WISCONSIN STATE LEGISLATURE
COMMITTEE HEARING RECORDS

2005-06
(session year)

Assembly
(Assembly, Senate or Joint)

Committee on Insurance (AC-In)

(Form Updated: 11/20/2008)

COMMITTEE NOTICES ...

➢ *Committee Reports* ... CR
**

➢ *Executive Sessions* ... ES
**

➢ *Public Hearings* ... PH
**

➢ *Record of Comm. Proceedings* ... RCP
**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL ...

➢ *Appointments* ... Appt
**

Name:

➢ *Clearinghouse Rules* ... CRule
**

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

➢ *Miscellaneous* ... Misc

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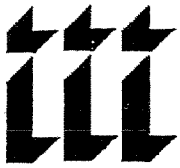
(misc. 2003 documents)

MEDICAL MALPRACTICE INSURANCE



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Introduction

Recent protests by doctors about the cost of medical malpractice insurance reflect a growing problem which is affecting access to healthcare and adversely impacting the quality of that care, prompting urgent calls for medical liability reform.

The lack of affordable insurance is leading doctors to retire prematurely, relocate their practices to non-litigious areas, practice without insurance or drop risky procedures. According to the American Medical Association (AMA), the medical liability situation has reached crisis point in at least 18 states and a crisis is looming in many others (Exhibit 1). Trauma centers and specialist practices, like obstetrics and gynecology, are increasingly under threat. In Pennsylvania, 18.6 percent of obstetricians/gynecologists (ob/gyns) have dropped obstetrics, while in West Virginia nearly one in five has stopped.[1] Also under pressure are the nation's hospitals, nursing homes and other healthcare facilities, which are being forced to close or reduce the range of services they can offer to the communities they serve.

History of the Problem

The medical malpractice insurance crisis did not appear overnight and is not the first of its kind. Previous crises occurred in the early 1970s and the 1980s. Various efforts were made to ease the explosion in claims costs at that time. Aggressive campaigns to reform state laws governing medical liability lawsuits began in the 1970s. Every state except West Virginia passed some reforms. California's Medical Injury Compensation Reform Act (MICRA), enacted in 1975, which caps non-economic damages, is considered a model law, as discussed later.

Other steps, like increased diagnostic testing, improved peer review and better communication between doctors and patients also had a positive impact. While the number of claims dropped, however, the size of claims in dollars has continued to grow. In response to the lack of available capacity, many doctors formed their own malpractice insurance companies to provide coverage. These companies now write about half of all the medical malpractice insurance in the US.

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[1] *American College of Obstetricians and Gynecologists (ACOG), January 16, 2003.*

Economic and Financial Implications

Rising medical malpractice costs are inflicting real pain on patients, doctors and insurers. Insurers are paying out significantly more in claims than they collect in premiums. In 2002, the medical malpractice combined ratio, a key measure of profitability, reached an estimated 165 compared with 106.1 for all lines combined (Exhibit 2). This means that medical malpractice insurers last year paid out $1.65 in losses and associated expenses for every dollar they collected in premiums. In contrast, insurers during the mid-1990s collected roughly the same amount in premiums as they paid out in claims and expenses. The increasing severity of claims has directly contributed to the deterioration in insurers' results. Insurance Information Institute calculations based on data from AM Best indicate that medical malpractice underwriting losses skyrocketed from $289.3 million in 1996 to $3.0 billion 2001, an increase of $2.7 billion, or 938 percent in just 5 years (Exhibit 3). Over the same period, premium earned by med mal insurers rose 16.8 percent, while losses and expenses rose by 68.9 percent (Exhibit 4).

Skyrocketing Losses Lead to Higher Insurance Costs

Many insurers have scaled back their exposure to the medical malpractice market and, in some cases, exited the market completely. Insurers that remain have imposed significant rate increases in order to cover their costs. Consequently, medical malpractice insurance premiums are rising rapidly.

The intensity of the country's medical malpractice problem varies by state, with those experiencing crises seeing the largest increases. According to the AMA, states where conditions are described as critical for medical malpractice insurance are Arkansas, Connecticut, Florida, Georgia, Illinois, Kentucky, Mississippi, Missouri, Nevada, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Texas, Washington and West Virginia. Doctors alone spent $6.3 billion last year to obtain coverage, while hospitals and nursing homes spent additional billions of dollars.[2] OB/GYNs are among the specialists that have been most seriously affected by rate increases due to their vulnerability to lawsuits. Medical Liability Monitor newsletter reports that ob/gyns' rate

[2] *Confronting the New Health Care Crisis: Improving Health Care Quality and Lowering Costs by Fixing Our Medical Liability System, prepared by US Department of Health and Human Services, July 24, 2002.*

increases averaged 19.6 percent in 2002. General surgeons also saw their rates increase by 25 percent on average, while for internists the average cost of coverage rose 24.7 percent. A recent nationwide survey from the Council of State Neurosurgical Societies showed that neurosurgeons, another high-risk group, were hit with an average premium increase of 63 percent from 2000 to 2002. As a result, as many as 43 percent plan to, or are considering, restricting their practice.

Exhibit 5 illustrates the enormous difference in premiums paid by doctors in three different specialties: obstetrics/gynecology, surgery and internal medicine.

Escalating Tort and Litigation costs

The US tort system is the most expensive in the industrialized world and this high cost inevitably translates into higher liability insurance premiums for policyholders. Latest data from consulting firm Tillinghast puts the cost of the US tort system at $205 billion in 2001, or 2.0 percent of the nation's gross domestic product, compared with 1.3 percent in 1970, and 0.6 percent in 1950 [2] (Exhibit 6). The ratio of tort costs to GDP dropped in the 1990s but is expected to increase again in the next few years. Tort costs were $721 per US citizen in 2001, compared with a cost of just $12 in 1950.

Tillinghast's data also shows that medical malpractice tort costs are skyrocketing. From 1990 to 2000, medical malpractice tort costs rose by 140 percent, more than double the 60 percent increase in medical costs generally over the same period (Exhibit 7). The tort system is also highly inefficient, returning only 46 cents on the dollar to claimants. In its breakdown of costs, Tillinghast found that just 22 cents of the tort dollar goes to litigants for their actual economic losses and 24 cents to compensate for pain and suffering. Of the remaining 54 cents, 19 cents pay for claimants' attorney fees, 14 cents for defense costs and 21 cents for administrative costs (Exhibit 8).

Added to the rising cost of going to court in the US, is the fact that the median award in medical malpractice liability suits is climbing sharply. The latest statistics from Jury Verdict Research show that from 1995 to 2001, the median jury award in medical malpractice litigation doubled to $1 million, from $500,000. From 1999 to 2001 alone, the median award rose by 43 percent (Exhibit 9). The mean (average) award from 1995 to 2001 rose from $2.0 million to $3.9 million, an increase of 95 percent. Medical

negligence in childbirth resulted in the highest median award. There is also a continuing trend toward larger verdicts. JVR data shows that 54 percent of all medical malpractice awards now are over $1 million, compared with just 36 percent between 1995 and 1997. Plaintiff recovery rates in medical malpractice are also on the rise to 39 percent in 2001, from 29 percent in 1996.

Doctors say run-away jury awards and increased litigiousness are key drivers of the medical liability insurance crisis. A nationwide survey conducted last year by Harris Interactive revealed that malpractice litigation was a number one concern among doctors.[3] Some 76 percent of doctors surveyed said their concerns about malpractice litigation have hurt their ability to provide quality care to patients. That fear of litigation has also caused many to practice defensive medicine, which in turn increases healthcare costs. Nearly four out of five doctors (79 percent) surveyed said they have ordered unnecessary tests, while 74 percent have referred patients to specialists more often than they would have based solely on professional judgment.

American consumers too, are increasingly concerned about the severity of medical liability lawsuits. A Health Care Liability Alliance (HCLA) survey released last June found that Americans agree that litigation is one of the primary factors behind rising medical costs and reduced access to care.

Rising Healthcare Costs

Another factor that is directly linked to the problem is healthcare costs. Healthcare costs have been rising for several years and a jump of as much as 15 percent is forecast for 2003. Litigation against doctors, hospitals and nursing homes, pharmaceutical and medical device manufacturers threaten to push these costs still higher. Indeed, excessive litigation is one reason why healthcare spending in the US reached a record $1.4 trillion in 2001, an 8.7 percent increase over 2000. According to the Department of Health and Human Services (HHS) this was the fifth consecutive year of growth in healthcare expenditure (Exhibit 10). Health spending grew more than three times faster than the 2.6 percent nominal rate of growth in the economy in 2001, and averaged $5,035 per person

[3] *Harris Interactive Survey conducted for Common Good, of 300 practicing physicians, 100 hospital administrators and 100 nurses interviewed in March 2002.*

in 2001, compared to $4,672 in 2000. HHS economists say the health share of gross domestic product (GDP) increased to 14.1 percent in 2001 from 13.3 percent in 2000 (Exhibit 11). Yet a reduction in healthcare costs would enable more Americans to obtain insurance. Today a staggering number of Americans – nearly 40 million – are uninsured. An HHS report suggests that healthcare costs could be reduced by 5 percent to 9 percent if unreasonable awards for non-economic damages were limited. It estimates this would save $60 billion to $108 billion in healthcare costs each year, thus lowering the cost of health insurance and allowing an additional 2.4 to 4.3 million Americans to obtain insurance.

A Changing Insurance Market

Decisions by many insurers to reduce their exposure to, or withdraw completely from, the medical malpractice market has caused a massive contraction in capacity and is another factor that has driven up premiums.

The St. Paul Companies, which until recently was the largest writer of medical malpractice in the US, announced in December 2001 that it was exiting the market because underwriting losses threatened its solvency. The company also announced a $900 million write-off stemming mainly from its medical malpractice book. St. Paul insured some 40,000 physicians (about 6 percent of that market), 72,000 other healthcare professionals and 750 hospitals and other facilities.

