**MASSACHUSETTS MEDICAL SOCIETY**

Investigation of Defensive Medicine in Massachusetts

November 2008

Current Environment

It is estimated that medical liability premiums in the United States have reached an astounding $26 billion annually, representing a 2,000% increase since 1975.[1] At 12 percent per year, the growth rate in medical malpractice premiums since 1975 is four times the rate of inflation and twice the rate of inflation in the cost of health care.[2] Million-dollar verdicts are now the norm in jury trials: 52% of all awards exceed $1 million, while the average award now weighs in at $4.7 million.[3] In the face of increasing risk, medical malpractice premiums have skyrocketed for doctors throughout all medical disciplines.

In fear of the potentially devastating economic and professional consequences of medical liability lawsuits, physicians nationwide are engaging in the practice of defensive medicine. Defensive medicine can come in diverse forms, including the pursuit of unnecessary laboratory or radiographic information, prescriptions for unneeded medications such as antibiotics, medically unnecessary referrals to specialists and hospitalizations, the performance of invasive procedures to exclude or confirm diagnoses, and the avoidance of high-risk procedures, or in certain circumstances, the avoidance of high-risk patients entirely.[4]

While the nature and prevalence of defensive medical practices have been widely debated, most agree that the costs are exorbitant. In fact, some estimates report that the practice of defensive medicine costs the American health care system in excess of $100 billion dollars annually, which would account for up to 12% of all health care expenditures.[5] In a study published last year by the Pacific Research Institute, the total impact of the current tort system on medical expenditures was estimated to be $124 billion annually, with an additional $38 billion in reduced access to health care.[6] A study conducted as early as 1987 estimated that expenditures resulting from defensive practices comprised over 15% of all health care dollars spent.[7] Tillinghast (2000) estimated the cost of defensive medicine at $70 billion nationally and $253 per person in Massachusetts, which with 6,000,000 citizens translates to over $1.5 billion in unnecessary costs for the period reported on.[8] A recent study reported that over 93% of Pennsylvania physicians reported engaging in defensive medicine in various forms.[9]

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[1] Tillinghast-Towers Perrin, U.S. Tort Costs: 2003 Update, Trends and Findings on the Cost of the U.S. Tort System 17 (2003)
[2] Ibid.
[3] Jury Verdict Research: Verdicts, Settlements and Statistical Analysis 5, 8 (Brooke J. Doran, ed., 2005).
[4] Studdert DM, Mellow MM, Sage WM, et al. Defensive Medicine Among High-Risk Specialist Physicians in a Volatile Malpractice Environment. *JAMA*, June 05, Vol 293. No 21.
[5] Carroll. Going on the Offensive against Defensive Medicine. Managed Care Magazine. March 2005.
[6] McQuillan, LJ, Abramyan H, Archie A. JACKPOT JUSTICE: The True Cost of America's Tort System. Pacific Research Institute, 2007.
[7] Reynolds RA, Rizzo JA, Gonzalez ML. *The Cost of Medical Professional Liability*. JAMA 257(20): 2776-2781, May 22/29, 1987.
[8] Tillinghast-Towers Perrin: U.S. Tort Costs 2000 (2002)
[9] Studdert et al. *ibid*.

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Defensive medicine is not only costly; it is unsafe for patients and reduces access to care. For instance, patients subjected to unnecessary radiological imaging are exposed to the risks of radiation exposure and possible anaphylactic reactions to contrast dye. Even major surgical procedures such as Caesarean-sections have increased as a result of liability concerns.[10] In addition, given high rates of malpractice claims, many specialists have closed their practices, stopped performing high-risk procedures, or reduced their care of high-risk patients, leading to a situation in which many smaller towns and cities have little or no access to medical specialists. For example, over 48% of Massachusetts physicians surveyed in 2007 reported that they currently alter or limit their day-to-day practice activities because of the fear of being sued.[11]

The Present Study

The American Medical Association classifies Massachusetts as a crisis state with respect to medical liability. Massachusetts ranks 6th in the nation for mean medical malpractice payments.[12] However, the medical liability environment in the Commonwealth has not been subjected to rigorous and comprehensive study. To address this problem, at A-07, the MMS HOD charged the Society to "…develop and conduct a comprehensive analysis of the practice of physicians in Massachusetts including a survey to examine the extent, character, and impact of the practice of defensive medicine in Massachusetts," and to produce a "…detailed report that discloses the impact of defensive medicine in Massachusetts on the cost of care, the physician workforce, patient safety, and access to care, and disseminate the report to support our efforts toward fundamental liability reform and eliminating the need for defensive medicine." This report presents results of a statewide survey of Massachusetts physicians to ascertain:

