). As discussed earlier, however, the impact of ADR on defensive medicine is not at all clear.

DEFENSIVE MEDICINE AND HEALTH CARE REFORM

Economic them-y predicts that the threat of liability will drive individuals (or organizations) to invest in activities to prevent liability until the cost of prevention exceeds the expected cost of liability (255). In a fee-for-service system, physicians

[27] Indeed, compensation under ACEs may have economic consequences for the physician if health care purchasers base their purchasing decisions on providers' experience under ACEs. This may be desirable if ACEs are true markers of quality of care, but potential for misuse exists if the concept of statistical avoidability gets confused with negligence.

often do not bear the costs of extra tests and procedures and may sometimes get paid more money when they order them.

Without counterincentives to investment in prevention of liability, extra tests or procedures would be ordered even when their marginal benefit to the patient is extremely low. As long as the "investment" in liability prevention is free or even remunerative, reducing the threat of liability might do little to change the incentive to practice defensive medicine. On the other hand, changes in health care payment that increase the cost to the clinician (or to the organization) of avoiding liability would probably reduce defensive medicine.

Several current health care proposals embrace the concept of managed competition.[28] Under such a system, health plans would have strong incentives to limit total expenditures on behalf of their enrollees. Plans and their physicians would weigh the cost of performing a test or procedure against the potential savings in liability costs that performing such tests can be expected to provide. Without the threat of liability, or some other effective method of quality assurance, managed competition could create too great an incentive to "do less" for the patient, leading to lower quality of care.

Under certain health care reform proposals, physicians could find themselves in the position of not being reimbursed for delivering care they believe is appropriate. Since the legal system does not now and probably will not recognize negative reimbursement decisions as evidence of the standard of care, physicians could be caught between competing pressures of bearing the cost of procedures or bearing the risk of liability (84).

CONCLUSIONS

Conventional tort reforms that tinker with the existing process for resolving malpractice claims while retaining the personal liability of the physician are more likely to be successful in limiting the direct costs of malpractice-claim frequency, payment per paid claim, and insurance premiums-than in altering physician behavior. Indeed, 20 years ago, when the frequency of malpractice suits, payments per paid claim, and premiums were much lower than today, physicians still claimed to practice defensive medicine frequently.

Greater use of practice guidelines in malpractice proceedings may reduce defensive medicine, because practice guidelines may offer physicians specific guidance about what the courts will accept as the standard of care. Although guidelines will not be a panacea, they are likely to play an increasingly important role in malpractice proceedings. Under a payment system that seeks to reduce costs, guidelines can be used both to specify appropriate clinical actions and to shield physicians from liability for adverse outcomes occurring when the guidelines have been followed. The overall impact of guidelines on defensive medicine will probably be limited, however, because of the tremendous uncertainty in medical practice.

Alternative dispute resolution relieves the physician of the prospect of a trial. An arbitrator may possess greater technical expertise in malpractice than a lay jury, and the process may be less adversarial and quicker. If concern about the competency of juries and the trial process is the primary motivator of defensive medicine, then this reform may have an impact on behavior. Physicians may find the process more rational and fair and therefore more readily accept the result. However, the process still involves judgments about the appropriateness of the physician clinical decision. In addition, ADR may increase the number of claims and strengthen the link between malpractice claims and professional licensing. Both of

[28] *Managed competition* in 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 addition, the Administration's proposal imposes caps on increases in premiums. It is expected that plans will exert greater influence on their participating doctors and hospitals to be more cost-conscious in making clinical decisions.

these factors could offset the psychological benefit of eliminating a trial.

Enterprise liability removes personal liability, but the physician is still likely to be called as a witness to defend his or her clinical decision if the case goes to trial. The main advantages of this concept are reduction in administrative costs associated with multiple defendants and the prospect for better quality control systems. In addition, physicians may have less anxiety when they know they will not be named in any suit.

Selective no-fault using ACES would probably limit physicians' involvement in the claims process, and a payment to the plaintiff would not necessarily imply that the physician was negligent. However, the criteria used to develop ACEs—i.e., generally avoidable adverse events does leave some notion of personal responsibility in the system. As for defensive medicine, it is not clear that ACES would address many of the situations in which much defensive behavior occurs. If these situations are left in the tort system, the motivation to practice defensively may not change, Consequently, the impact of selective no-fault on defensive medicine is unpredictable.

The projected impacts of these new malpractice reform proposals on physician behavior are based on logic, not experience. Missing is information about what aspects of the malpractice system drive physician behavior. If physicians mainly want to avoid jury trials, then ADR may be sufficient to reduce defensive medicine. On the other hand, if physicians are distressed about any process that questions their clinical judgment, then reforms retaining a fault-based system may not result in changes in physician behavior.

Health care reform may also have an impact on defensive medicine. A different health care financing arrangement may create financial disincentives for practicing defensive medicine, making tort reform unnecessary or even unadvisable.