In August 2002, New Jersey regulators approved the restructuring of Lawrenceville, New Jersey-based MIIX Insurance Co, a medical malpractice insurer that covered some 37 percent of New Jersey doctors. Under the reorganization, regulators have given conditional approval to a new company, MIIX Advantage Insurance Co. Regulators had placed MIIX Group in solvent run-off in May 2002, after learning that the company's surplus had dropped $128 million between September and December 2001.

The collapse of Pennsylvania-based PHICO and Reliance, and New York-based Frontier Insurance Group has added to the market's capacity woes.

Current Market Structure

Today's medical malpractice insurance market is a mix of traditional insurers, provider-owned groups (physicians and hospitals) and alternative risk transfer entities. They serve a changing customer market. Physicians accounted for 52 percent of estimated medical malpractice premiums in 1999, followed by hospitals at 32 percent, according to Conning & Co. Allied health care, nursing homes and managed care organizations make up the remainder.

A.M. Best reports a total of 335 companies wrote $6.1 billion in net medical malpractice premiums in 2001, an 8.7 percent increase on the $5.6 billion net premiums written in 2000. Premium growth was flat during much of the 1990s (Exhibit 4), although there were variations year-on-year. In the last five years of the decade, net premiums written grew at an average rate of just 1.5 percent, compared with 2.5 percent growth for all lines. In 2000, the top five groups accounted for 33 percent of the medical malpractice market, and the top five states were New York, California, Florida, New Jersey and Illinois, which between them accounted for 44.6 percent of the market. Alternative risk transfer options, such as self-insurance, pooling and even the formation of offshore captives, are becoming increasingly popular and given the current crisis, this segment of the market is expected to grow further.

Medical Malpractice Reform

California Case Study—The MICRA Experience

California has had a $250,000 cap on noneconomic damages since 1975 when the Medical Injury Compensation Reform Act (MICRA) took effect. The Act has helped stabilize the medical malpractice environment in the state, making the coverage more affordable than in many other states. MICRA has seven major elements: a collateral source rule which requires that juries be told when plaintiffs have other sources of compensation for their injuries, a cap of $250,000 on noneconomic awards such as compensation for pain and suffering, and periodic payments rather than a lump sum for awards of more than $50,000. It also requires lawsuits generally to be filed within three

years of the injury, includes a specific scale for attorneys' fees, requires that plaintiffs' attorneys give 90 days advance notice to the defendant of their intention to file suit, and stipulates that contracts for medical services may include provisions for binding arbitration.

Impact of MICRA Reforms

A General Accounting Office report on medical malpractice published in December 1986 singled out the reforms enacted in California as among the most effective in moderating increases in the cost of insurance and the size of awards. According to Jury Verdict Research data, the median jury award in medical malpractice litigation in California in the period 1997 to 2002 is $402,500, significantly lower than other states with no reforms. It compares with an award median for the period 1996 to 2001 of $1 million in New York, $806,750 in Florida and $840,000 in Pennsylvania, for example (Exhibit 12). In addition, the frequency of million dollar plus medical malpractice awards in California is considerably lower than in other states (Exhibit 13). California's doctors also pay significantly less for their liability insurance than their colleagues in other states. The AMA reports that since 1976, medical liability premiums across the US have increased three times faster than in California. It puts the savings to Californians at more than $1 billion a year. According to the HHS, states with limits of $250,000 or $350,000 on noneconomic damages experienced an average premium increase of just 12 percent to 15 percent in 2001, compared with a 44 percent increase for states with no caps on noneconomic damages.

The Effects of Reforms on Loss Costs and Premium Costs

The historical record clearly shows that reforms, particularly caps on noneconomic damages, result in lower losses. Simple common sense would predict this outcome, which is confirmed by critical studies. Even recent reforms produce lower costs within a few years.

It has been suggested that lower costs do not translate into lower premiums, because a median number of states with some reform have experienced premium increases. There are several difficulties with the argument. One is that according to those making this case, most states have passed reforms only recently. For a long-tail line like medical

malpractice, it may take a minimum of five years for states in which caps have only been recently introduced to see the resulting affect on premiums, and even longer to repair the balance sheets of insurers hit by very large payouts not envisaged when the policies were written years earlier.

It is also likely that for states with recent caps, the medical liability situation had reached a crisis point in order for the reforms to stand a chance of being passed. Further, there is typically an understandable rush to file lawsuits as reforms appear about to take effect, which results in costs that will be carried forward for many years. It is therefore not surprising if the introduction of caps on noneconomic damages does not result in an immediate reduction in premium costs. Also, many of the caps used to arrive at a median are in fact up to $1 million.

In California, as noted earlier, it is clear that the $250,000 cap on noneconomic damages has had a measurable impact on claim payments and insurance costs over time (Exhibit 12). Analysis by the Pennsylvania Medical Society shows that between 1985 and 1998, major medial professional liability reforms substantially reduced loss costs. According to its findings, states with six major medical professional liability reforms saw a 91 percent increase in loss costs during the period, while states with only one reform had an increase of 252 percent (Exhibit 14).

Almost always, the main argument against reform appears to be that the financial problems in the medical malpractice line are caused by poor investment returns and a cyclical insurance market, rather than by rising costs. As has been stated above, while very low interest rates do play a role, they do not alter the fact that loss costs are a central part of insurance prices. Even those that argue that premiums go up in states where caps have been introduced also present data showing that claims payouts do in fact drop. Again, this is supported by basic common sense: the more expensive a product is to produce, the more it will cost.

Investment Facts

Common stock accounts for only about 20 percent of the insurance industry's invested assets. Bonds are still the mainstay of insurer investments (Exhibit 15). This is fortunate

since the S&P 500 index declined 23 percent in 2002, making it the worst year for the US equity market since 1974.

For most of the 1990s when the bull market and higher interest rates generated higher earnings on securities, investment income did help to offset underwriting losses for medical malpractice insurers. At the same time, the introduction of managed care in the early 1990s initially kept healthcare costs down. This pushed the cost of insurance significantly lower, and policyholders benefited. As investment returns have shrunk, according to III and AM Best statistics, medical malpractice investment gains as a percentage of net earned premiums fell to 19 percent, or $1.1 billion in 2001, down from 27.6 percent, or $1.5 billion in 2000 (Exhibit 16). In the eight-year period from 1994 to 2001, medical malpractice insurers averaged an annual investment gain of 26.9 percent, compared with just 17.6 percent for all lines during the same period (Exhibit 17). Since then, with claims costs spiraling and interest rates continuing to fall, insurers raised rates and tightened underwriting standards. As the figures shown earlier indicate, medical malpractice insurers achieved an underwriting profit in only two of 12 years from 1990 through 2001. Over the same period, net premium earned rose 44 percent, but losses and expenses rose by more than 100 percent.

Following our report are 17 tables which illustrate the medical malpractice insurance problem, as discussed above.

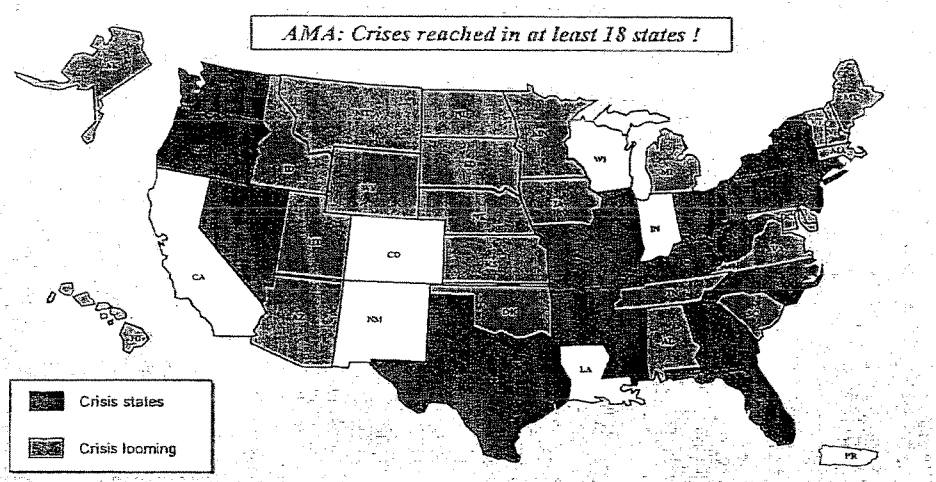
For additional information, see:

- Insurance Information Institute, www.iii.org
- American Medical Association, www.ama-assn.org
- A.M. Best, www.ambest.com
- Conning & Co., www.conning.com
- Tillinghast-Towers Perrin, www.tillinghast.com
- Medical Liability Monitor, www.medicalliabilitymonitor.com
- U.S. Bureau of Labor Statistics, www.bls.gov
- Jury Verdict Research, www.juryverdictresearch.com
- Department of Health and Human Services, www.hhs.gov

- Pennsylvania Medical Society, www.pamedsoc.org
- Medical Society of the State of New York, www.mssny.com
- New Jersey Medical Society, www.msnj.org
- Health Care Liability Alliance, www.hcla.org
- Hospital and Healthsystem Association of Pennsylvania, www.haponline.org
- Americans for Insurance Reform, www.insurance-reform.org
- Consumer Federation of America, www.consumerfed.org
- Center for Justice and Democracy, www.centerjd.org
- Physicians Insurers Association of America, www.thepiaa.org
- American College of Obstetricians and Gynecologists, www.acog.org
- Georgia Board for Physician Workforce, www.gbpw.georgia.gov