- The extent to which physicians alter their clinical behavior because of malpractice concerns, as indicated by the frequency of occurrence of laboratory tests, imaging studies, referrals, and hospitalizations for defensive reasons
- The impact of the current liability environment on the scope of physicians' practices and access to patient care
- An estimate of the cost of radiological imaging, laboratory testing, referrals and consultations and hospitalizations that are ordered due to liability concerns

Survey Method

To investigate these questions, the MMS conducted a statewide survey of practicing physicians in eight specialty areas from November 2007 to April 2008. The initial sample contained 3,650 physicians drawn from the current Board of Registration in Medicine database with full and active Massachusetts licenses and a primary specialty of anesthesiology, emergency medicine, family medicine, general surgery, internal medicine, neurological surgery, obstetrics/gynecology, and orthopedic surgery. A systematic probability sample containing 150 neurosurgeons and 500 physicians in each of the other specialty areas was selected for participation. All members of the sample received a 10–15 minute questionnaire by mail that they were asked to complete and

[10] Localio AR, Lawthers AG, Bengtson JM et al., "Relationship Between Malpractice Claims and Caesarean Delivery," Journal of the American Medical Association 269(3):366-373, Jan. 20, 1993.
[11] *Massachusetts Medical Society Physician Workforce Study*, 2007: 13.
[12] National Practitioner Data Bank (2005) *Annual Report* (available at: http://www.npdb-hipdb.hrsa.gov/pubs/stats/2005_NPDB_Annual_Report.pdf)

return within 2–3 weeks. Members of the sample that did not respond with the allotted time received a second copy of the questionnaire and were again asked to return it within 2–3 weeks. Because of a limited response to the first two mailings, a third mailing of a truncated version of the original survey was conducted. A total of 838 physicians completed either version of the survey (long form: 484, short form: 354) which, after adjusting for eligibility, resulted in an overall response rate of 23.6%.***** A breakdown of responses by specialty area is presented in Figure 1 (see Appendix). All data presented in this report was derived from physicians' self-reports.

Figures 2 and 3 (see Appendix) present a basic demographic profile of the physicians in the sample. The sample was 72% male and had a modal age category of 45–54. The most common employment arrangements were self-employed (32%) and employed by a medical group (32%), with slightly less than a quarter of respondents employed by hospitals (24%). Almost two-thirds of respondents described their main practice arrangement as single specialty (61%). The average number of hours of patient care per week was 40.3.

*** See addendum to response rate on last page of this report**

Survey Results

*Frequency of Defensive Medical Practices*

The extent to which physicians alter their clinical behavior because of malpractice concerns was examined by asking: a) the frequency with which physicians ordered different tests, procedures, admissions, and consultations, and b) the frequency with which the same tests, procedures, admissions, and consultations were ordered due to concerns about liability (e.g., orders that were motivated more by liability concerns than by evidence-based medical need). Physicians were asked for the frequency with which they ordered the following in a typical month:

- Plain film x-rays
- CT scans
- MRI studies
- Ultrasound studies
- Specialty referrals or consultations
- Laboratory tests (e.g., CBC, Chem Profile, Thyroid Panel)
- Hospital admissions

In all, the results showed that 83 percent of the physicians surveyed reported that they practiced defensive medicine.

Results showing the percentages of each of these tests, procedures, admissions, and consultations that were ordered for defensive reasons are presented in Figures 4–10 (see Appendix), separated by specialty. The "Total" at the bottom of each figure presents the average proportion of tests and procedures ordered for defensive purposes across all specialties included in the study, weighted to reflect the relative number of physicians in the Commonwealth in each specialty area.

*Plain Film X-Rays*

Overall, 22% of x-rays ordered by physicians in these eight specialty areas were for defensive purposes. The proportion of x-rays ordered did not differ significantly among those in different specialty areas ($F = 1.15$, $p = .33$)

*CT Scans*
28% of all CT scans were ordered for defensive reasons. This percentage differed significantly by specialty ($F = 2.39$, $p = .021$). Roughly 33% of the CT scans ordered by obstetrician/gynecologists, emergency physicians, and family practitioners were not motivated by medical need, in contrast to 20% of those ordered by neurosurgeons and orthopedic surgeons.

*MRI Studies*
Similar results were observed for MRI studies. The overall rate of MRIs ordered for defensive purposes was 27%, and this rate varied significantly by specialty ($F = 2.55$, $p = .014$). The highest rates of MRI studies motivated by defensive medical practice were reported by obstetrician/gynecologists, general surgeons, and family practitioners, while the lowest rates were reported by neurosurgeons and emergency physicians.