Exhibit 1

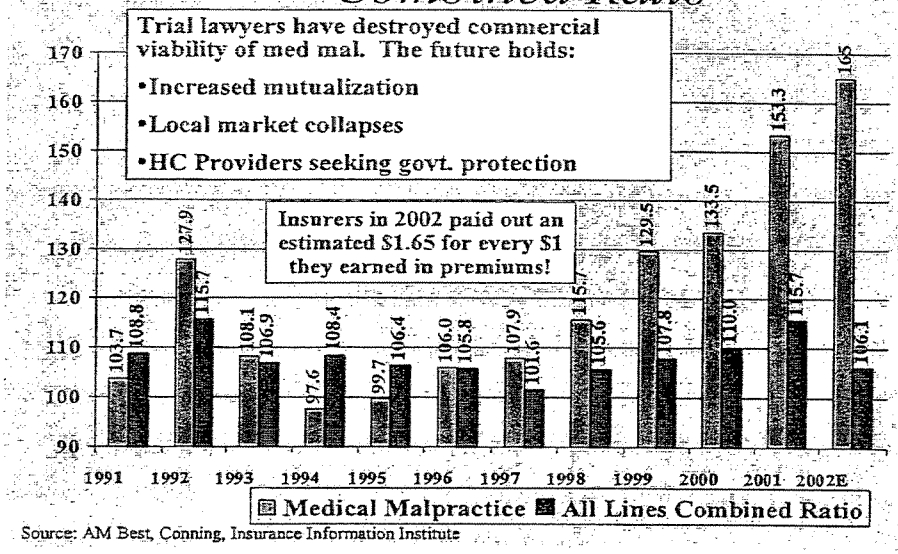
Medical Crises across the US



Source: American Medical Association, March 2003

Medical Malpractice Combined Ratio

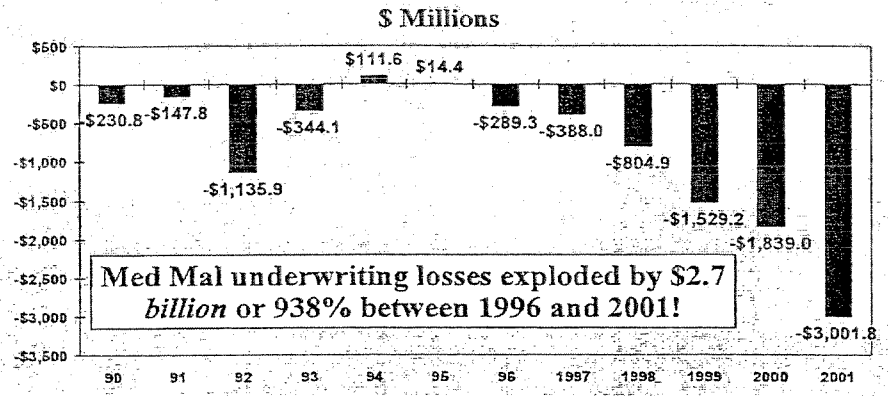
Exhibit 2



Source: AM Best, Conning, Insurance Information Institute

Exhibit 3

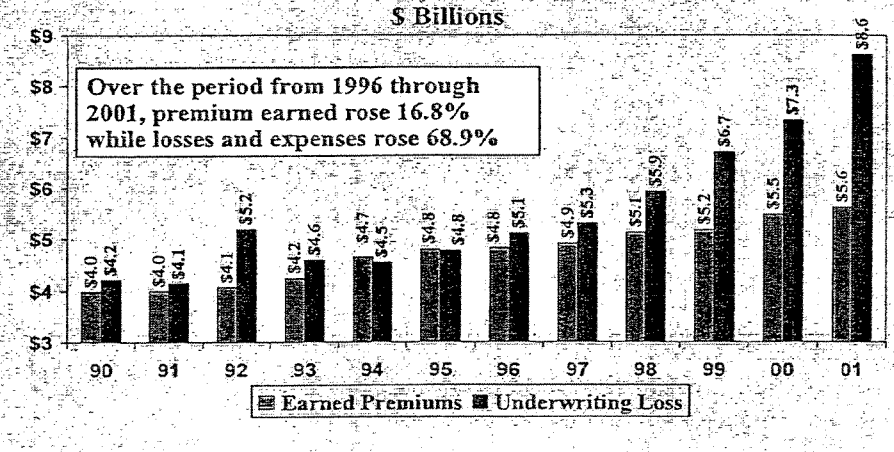
Medical Malpractice: Underwriting Losses



Source: Insurance Information Institute calculations based on data from A.M. Best

Exhibit 4

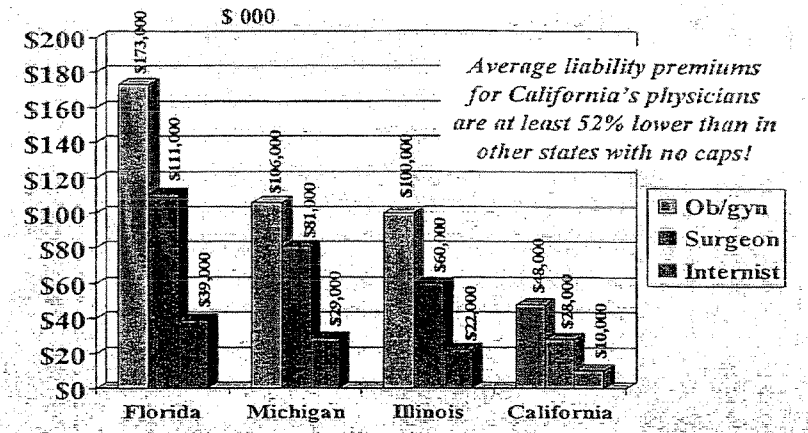
Medical Malpractice: Losses & Expenses Paid vs. Premiums Earned



Source: Computed from A.M. Best data by the Insurance Information Institute

Exhibit 5

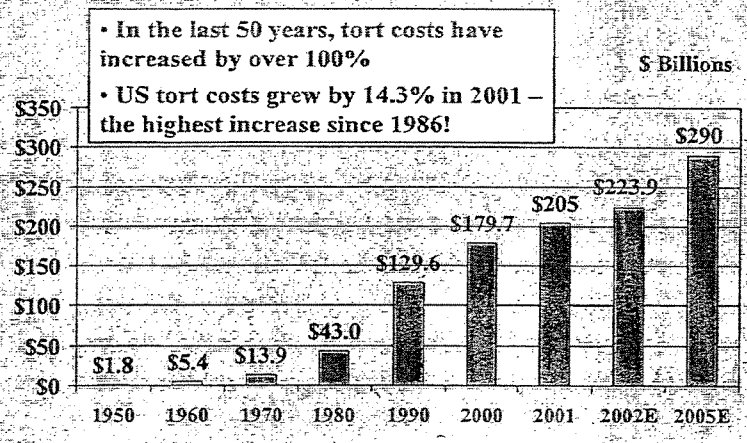
Annual Premiums in 2001 By Specialty Compared to California



Source: Medical Liability Monitor

Exhibit 6

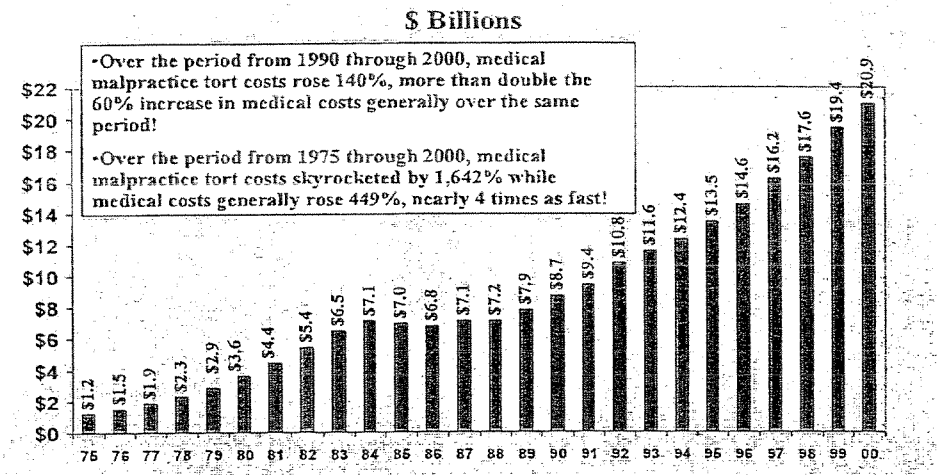
US Tort Costs 1950-2001



Source: Tillinghast-Towers Perrin

Exhibit 7

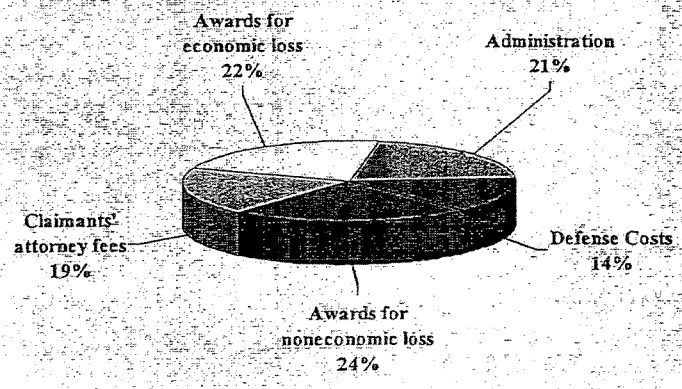
Medical Malpractice: Tort Cost Growth is Skyrocketing



Sources: Tillinghast-Towers Perrin, US Bureau of Labor Statistics, Insurance Information Institute

Exhibit 8

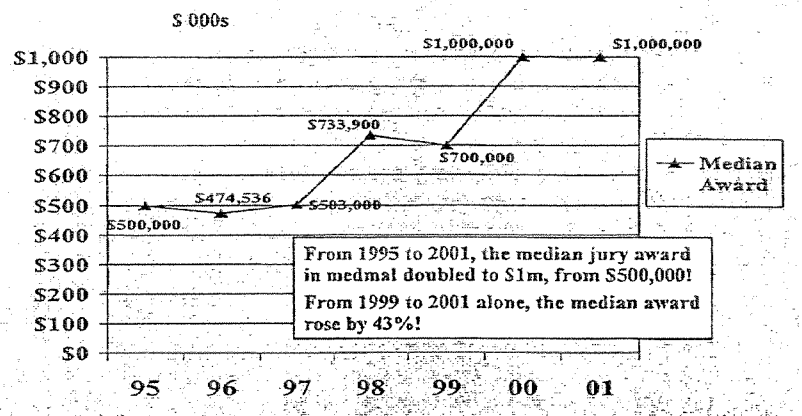
Where Tort Cost Goes



Source: Tillinghast-Towers Perrin

Exhibit 9

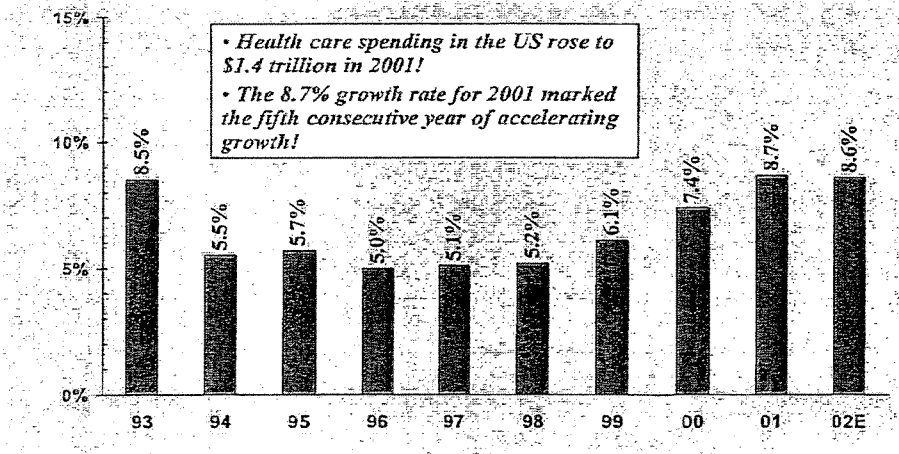
National Jury-Award Median in Medical Malpractice Cases



Source: Jury Verdict Research

Exhibit 10

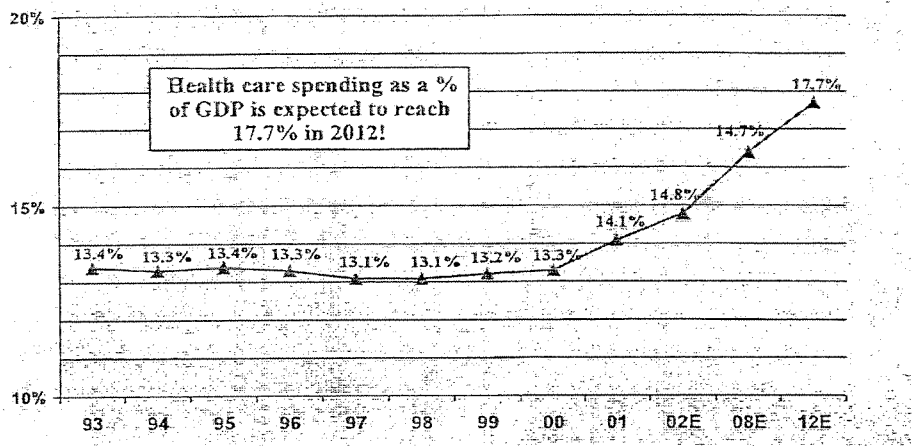
National Health Care Costs



Source: Department of Health and Human Services

Exhibit 11

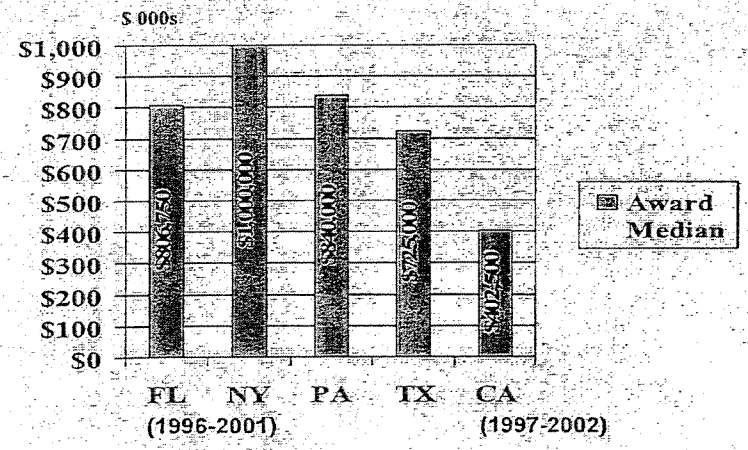
National Health Care Expenditure as % of GDP



Source: Department of Health and Human Services

Exhibit 12

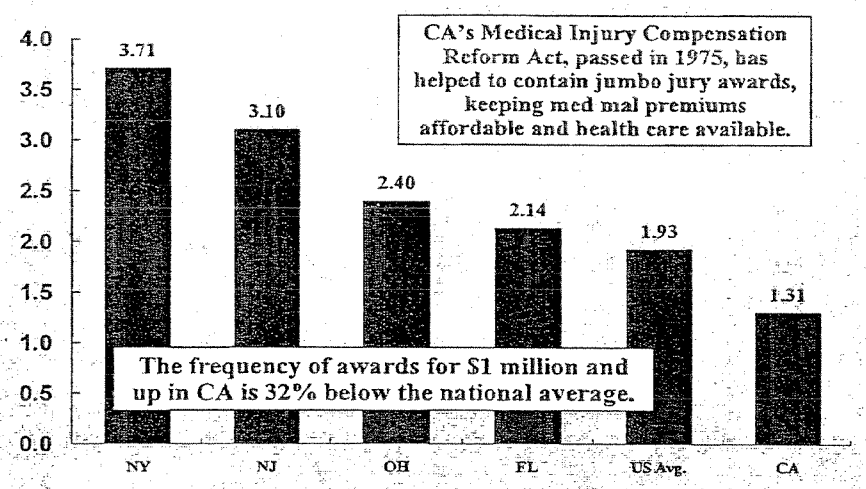
Median Med Mal Jury Awards 1996-2002



Source: Jury Verdict Research

Exhibit 13

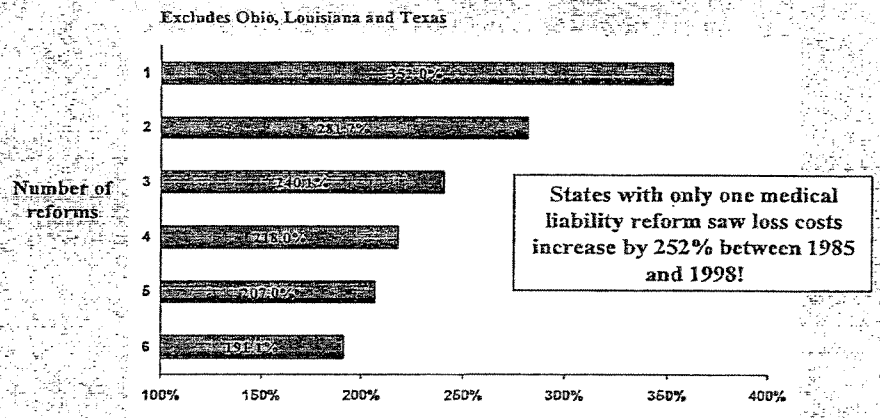
Frequency of $1 Million + Jury Verdicts (Per 1,000 Doctors)



Source: Jury Verdict Research, American Medical Association, Insurance Information Institute.

Exhibit 14

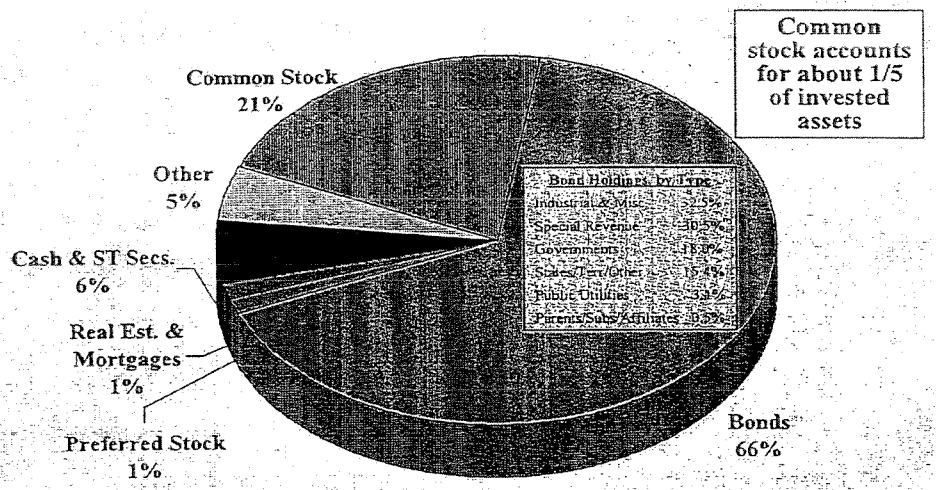
Loss Cost Changes by Number of Major Reforms by State 1985-1998