*Ultrasound Studies*
Overall, 24% of ultrasound studies were ordered for defensive reasons. Statistically significant differences by specialty were observed ($F = 3.62$, $p = .001$), with orthopedic surgeons (33%) and obstetrician/gynecologists (28%) reporting that roughly one-third of the ultrasound studies they ordered were motivated by liability concerns. In contrast, very few of the ultrasound studies ordered by neurosurgeons (6%) and anesthesiologists (9%) were motivated by liability concerns.

*Specialty Referrals and Consultations*
Physicians in the sample reported that 28% of specialty referrals or consultations were motivated by liability concerns. There were statistically significant differences by specialty ($F = 5.60$, $p = .000$). Obstetrician/gynecologists reporting that 40% of the referrals and consultations they ordered were not driven by medical need, as were roughly a third of the referrals/consultations ordered by anesthesiologists and family practitioners. Lower rates of defensively motivated consultations were reported by neurosurgeons (16%), emergency physicians (20%), and internists (21%).

*Laboratory Tests*
Eighteen percent of laboratory tests ordered by physicians in these specialty areas were motivated by liability concerns. Statistically significant differences by specialty were observed ($F = 2.50$, $p = .016$), with one quarter of the lab tests ordered by emergency physicians for defensive purposes, in contrast with 7% among neurosurgeons and 12% among orthopedic surgeons.

*Hospital Admissions*
Physicians in these specialty areas reported on average that 13% of hospital admissions were motivated by liability concerns. Statistically significant variability by specialty was observed ($F = 2.44$, $p = .018$), with the surgical specialties reporting lower rates of hospitalizations for defensive purposes than other specialties.

Impact of the Medical Liability Environment on Patient Care
Data characterizing the extent to which concerns about medical liability affect the care provided to patients are presented in Figures 11–14. The results presented in the first three figures clearly indicate that professional liability concerns have had a substantial effect on the scope of physicians' practices over the past 5 years. Overall, 38% of physicians in the sample reported that they reduced the number of high risk services or

procedures they performed (Figure 11), with this most pronounced among orthopedic surgeons (55%), obstetrician/gynecologists (54%), and general surgeons (48%). Lesser restrictions in the scope of practice were reported by emergency physicians (15%), internists (19%), and anesthesiologists (23%). Differences by specialty were statistically significant (chi square = 78.6, p = .000).

A similar pattern was observed with respect to reductions in the number of high-risk patients over the past 5 years (Figure 12). Overall, 28% of physicians in the sample reported reducing the number of high-risk patients they saw. Statistically significant differences by specialty were observed (chi-square = 77.9, p = .000), with obstetrician/gynecologists (44%) and the surgical specialties (37–42%) much more likely to reduce their number of high-risk patients than emergency physicians (7%), anesthesiologists (14%), internists (18%), and family practitioners (19%).

Smaller percentages of physicians reported reductions in the number of hours of patient care they provide (Figure 13). Overall, 16% said they had reduced their hours of patient care over the past 5 years, and differences between specialty groups were not statistically significant (chi-square = 77.9, p = .000).

Finally, in response to a question concerning whether professional liability concerns affected the medical care they provided to their patients, 28% of physicians in the sample said that liability concerns affected the care they provided "a lot" (Figure 14). Responses to this question varied significantly by specialty (chi-square = 6.72, p = .459), with emergency physicians (38%) and obstetrician/gynecologists (35%) most likely to endorse this response, and family practitioners (19%) and anesthesiologists (21%) least likely.

Impact of the Medical Liability Environment on Physicians' Practices

Data describing the impact of the medical liability environment on physician practices are presented in Figures 15–17 (see Appendix). Twelve percent of physicians in the sample reported that they had increased their liability coverage limits over the past 5 years (Figure 15). This was reported most often by emergency physicians (24%), and least often by orthopedic and general surgeons (7–8%). Differences between specialty groups were statistically significant (chi-square = 18.9, p = .009).

In response to the question, "How much of a financial burden are your professional liability insurance premiums?" (Figure 16, see Appendix), 32% of physicians in the sample characterized their liability insurance premiums as "very burdensome." However, there was enormous variability by specialty in response to this question (chi-square = 105.5, p = .000), with neurosurgeons (69%) and obstetrician/gynecologists (55%) much more likely to report that their premiums were financially burdensome as compared with anesthesiologists (11%), internists (17%), family practitioners (20%), and emergency physicians (23%). Not surprisingly, who pays for liability insurance (i.e., the physician, their employer or a medical group) has a substantial impact on the financial burden of liability premiums. Fifty-five percent of physicians who paid their own liability insurance premiums said they were "very burdensome," as opposed to 21% of those whose premiums were paid by their employer or group (chi-square = 129.1, p = .000).