Source: Pennsylvania Medical Society

Exhibit 15

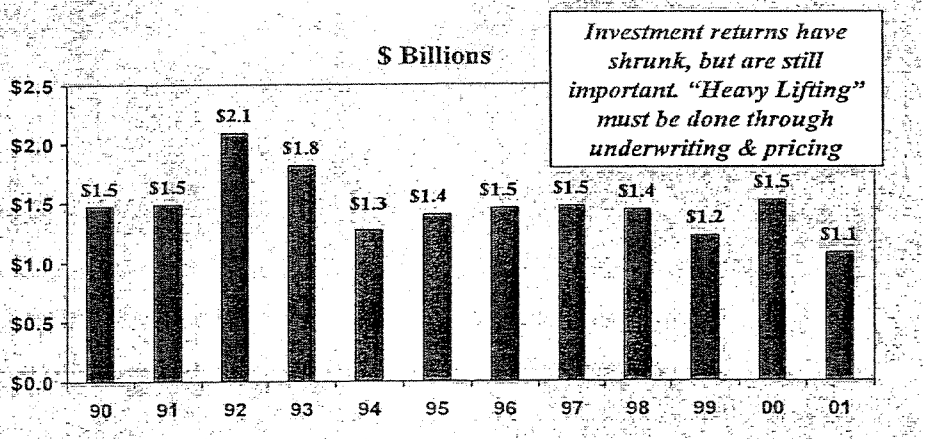
P/C Industry Investments, by Type (as of Dec. 31, 2001)



Source: A.M. Best, Insurance Information Institute

Exhibit 16

*Medical Malpractice Investment Gain**

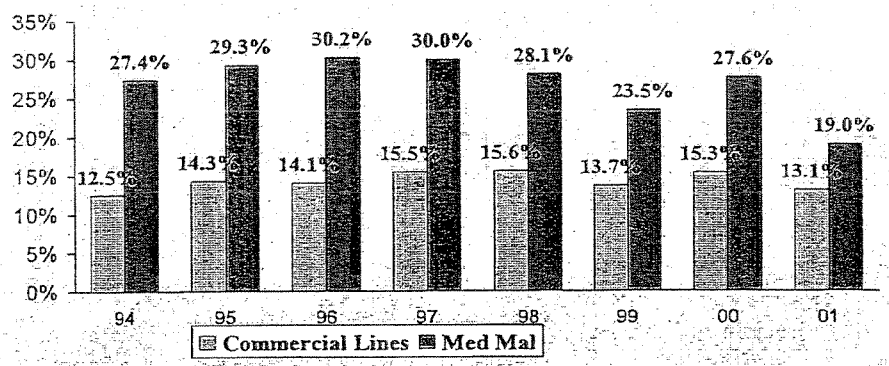


*Imputed from investment gain data as a % of net earned premium. Investment gains consists primarily of interest, dividends and realized capital gains and losses.
Source: A.M. Best; Insurance Information Institute estimate

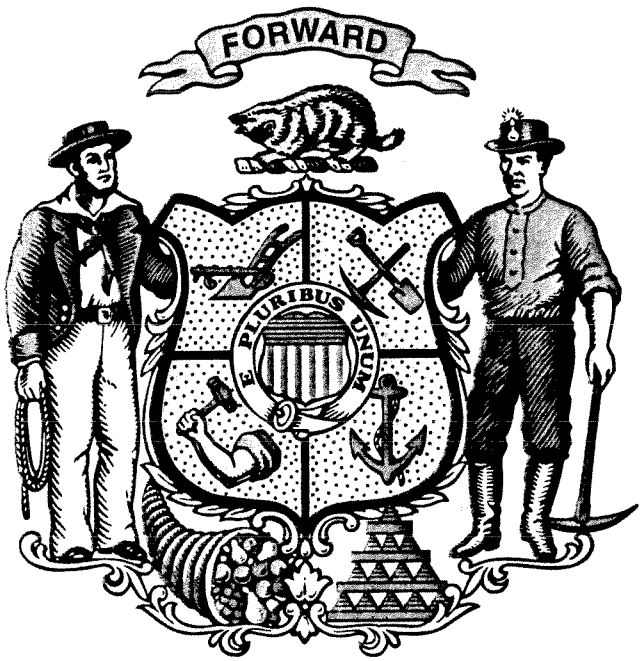
Exhibit 17

*Investment Gain: Med Mal vs. All Commercial Lines**

Investment returns have shrunk, but are still important. "Heavy Lifting" must be done through underwriting & pricing



*As a % of net earned premium. Investment gains consists primarily of interest, dividends and realized capital gains and losses.
Source: A.M. Best; Insurance Information Institute estimate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June 2003

Radiology

Survey of Radiology Residents: Breast Imaging Training and Attitudes[1]

Lawrence W. Bassett, MD
Barbara S. Monsees, MD
Robert A. Smith, PhD
Lily Wang, MD
Parizad Hooshi, MD
Dione M. Farria, MD
James W. Sayre, PhD
Stephen A. Feig, MD
Valerie P. Jackson, MD

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Breast, US, 00.1298
Economics, medical
Education
Radiology and radiologists, socioeconomic issues

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Radiology 2003; 227:862–869

[1] From the Iris Cantor Center for Breast Imaging, Department of Radiology, David Geffen School of Medicine at UCLA and UCLA-Jonsson Comprehensive Cancer Center, 200 UCLA Medical Plaza, Rm 165-49, Los Angeles, CA 90095-6952 (L.W.B., L.W., P.H., J.W.S.); Mallinckrodt Institute of Radiology, Washington University School of Medicine and Siteman Cancer Center, St. Louis, Mo (B.S.M., D.M.F.); Cancer Control Department, American Cancer Society, Atlanta, Ga (R.A.S.); Department of Radiology, Mount Sinai School of Medicine of New York University and Mount Sinai Hospital, New York, NY (S.A.F.); and Department of Radiology, Indiana University School of Medicine, Indianapolis (V.P.J.). From the 2001 RSNA scientific assembly. Received February 5, 2002; revision requested April 2; final revision received October 2; accepted October 14. Address correspondence to L.W.B.

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PURPOSE: To investigate the training and attitudes of residents regarding breast imaging.

MATERIALS AND METHODS: A telephone survey was conducted with 201 4th-year residents (postgraduate medical school year 5) and 10 3rd-year residents (postgraduate medical school year 4) at 211 accredited radiology residencies in the United States and Canada. Survey topics included organization of the breast imaging section, residents' role in the section, clinical practice protocols of the training institution, residents' personal thoughts about breast imaging, and their interest in performing breast imaging in the future.

RESULTS: Of 211 programs, 203 (96%) had dedicated breast imaging rotations; 196 (93%) rotations were 8 weeks or longer; 153 (73%), 12 weeks or longer. Residents dictated reports in 199 (94%) programs. Residents performed real-time ultrasonography (US) in 186 (88%) programs, needle localization in 199 (94%), US-guided biopsy in 174 (82%), and stereotactically guided biopsy in 181 (86%). One hundred eighty-four (87%) residents rated interpretation of mammograms more stressful than they did that of other images, and 137 (65%) believed mammograms should be interpreted by subspecialists. One hundred thirty-five (64%) residents would not consider a fellowship in breast imaging if offered, and 133 (63%) would not want to spend 25% or more of their time in clinical practice on interpretation of mammograms. The most common reasons given for not considering a fellowship or interpretation of mammograms were that breast imaging was not an interesting field, that they feared lawsuits, and that it was too stressful. Fellowships were offered at 53 programs, and at 46 programs, a total of 63 fellows were recruited.

CONCLUSION: Residency training in breast imaging has improved in terms of time and curriculum. However, a majority of the residents would not consider a fellowship and did not want to interpret mammograms in their future practices.
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The demand for mammographic services is increasing, because there are greater numbers of women older than 40 years in the population and there is increased compliance with screening guidelines (1,2). According to the National Center for Health Statistics, the percentage of women 40 years and older who underwent mammography within the preceding 2 years increased from 28.7% in 1987 to 66.9% in 1998 (3). Furthermore, the U.S. Census Bureau estimates that the U.S. female population aged 40–84 years will increase from 64.6 to 77.4 million in the next 2 decades (4). These projected increases, due largely to the aging of the post-World War II birth cohort, translate into more women in the mammographic screening age group. Insofar as breast imaging is the cornerstone of our breast cancer control strategy for the foreseeable future, these projections also mean there will be a need for greater numbers of interpreting physicians.

However, mammography is facing a crisis due to inadequate reimbursement levels, long waiting times, costly regulations, litigation directed at radiologists for delay in diagnosis of breast cancer, difficulty in recruitment of breast imaging faculty to academic medical centers, and a sense that there is a growing shortage of radiologists dedicated to reading

mammograms and performing other breast imaging procedures (1,5–12). Federal regulations mandate minimal professional qualifications and experience for physicians who interpret mammograms (10). Training sufficient numbers of residents to interpret mammograms in the future may become increasingly difficult.

Results of previous surveys of radiology residents have shown that residency training in breast imaging is improving in terms of time devoted, faculty, curriculum, and the resident's role (13–17). We conducted a telephone survey of radiology residents across the United States and Canada to investigate the training and attitudes of residents regarding breast imaging.

MATERIALS AND METHODS

From April to July 2000, a telephone survey that was approximately 20 minutes long was conducted with residents from 211 diagnostic radiology residency programs. The 211 programs came from a list of 224 diagnostic radiology residency programs listed in an American Medical Association Directory of Graduate Medical Education Programs for 1999–2000 (18). One resident from each of the 211 programs was contacted with a telephone call to their residency program director's office. The residency training office was requested to have a 4th-year resident telephone our office and either complete the survey at that time or make an appointment to complete it at a time that was convenient for the resident. A 4th-year resident was defined as one who was in the 4th year of a radiology residency program after completion of the clinical internship year. In other words, the resident was at postgraduate medical school year 5.

Of the residents in 224 programs, those in five declined to participate and those in six agreed to participate but they did not schedule time to complete the survey despite several reminders; furthermore, one program was discontinued and one had a combined breast imaging service with one of the other programs. In 10 programs, a 4th-year resident was not available, and the survey was conducted with a 3rd-year (postgraduate medical school year 4) resident. Whether the residents were in the 3rd or 4th year, they had to have completed at least one rotation in breast imaging to participate.