Finally, in response to the question, "How concerned are you about the impact of a lawsuit on your practice?, 48% of physicians in the sample said that they were "very concerned." Statistically significant differences by specialty in response to this question

were observed (chi-square = 31.9, p = .000)), with 72% of neurosurgeons reporting that they were "very concerned," in contrast to slightly more than one-third of internists and family practitioners. Responses to this question did not differ significantly by source of payment for liability insurance premiums (physician vs. employer).

Estimating the Cost of Defensive Medicine in Massachusetts

In Table 1, we present data extrapolating from the numbers of tests ordered for defensive purposes to provide an estimate of the total annual cost of defensive behavior among Massachusetts physicians in the eight subspecialties surveyed. These estimates were based on 2006 Massachusetts payment data obtained from the Centers for Medicare and Medicaid Services (CMS) and two pieces of information obtained in our survey: 1) the weighted proportions of the self-reported measures of defensive behaviors examined in this study and 2) estimates of the total numbers of each of these tests performed annually by Massachusetts physicians, which were calculated by multiplying the annualized totals in each category reported by physicians in this study by the total number of licensed physicians in the Commonwealth in these eight specialties (N = 11,457). Comparable payment data for hospital costs were not available from CMS at the time of the submittal of this report. Assuming that the average cost of tests billed by private insurers is similar to those reimbursed by CMS, these calculations indicate that the total cost of these six categories of tests and referrals ordered due to liability concerns approaches $300 million annually in Massachusetts. Note: this number is restricted to eight specialty areas, which constitute roughly 46% of the Massachusetts physician population, and to the limited number of tests included in this study. It excludes the cost of unnecessary hospitalizations, and thus represents a small percent of actual defensive medicine costs.

Limitations

This study is based entirely on self-reported measures whose validity and reliability have not been established. Physicians' reports of the frequency of defensive practices may have errors due to recall bias. In addition, social desirability may have lead physicians to report higher rates of defensive practices in an effort to bring attention to what they and the Society perceive to be a wasteful and potentially harmful situation. Conversely, concerns over acknowledging tests and procedures that were not motivated by medical necessity may have suppressed reports of defensive practices. Confirmation of these patterns with data from chart reviews and other more objective measures would enhance the validity of our results. Finally, the response rate for this survey, while in the expected range for a study of physicians, was lower than what is considered optimal. To address this issue, we conducted separate analyses using multiple imputations, a simulation-based approach to the assignment of missing data. A manuscript based on this work has been submitted for publication and is included in the Appendix.

Conclusions

Results from this survey of Massachusetts physicians reveal the profound impact of the current medical liability environment on physicians and their patients:

1) The current medical liability environment appears to add significantly to the cost of health care.
    - A substantial proportion of laboratory tests, imaging studies, referrals and consultations, and hospital admissions ordered by physicians in the eight specialty areas included in this study were motivated by liability concerns,

ranging from of 13% of all hospital admissions to almost 30% of MRI studies, CT scans, and referrals/consultations.

2) The cost of professional liability insurance and the risk associated with medical malpractice suits present significant financial concerns for Massachusetts physicians.
   - One third of physicians in the sample, and a majority of neurosurgeons and obstetrician/gynecologists, characterized their liability insurance premiums as "very burdensome" financially.
   - Almost half of physicians in the sample, and nearly three-quarters of neurosurgeons, were "very concerned" about the impact of a malpractice suit on their practice.

3) Medical liability concerns have lead Massachusetts physicians to reduce the scope of their practices in ways that have clearly affected patients' access to care
   - More than one-quarter of physicians in the sample, and half of orthopedic surgeons, obstetrician/gynecologists, and general surgeons, reported that they reduced the number of high-risk services or procedures they performed.
   - More than one-quarter of physicians also reported reducing the number of high-risk patients they saw; this was most common among obstetrician/gynecologists and those in surgical specialties.

4) The estimated annual cost to the health care system in Massachusetts of defensive medical practices is substantial. Among the eight subspecialties in this study, the estimated cost of defensively-motivated radiological imaging, laboratory testing, and consultations or referrals was $281 million in 2006 dollars. In addition, the cost of hospital admissions was estimated to be $1.1 billion, for a combined estimate of nearly $1.4 billion. The estimated cost of hospitalizations was determined by taking 13% of admissions to Massachusetts hospitals in 2007 and multiplying by the average cost of a hospitalization for Massachusetts using data from the American Hospital Association. The subspecialties targeted in the survey constitute only 46% of the physicians in Massachusetts, so the dollar estimates do not include tests and diagnostic procedures ordered by physicians in other specialties. The dollar estimates also do not include the costs of observation admissions to hospitals, specialty referrals and consultations, or unnecessary prescriptions. Therefore, it is likely that the total cost of defensive medicine in Massachusetts accounts for billions of dollars – a conclusion that would be consistent with several other previous studies.

In reviewing the data from physicians across the state, it is quite clear that defensive medicine is highly prevalent in Massachusetts. This study is the first that we are aware of to have quantified the extent to which radiological imaging, laboratory testing, specialty referrals, and hospital admissions are ordered for defensive reasons. Medical-legal reform has always been portrayed as a "doctor-driven" cause, one in which only the physician would benefit. These results clearly indicate, however, that the current medical liability environment is a serious burden on the entire health care system due to the substantial costs of defensive medical practices and negatively impacts patient care and access to physicians.

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Given these results, the MMS must aggressively advocate for a fundamental transformation of the current dysfunctional medical liability system through many diverse avenues to reduce the impact of defensive medicine on health care costs and to increase access to care. While efforts targeting tort reform have been demonstrated to attenuate the rate of increase in liability premiums, it is only through a fundamental transformation of the medical liability system that we can reduce the practice of defensive medicine.

There are multiple means to achieve such a fundamental transformation. The most comprehensive approach advocates investing in a baseline culture of safety at every health care enterprise fostering open communication (not the "blame game"), and analysis of every miss or near miss with loop closure to prevent recurrence followed by best-practice dissemination to improve patient safety universally. Further, when an adverse event occurs, there is full disclosure to the patient and, for avoidable injuries, there is an appropriate, sincere apology followed by an offer to provide fair and timely economic compensation. Disputes are resolved through mediation or arbitration. Litigation through the court system with its tremendous time and overhead inefficiencies and adversarial nature is used rarely as a last resort, a process which could potentially be improved with the establishment of health courts.

This comprehensive approach fundamentally transforms the system from a reactive to a proactive model, from an adversarial to an advocacy model, from a "culture of secrecy" to a system of open disclosure and full transparency, from a culture of "blame and deny" to apology and healing, from a culture which isolates involved patients and providers to one of supportive assistance, from a system which thwarts patient safety to one which embraces it, and from a system that encourages defensive medicine to one of evidence-based medicine. It is a system that compensates a greater number of patients much more quickly and equitably while dramatically reducing the costly overhead of litigation and restores trust and open communication among all parties.

This comprehensive approach is consistent with the recommendations in the Joint Commission's Report, "Healthcare at the Crossroads," and the Sorry Works! Coalition's reform agenda and has shown dramatic success in environments where it has been instituted (e.g., University of Michigan).

Another approach is to establish a system based on enterprise liability, a concept that would effectively remove physicians from the medical malpractice system. In other words, enterprise liability would retain the current malpractice system, but the physician would no longer be a named as defendant. Instead, the enterprise in which the physician practices would assume the liability for medical negligence. This policy would help to eliminate physician fear of medical liability and in turn the practice of defensive medicine, and would motivate organizational commitment to patient safety improvement initiatives.

As we approach a new era in American health care in which we will struggle to provide affordable quality care to every individual, we must explore new strategies to reduce cost and increase access. Through reducing the practice of defensive medicine our state health care system could dramatically reduce costs and simultaneously improve the quality of care and access to care.

Based on the findings, the committees believe that this issue has been the most pressing concern for Massachusetts physicians surveyed in the Medical Society's annual Membership Survey for five consecutive years, with the vast majority of members identifying it as one of their most critical priorities for the Society. Results from this study suggest that defensive medical practices fostered by the current liability climate have a substantial impact on the cost of health care. Moreover, our results have quantified the impact of liability concerns on patients' access to care, particularly for high-risk patients. Given the political sensitivity of both the cost of and access to care, such data should provide strong impetus for legislative initiatives promoting fundamental liability reform.

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## Appendix

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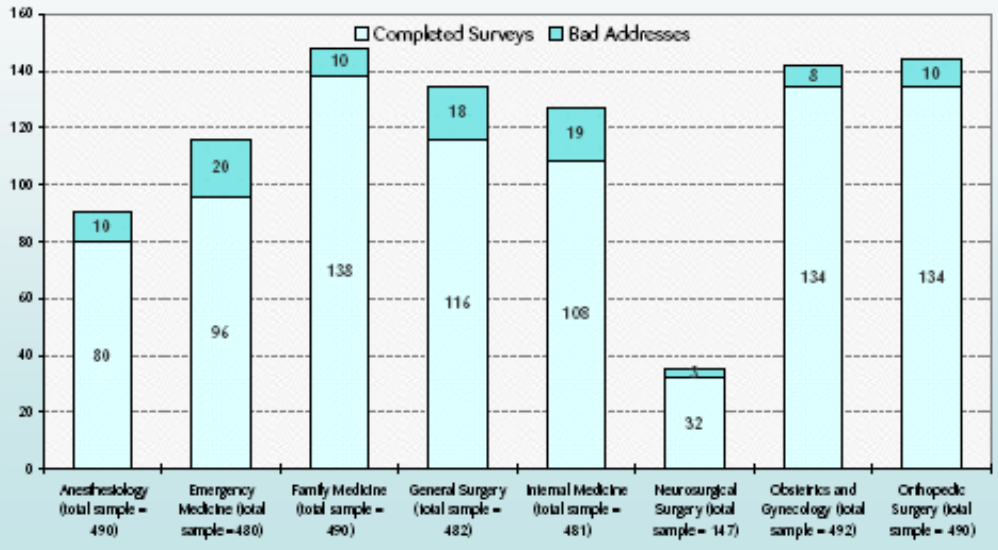
Figure 1.
Medical Liability Survey Responses by Specialty