The survey tool was developed by several of the authors (L.W.B., B.S.M., R.A.S., D.M.F., S.A.F., V.P.J.) who were involved in breast imaging education and who were familiar with current issues regarding mammography. The survey about research electives was conducted by four medical students, including two of the authors (L.W., P.H.). Each individual survey was conducted independently by one of the research assistants with on-site supervision of one of the authors (L.W.B.). The results were evaluated by all of the authors, including the study statistician (J.W.S.).

Informed consent was obtained from the participants. Prior to conducting the actual interview, the radiology residents were advised that the purpose of the survey was to learn more about resident training in mammography and that their individual responses would be confidential. Questions covered a wide range of topics, including organization of the breast imaging section at the training institution, the residents' role in the section, the characteristics and protocols of the practice, the residents' personal thoughts about breast imaging, and their interest in performing breast imaging in the future.

Organization of the Breast Imaging Training Program

Questions included whether the breast imaging training program was a separate independent entity in the department, what the length of rotations was in weeks, what the total number of weeks of breast imaging rotations during residency was, and whether the faculty were subspecialists (ie, that they spent at least 50% of their time in breast imaging).

Residents' Role in the Breast Imaging Section

The purpose of these questions was to learn to what extent residents generated reports, whether they used the standardized mammographic terminology, and what the number of mammographic examinations they interpreted with supervision was. In addition, resident training in screening mammography, diagnostic mammography, clinical breast examination, medical audit, clinical image quality, breast ultrasonography (US), and interventional procedures was determined. Since the residents' participation could not always be categorized as a simple "yes" or "no," the residents were provided a five-response scale, which ranged from "always" to "never."

Characteristics of the Breast Imaging Practice

These questions addressed clinical practice protocols of the training programs regarding screening and diagnostic mammography, patient communication, clinical breast examination, and performance of breast US and interventional procedures. Again, the residents were asked to answer by using a five-response scale, which ranged from "always" to "never." The "don't know" response was an appropriate response when residents were not aware of a particular practice protocol.

Residents' Perceptions and Attitudes Concerning Breast Imaging

The residents were asked to compare their level of concern when they interpreted diagnostic mammograms with their level of concern when they interpreted other types of images (specifically computed tomographic [CT] scans of the abdomen with contrast material or other types of images in general) by using a five-response scale, which ranged from "much less" to "much more." For these questions, the residents were asked to base their answers on their own personal perceptions and thoughts. The issues addressed were concerns about potentially missing important findings, under- or overestimating the clinical importance of a finding, not making appropriate recommendations for further work-up, disagreeing with another radiologist, retrospective review by another physician showing an abnormality that was missed, decreased technical quality or decreased observational ability after reading of multiple images, workload stress levels, and malpractice liability.

Interest in Interpretation of Mammograms and Fellowship Training in Breast Imaging

To evaluate their interest in interpretation of mammograms, the residents were asked to state their strength of agreement by using a five-response scale, which ranged from "strongly agree" to "strongly disagree," with statements provided. Statements included the following: "Mammograms should be interpreted by subspecialists in breast imaging," "You would consider a fellowship in breast imaging if offered," and "Even if you do not participate in a fellowship in breast imaging, you would like to interpret mammograms for a substantial portion (≥25%) of your future

TABLE 1
Resident's Role and Training in Breast Imaging Sections of 211 Programs

Responsibility	Response				
	Always	Frequently	Sometimes	Rarely	Never
Generates mammography reports	142 (67)	36 (17)	13 (6)	11 (5)	9 (4)
Uses BI-RADS*	196 (93)	8 (4)	4 (2)	0 (0)	3 (1)
Uses final assessment categories in reports†	197 (93)	5 (2)	4 (2)	0 (0)	5 (2)
Receives instruction in breast clinical examination	31 (15)	33 (16)	41 (19)	54 (26)	52 (25)
Learns principles of medical audit	23 (11)	57 (27)	37 (18)	76 (36)	18 (9)
Learns to evaluate image quality at the view box	96 (45)	103 (49)	6 (3)	6 (3)	0 (0)
Performs real-time breast US	62 (29)	74 (35)	50 (24)	17 (8)	8 (4)
Performs cyst aspiration	43 (20)	69 (33)	69 (33)	21 (10)	9 (4)
Performs preoperative needle localization	77 (36)	77 (36)	45 (21)	11 (5)	1 (0)
Performs US-guided core-needle biopsy	38 (18)	67 (32)	69 (33)	28 (13)	9 (4)
Performs stereotactically guided core-needle biopsy	41 (19)	57 (27)	53 (25)	35 (17)	25 (12)

Note.—Data are the numbers of residents who responded in each category. Numbers in parentheses are percentages.
* Breast Imaging Reporting and Data System.
† Categories are negative, benign, probably benign, suspicious, highly suggestive of malignancy, and incomplete assessment/additional imaging.

practice." If residents responded that they would not consider a fellowship in breast imaging if offered or would not like to spend a substantial portion of their practice (≥25%) interpreting mammograms in their future practice, they were asked which items from a list of possible reasons would apply. They were also asked to provide any additional reasons for their decision.

One of the authors (L.W.B.) compared the results of this survey with data from similar questions from previous surveys of residents regarding training in breast imaging. The dates of those surveys included 1980, 1991, 1993, and 1996 (13–16).

The UCLA Medical Center institutional review board reviewed the survey and data collected and did not object to the analysis and publication of the data.

RESULTS

Two hundred eleven resident surveys were completed, and this number represented one resident from each of the 211 programs.

Organization of Breast Imaging Training Programs

The residents reported that training in mammography was offered in each of the 211 programs. Of the 211 programs, 203 (96%) had rotations devoted exclusively to breast imaging, compared with 74% in 1994 and 40% in 1990. Of the remaining eight programs, seven programs included mammography training in general radiology rotations, and one program included a combination of mammography training and general US rotation. Of the 211 programs, 202 (96%) had a separate breast imaging section (not combined with another section), compared with 81% in 1992. Of the remaining nine programs, six included breast imaging in a general radiology section, two included breast imaging with general US, and one combined breast imaging with nuclear medicine. Regarding length of training in breast imaging, 196 (93%) of the 211 residents reported that training was 8 weeks or longer, compared with 79% in 1992 and 46% in 1990; and 153 (73%) reported that the rotations lasted 12 weeks or longer. Of the remaining 15 of 211 residents, eight reported that the length of training in breast imaging was shorter than 8 weeks, and seven did not know or were not sure about the total length of training. The residents reported that 86 (41%) of the directors or section heads for breast imaging in the 211 programs worked exclusively in breast imaging, and 158 (75%) spent 50% or more of their time working in breast imaging. The 125 directors or section heads who did not work exclusively in breast imaging also worked in another subspecialty area or in general radiology.

Residents' Role in the Breast Imaging Rotation

During the rotations, the residents indicated that they interpreted from 40 to 575 mammograms per week with supervision, with a mean of 162 per week. Regarding screening versus diagnostic mammography, 201 (95%) of the 211 residents indicated they had experience in screening, and 204 (97%) indicated they had experience in diagnostic mammographic work-ups. Table 1 includes additional information about the residents' role and training in the breast imaging section.

Characteristics of the Breast Imaging Practices

Residents were aware of a distinction between the protocols for screening versus diagnostic examinations at 184 (87%) of the 211 training institutions, compared with 50% in 1994 and 35% in 1990. The remaining 27 residents were not aware of distinctions between protocols for screening versus diagnostic examinations. Table 2 includes data about other protocols of the breast imaging services.

Dedicated breast US equipment was located in space assigned to the breast imaging section in 142 (67%) of the 211 training programs. In the remaining 69 training programs, US equipment was not located in the same area where mammography was performed. In 211 programs, the residents indicated that the breast imaging faculty interpreted the breast US scans always in 166 (79%) facilities, frequently in 28 (13%), and sometimes in 11 (5%). In the remaining six programs, the residents thought that the question did not apply to their program because mammograms were read by all the faculty, and they did not identify any of these faculty specifically as breast imaging faculty. Actual hands-on, real-time US scanning was performed by several different operators, including breast imaging faculty in 192 (91%) facilities, radiology residents in 184 (87%), US technologists (certified sonographers) in 130 (62%), breast imaging fellows in 49 (23%), US faculty who did not interpret mammograms in 37 (18%), and mammography technologists in 30 (14%).

Table 3 details whether findings of other breast imaging procedures were interpreted or whether the procedures were supervised or performed by breast imaging faculty (ie, the radiologists who interpreted the mammograms).

TABLE 2
Diagnostic Protocols of 211 Training Programs

Protocol	Response					
	Always	Frequently	Sometimes	Rarely	Never	Don't Know
Someone calls the referring physician when a biopsy is recommended	145 (69)	33 (16)	18 (9)	5 (2)	3 (1)	7 (3)
Core-needle biopsy is performed online*	14 (7)	28 (13)	40 (19)	69 (33)	58 (27)	2 (1)
Radiologist discusses diagnostic examination findings with patients	113 (54)	36 (17)	35 (17)	14 (7)	9 (4)	4 (2)
Clinical breast examination is performed†	23 (11)	12 (6)	38 (18)	32 (15)	99 (47)	7 (3)
Targeted clinical breast examination is performed‡	104 (49)	47 (22)	44 (21)	9 (4)	3 (1)	4 (2)
US recommended for diagnostic reasons and performed on the same day	92 (44)	80 (38)	22 (10)	14 (7)	3 (1)	0 (0)
Radiologist reviews screening mammograms before the patient leaves	38 (18)	28 (13)	36 (17)	73 (35)	35 (17)	1 (0)
Radiologist reviews diagnostic mammograms before the patient leaves	183 (87)	18 (9)	8 (4)	2 (1)	0 (0)	0 (0)
Diagnostic mammographic results are provided to patients on site	109 (52)	41 (19)	29 (14)	21 (10)	8 (4)	3 (1)

Note.—Data are the numbers of residents who responded in each category. Numbers in parentheses are percentages.
* Online means immediately after the work-up or on the same day.
† Clinical breast examination was defined as a complete clinical examination of both breasts, not just of an area of interest.
‡ Targeted clinical examination was defined as examination of an area of clinical concern or of a mammographic finding.