* 23.6% does not include additional telephone surveys. Revised response rate is 27%.

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Figure 2. Demographic Profile

| | | |
|---|---|---|
| Gender | Male | 72% |
| | Female | 28% |
| Age | Under 35 | 7% |
| | 35-44 | 24% |
| | 45-54 | 30% |
| | 55-64 | 26% |
| | 65 and over | 13% |
| Employment Type | Self | 32% |
| | Hospital | 24% |
| | Medical School | 5% |
| | Medical Group | 32% |
| | Other | 7% |

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## Figure 3.
Demographic Profile (continued)

| | | |
|---|---|---|
| Direct Patient Care | Average Hours/Week | 40.3 |
| Practice Arrangement | Single Specialty Practice | 61% |
| | Multi-specialty Practice | 16% |
| | Academic/Teaching/Research | 16% |
| | Administration | 2% |
| | Other | 5% |

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## Figure 4.
Percent of X-rays ordered for defensive reasons

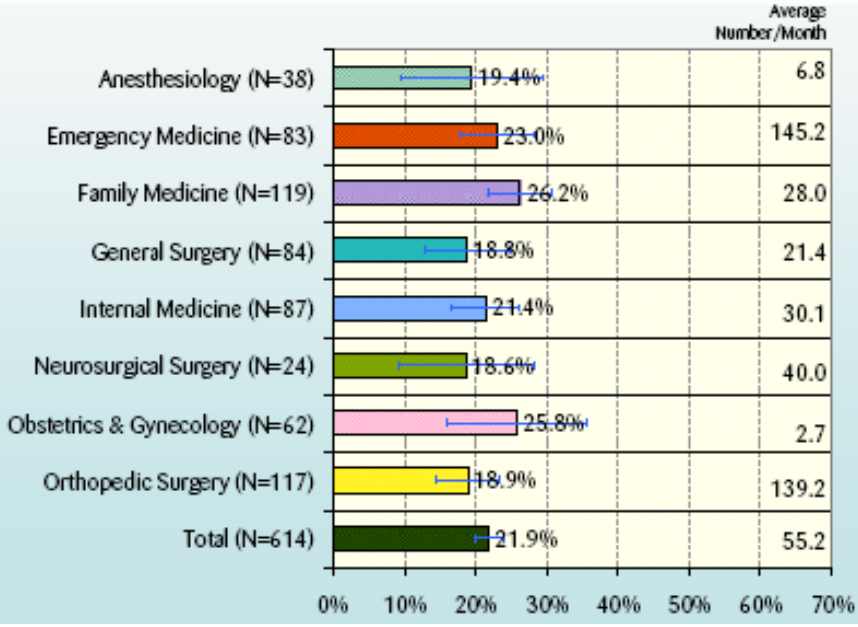

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Figure 5.
Percent of CT scans ordered for defensive reasons