Residents' Perceptions and Attitudes Concerning Breast Imaging

The residents were asked about their personal thoughts and opinions about breast imaging and other radiologic examinations. Table 4 includes their responses when they were asked to compare diagnostic mammography with transverse abdominal CT with contrast material (the pelvis was excluded). Table 5 includes their responses when they were asked to compare workload and stress levels of mammography with those of other types of imaging examinations in general.

TABLE 3
Frequency That Findings of Breast Imaging Procedures Were Interpreted or That Procedures Were Supervised or Performed by Breast Imaging Faculty in 211 Training Programs

Examination or Procedure	Response				
	Always	Sometimes	Frequently	Rarely	Never
US-guided biopsy (n = 199)	157 (79)	29 (15)	5 (3)	4 (2)	4 (2)
Stereotactically guided biopsy (n = 189)	164 (87)	15 (8)	6 (3)	2 (1)	2 (1)
Ductography (n = 170)	158 (93)	7 (4)	2 (1)	1 (0)	2 (1)
Breast MR imaging (n = 156)	69 (44)	9 (6)	17 (11)	25 (16)	36 (23)
Radionuclide imaging (scintimammography) (n = 151)	21 (14)	4 (3)	18 (12)	16 (11)	92 (61)
Positron emission tomography (n = 56)	6 (11)	2 (4)	2 (4)	3 (5)	43 (77)

Note.—Breast imaging faculty are the radiologists who interpret mammograms. Data are the numbers of residents who responded if the procedure was performed at their facility. Numbers in parentheses are percentages. MR = magnetic resonance.

Interest in Fellowship Training in Breast Imaging and Interpretation of Mammograms as Part of Their Future Practice

Table 6 summarizes the residents' strength of agreement with statements as to whether breast images should be interpreted by subspecialists in breast imaging, if they would consider participating in a fellowship in breast imaging if offered, and if they would like to interpret mammograms 25% or more of the time in their future practices. Reasons for not considering a fellowship in breast imaging are described in Figure 1, and the most common reasons for not devoting 25% or more of the time in future practice to interpretation of mammograms are shown in Figure 2.

Fellowships in breast imaging were offered at 53 institutions, but only 46 institutions had filled their fellowship positions. The total number of breast imaging fellows reported in the 46 programs was 63, 13 fewer than the 76 breast imaging fellows reported to be at 40 institutions in 1994.

DISCUSSION

As the population grows and women increase their use of screening mammography, we anticipate a greater need for qualified radiologists to supervise and interpret screening mammograms and to perform diagnostic work-ups (1–4). Training sufficient numbers of residents to interpret mammograms in the future is an important challenge for radiology residency training programs today. In 1980, Homer (13) reported deficiencies in residency training in mammography, including the fact that only nine (10%) of 91 residency programs surveyed had rotations devoted to mammography. A survey of diagnostic radiology residents in 1990 indicated that 82 (40%) of 207 programs had rotations dedicated to breast imaging, and this number had increased to 166 (74%) of 224 programs on the basis of a survey of residents that was conducted in 1994 (14,16). Our 2000 survey of residents revealed that 203 (92%) of 221 programs had rotations devoted exclusively to breast imaging.

Comparison with previous surveys also revealed increased time devoted to these rotations during the past decade. Rotations of 8 weeks or greater increased from 63 (30%) in 207 programs in a survey of residents in 1990 to 177 (79%) in 224 programs in a survey of residents in 1994 and to 200 (95%) in 211 programs in a survey in 2000 (14–16). Increased time devoted to breast imaging can be attributed to several factors, including the initiation of a separate breast imaging category on the June 1990 American Board of Radiology Oral Board Examination, more questions on breast imaging on the American Board of Radiology Written and American College of Radiology In-Training examinations, and an increas-

TABLE 4
Responses of 211 Residents Regarding Level of Concern When Interpreting Findings at Diagnostic Mammography Compared with Those at Transverse Abdominal CT with Contrast Material

Level of Concern	Response				
	Much Less	Somewhat Less	About Same	Somewhat More	Much More
Missing a potentially important finding	3 (1)	5 (2)	56 (27)	93 (44)	54 (26)
Underestimating the clinical importance of a finding	5 (2)	8 (4)	58 (27)	90 (43)	50 (24)
Overestimating the clinical importance of a finding	6 (3)	45 (21)	71 (34)	68 (32)	21 (10)
Not making appropriate decision for further work-up	9 (4)	13 (6)	79 (37)	86 (41)	24 (11)
Disagreeing with another radiologist	7 (3)	17 (8)	92 (44)	75 (36)	20 (9)
Retrospective review by another physician showing an abnormality that was missed	3 (1)	10 (5)	68 (32)	84 (40)	46 (22)
Missing an abnormality because of technical quality	4 (2)	16 (8)	55 (26)	82 (39)	54 (26)
Decreased observational acuity after reading multiple studies	2 (1)	14 (7)	77 (36)	84 (40)	34 (16)
Malpractice liability	0 (0)	0 (0)	14 (7)	46 (22)	151 (72)

Note.—The pelvis was excluded at transverse CT of the abdomen for the comparison with mammography. Data are the numbers of residents who responded in each category. Numbers in parentheses are percentages.

TABLE 5
Responses of 211 Residents Regarding Workload, Stress Levels, and Concern about Malpractice of Diagnostic Mammography Compared with Those of Other Types of Imaging Examinations

Factors	Response				
	Much Less	Somewhat Less	About Same	Somewhat More	Much More
Workload per radiologist	6 (3)	58 (27)	100 (47)	37 (18)	10 (5)
Stress levels related to possible misdiagnosis	1 (0)	6 (3)	30 (14)	98 (46)	76 (36)
Patient stress	0 (0)	0 (0)	15 (7)	70 (33)	126 (60)
Concern about malpractice liability	0 (0)	0 (0)	14 (7)	46 (22)	151 (72)

Note.—Data are the numbers of residents who responded in each category. Numbers in parentheses are percentages.

TABLE 6
Agreement with Statements Regarding Who Should Interpret Mammograms, Their Interest in a Breast Imaging Fellowship, and Interpretation of Mammograms in Future Practice in 211 Residents

Statement	Response				
	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Mammograms should be interpreted by subspecialists	75 (36)	62 (29)	16 (8)	48 (23)	10 (5)
You would consider a breast imaging fellowship	25 (12)	40 (19)	11 (5)	69 (33)	66 (31)
You would like to spend a substantial portion (≥25%) of your time interpreting mammograms	19 (9)	43 (20)	17 (8)	67 (32)	65 (31)

Note.—Data are the numbers of residents who responded in each category. Numbers in parentheses are percentages.

ing volume of breast imaging in radiology practices. Furthermore, the interim regulations of the Mammography Quality Standards Act of 1992 included baseline training requirements for physicians in interpretation of mammograms. The Mammography Quality Standards Act Final Regulations, which were implemented on April 28, 1999, by the Food and Drug Administration, mandate both initial training and initial experience requirements. For a physician to qualify to independently interpret mammograms, he or she must be board-certified in diagnostic radiology by a body approved by the Food and Drug Administration or have 3 months of formal training in mammography (10). In addition, there is an initial experience requirement that a physician interpret 240 mammograms with direct supervision during the 6-month period immediately prior to qualifying as an independent interpreting physician. If a resident takes and passes the board examination (including all 10 sections) at the first allowable time, the 240-mammogram initial experience requirement does not have to be fulfilled during the last 6 months before qualifying but can be fulfilled by such an experience during the last 2 years of residency. If a resident does not pass the board examination at the first allowable time, he or she must have 3 months of training in mammography and interpret 240 mammograms with direct supervision in the 6 months immediately prior to qualifying. The Mammography Quality Standards Reauthorization Act of October 10, 1998, extended these requirements to October 2002. To ensure that residents will be able to interpret mammograms when they enter clinical practice, many programs include 3 months of breast imaging in their residency curriculum.

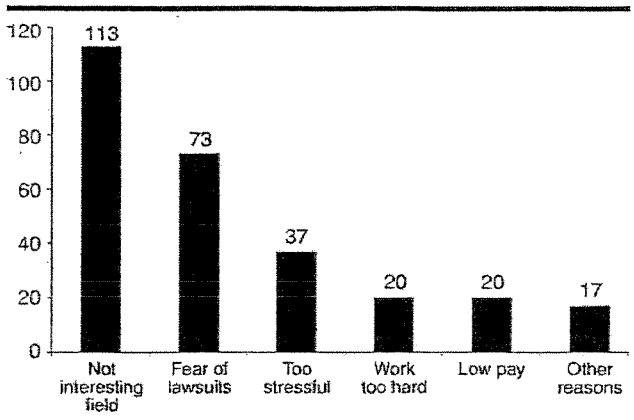

Figure 1. Graph shows reasons selected by 132 residents who would not consider a fellowship in breast imaging if offered. Residents could select as many reasons as they thought applied to them. The y axis indicates the number of times the reason was selected by residents who would not consider a fellowship in breast imaging.