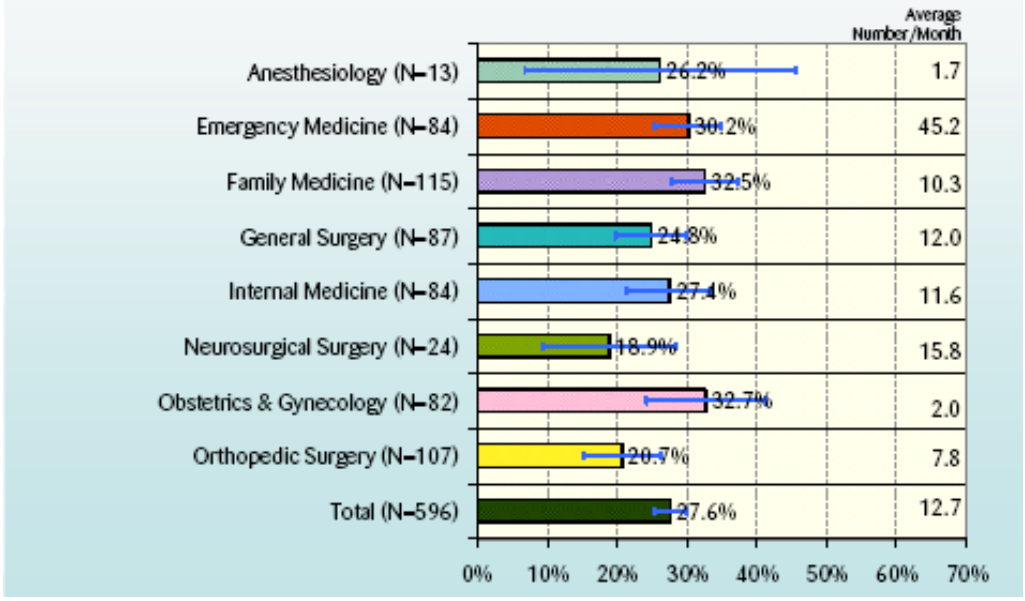


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Figure 6.
Percent of MRI studies ordered for defensive reasons

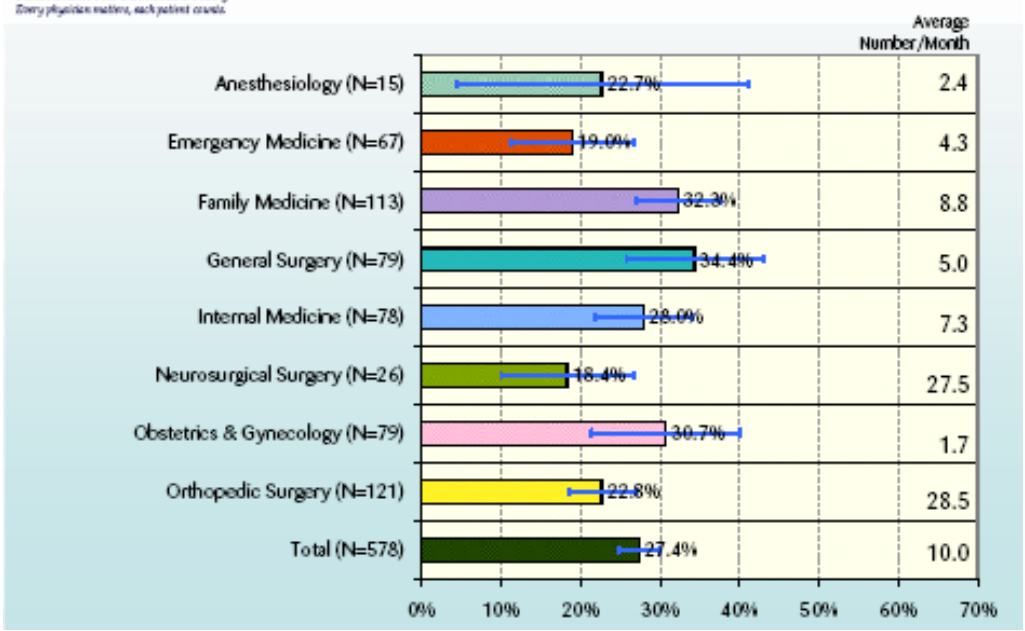

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Figure 7.
Percent of ultrasound studies ordered for defensive reasons

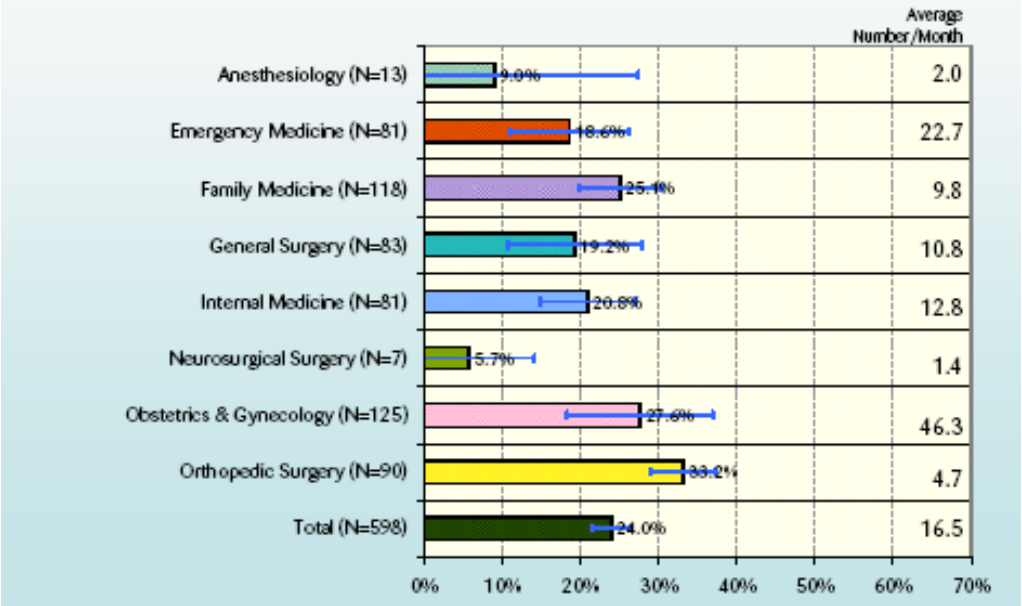


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Figure 8.
Percent of specialty referrals ordered for defensive reasons