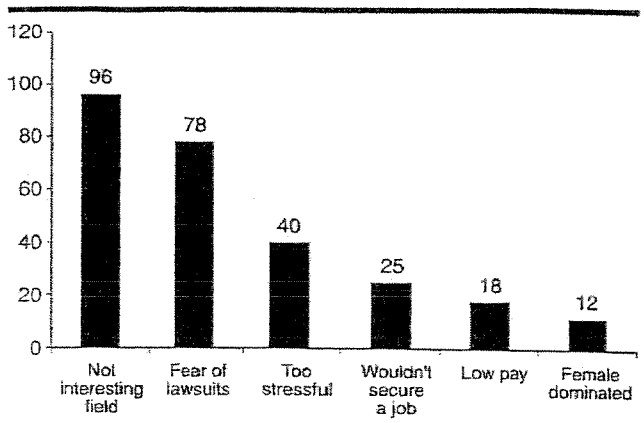

Figure 2. Graph shows reasons selected by 133 residents who would not like to spend a substantial portion of time (≥25%) for interpretation of mammograms in their future practices. Residents could select as many reasons as they thought applied to them. The y axis indicates the number of times a reason was selected by residents who would not like to spend a substantial portion of time (≥25%) for interpretation of mammograms.

In addition to the length of time devoted to rotations, proper training also requires dedicated faculty supervision, an organized curriculum, and exposure to adequate numbers and types of examinations, which include breast US and interventional procedures. A survey of residents in 1990 indicated that 95 (46%) of 206 supervising faculty (directors or section heads) spent at least half of their time in breast imaging (14). In our 2000 survey, residents reported that 87 (41%) of the 211 directors or section heads worked exclusively in breast imaging, and 158 (75%) spent 50% or more of their time in breast imaging. Findings in a recent report indicated that academic medical centers are having difficulty recruiting and retaining faculty in general (12). According to this study, in 106 academic radiology programs surveyed, most of which are affiliated with medical schools, there were more than 570 job vacancies. Results of this study (12) indicated that in addition to 69.5 breast imaging faculty positions, these vacancies included 84.5 neuroradiology, 84.5 abdominal imaging, 78 vascular/interventional, 55 general radiology, 43.8 pediatric, 36.5 chest, 32 musculoskeletal, 31.5 nuclear radiology, 25 research, 17 US, and 13 other faculty positions. Considering the overall shortage of radiologists and the financial disincentives of academic practice, this problem is not likely to be remedied in the near future.

The Society of Breast Imaging has developed specific recommendations for a residency curriculum in breast imaging (19). The Society of Breast Imaging curriculum includes training in epidemiology, breast anatomy, pathology and physiology, mammographic equipment and technique, quality control, interpretation and reporting, screening and problem-solving mammography, breast US, breast MR imaging, and interventional procedures. Although our survey could not address each aspect of the Society of Breast Imaging recommendations, we were able to explore many key items. Answers to questions about the resident's role in the breast imaging section, the characteristics of the practice, and the practice protocols indicated that the majority of residents were receiving adequate training and experience in patient treatment, imaging modalities, and interventional procedures (Tables 1–3).

Despite apparent improvements in training and curriculum, results of our survey revealed that the majority of residents had negative attitudes about breast imaging. For example, the residents found the interpretation of mammograms to be more stressful than interpretation of other images (Tables 4, 5). Furthermore, 147 (70%) of the 211 residents were more concerned about missing a potentially important finding at mammography than at transverse abdominal CT. Although they indicated that the workload for mammography was about the same as it was for other types of imaging examinations, with 64 (30%) indicating that the workload for mammography was less, 100 (47%) indicating that it was the same, and 47 (22%) indicating that it was more, 174 (82%) thought that the stress levels regarding possible misdiagnosis were greater for mammography (Table 5). Of the 211 residents, 196 (93%) reported that patient stress was greater for mammography. The latter may be related to the increased patient contact associated with breast imaging, compared with the patient contact of other areas of radiology, but it could also reflect the higher levels of anxiety of patients related to a possible diagnosis of breast cancer (20,21).

We were surprised by the level of concern the residents reported about medical malpractice liability related to interpretation of mammograms. For example, 197 (93%) of the 211 residents indicated they had "somewhat more" or "much more" concern about malpractice liability related to interpretation of diagnostic mammograms when compared with interpretation of other images (Tables 4, 5). The residents' awareness of medical malpractice issues may reflect concerns of their faculty and community radiologists or the frequent coverage of malpractice issues in the radiology literature (22). In 1990, the Physician Insurers Association of America reported that failure to diagnose breast cancer had become the second most common reason that physicians were sued and the leading cause for indemnity payments (23). In a 1995 follow-up study, the Physician Insurers Association of America reported that failure to diagnose breast cancer had become the number one cause of medical malpractice lawsuits (11). A substantial number of residents we interviewed indicated that malpractice exposure was one of the leading disincentives to interpretation of mammograms.

The disinterest in breast imaging expressed by current residents should raise concerns about the ability to meet future breast imaging needs. Although 137 (65%) of the 211 residents indicated that specialists should interpret mammograms, only 65 (31%) of the residents would even consider a fellowship in breast imaging if it were offered to them. Of 53 institutions offering fellowships in breast imaging, only 46 had been successful in recruiting fellows. Results of our survey showed that there were a total of 63 breast imaging fellows at these institutions, compared with 76 fellows identified in 1994 (16). We are not certain how this compares with unfilled positions in other subspecialties. Such comparative information will be available with the initiation of the fellowship matching program.

Of equal concern is the fact that only 62 (29%) of the 211 residents agreed with the statement that they would "like to spend a significant portion (≥25%) of their time interpreting mammograms" in their future practices (Table 6). The leading reason residents would not consider a fellowship in breast imaging and did not want to interpret mammograms in the future was a perception that it was "not an interesting field." In decreasing order of frequency, other reasons residents selected for not wanting to pursue fellowship training in breast imaging or to interpret mammograms in clinical practice included "fear of lawsuits," "too stressful," and "low pay" (Figs 1, 2). We are uncertain how this compares with residents' perceptions of other subspecialty areas, and many residents may identify other subspecialties that are not interesting fields for them. However, these findings suggest that it will be a challenge to provide adequate interpreters for increasing numbers of examinations in the future.

The residents' perception of "low pay" for breast imaging could also be related to the notoriously low reimbursement for mammographic services that is having a negative impact on both academic and community practices. For example, the number of facilities at which mammograms are interpreted in Maryland is reported to have decreased from 167 to 150 in 1 year, and the number of accredited mammography centers nationwide has decreased from 9,873 in March 2000 to 9,534 at the end of October 2000 (7). In addition to a number of factors, such as phasing out older practices and equipment and consolidation of practices, inadequate reimbursement has been identified as the primary reason that facilities are discontinuing mammographic services (5–7). Findings of a recent study of the financial status of mammographic services at seven university-based programs revealed that all programs sustained losses in the professional component of mammographic services (5). The greatest discrepancy between costs and reimbursement proved to be in diagnostic mammography. The authors concluded that reimbursement rates for mammographic procedures, especially diagnostic mammography, needed to increase to reflect the resources necessary to provide these services. However, attempts to address this issue with the Centers for Medicare and Medicaid Medical Services have been disappointing. According to a Centers for Medicare and Medicaid Medical Services notification on January 1, 2002, the Medicare Ambulatory Payment Classification rate applied to hospital-affiliated outpatient facilities for diagnostic mammography was scheduled to be reduced (24). These decisions have a major impact on teaching institutions because they are all hospital-affiliated practices. Therefore, decreased Ambulatory Payment Classification reimbursements will further discourage academic training hospitals from supporting breast imaging programs. The current situation also suggests that the practice of treating a high-volume procedure such as mammography as a loss leader is having adverse consequences on interest in specialization in a field that is regarded by radiology in general, and perhaps visibly by one's colleagues, as a money loser.

There may be other key reasons why residents are not pursuing breast imaging fellowships. One reason involves Mammography Quality Standards Act regulations. In many programs, mammography rotations may be delayed until the last 2 years of the 4-year residency to ensure that residents meet Mammography Quality Standards Act regulations. In some programs, rotations in breast imaging also may be deferred so that residents can spend more time in their first 2 years in subspecialty rotations that are required for night call coverage. However, residents are under pressure to make a decision and apply for radiology fellowships by their 3rd year of residency. Therefore, during the first 2 years of training, residents are considering fellowship options based on their experiences during rotations in a variety of subspecialty areas. It is important to understand that while federal regulations do not require that mammography rotations be in the last 2 years, the fact that the Mammography Quality Standards Act requires that interpretation of at least 240 mammograms with direct supervision must be completed in a 6-month period during the last 2 years of residency may lead to the scheduling of the mammography rotation to be coincident with that requirement. To stimulate a possible interest in breast imaging as a subspecialty, we recommend that residents have an introductory rotation in breast imaging during the first 2 years of residency.

The current shortage of radiologists in the United States and Canada also has a negative impact on recruitment of fellows. Radiologists are in such demand that the advantage of a fellowship in obtaining a job has diminished.

The main limitations of our study involve possible sampling errors, since we could interview only one resident in each program and primarily used 4th-year (postgraduate medical school year 5) residents, the majority of whom were chief residents who may not have been representative of all of the other residents in their programs. In addition, problems identified in breast imaging may well exist in other subspecialties because of the current shortage of radiologists. Comparison of specific items, such as residents' perceptions of the subspecialty, with their perceptions of other subspecialties was also not possible because of a paucity of information in the current literature.

In conclusion, compared with results of previous surveys, findings in this study indicate that residents are spending more time in dedicated breast imaging rotations, and the curriculum and the role of the resident in the services appear to be improving. A number of problems that deter residents from pursuing breast imaging either as specialists or as general radiologists have been identified. These problems represent complex challenges without easy solutions, but it is critical that we begin to address these issues immediately so that training programs can provide adequate numbers of skilled interpreting physicians in the future.

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