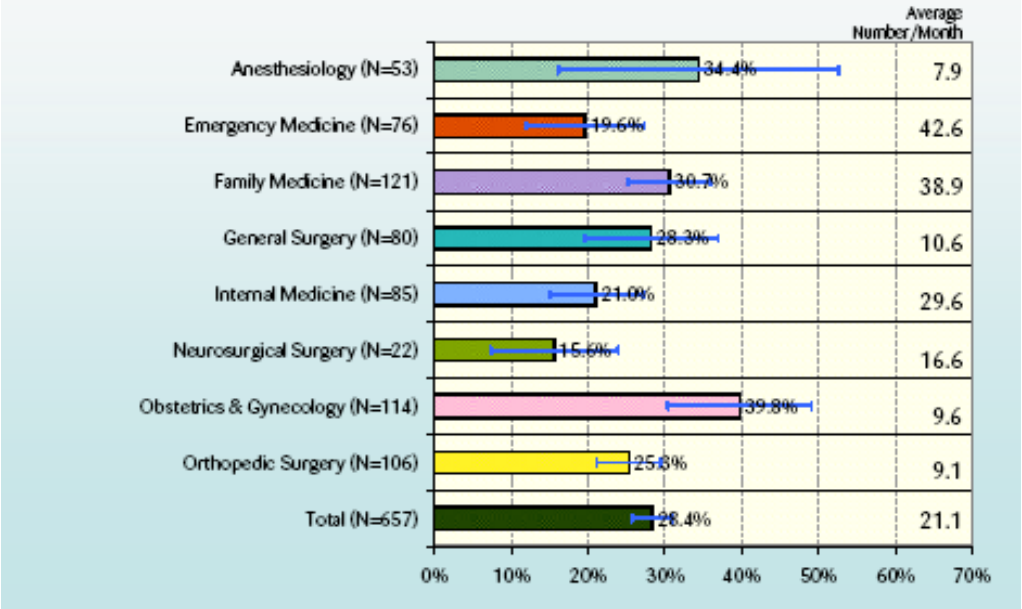

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Figure 9.

Percent of lab tests ordered for defensive reasons

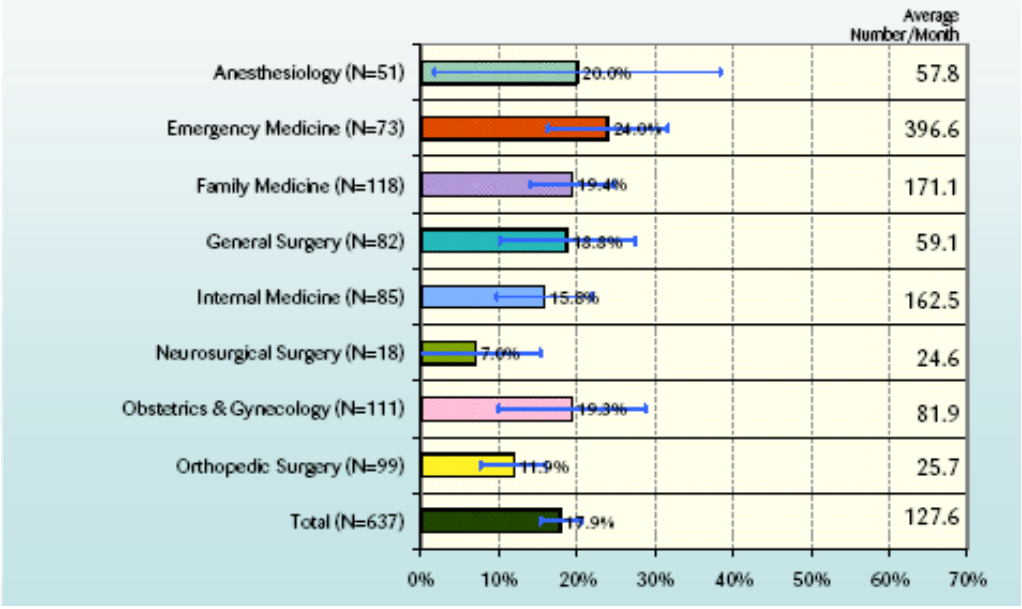


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Figure 10.

Percent of hospital admissions ordered for defensive reasons

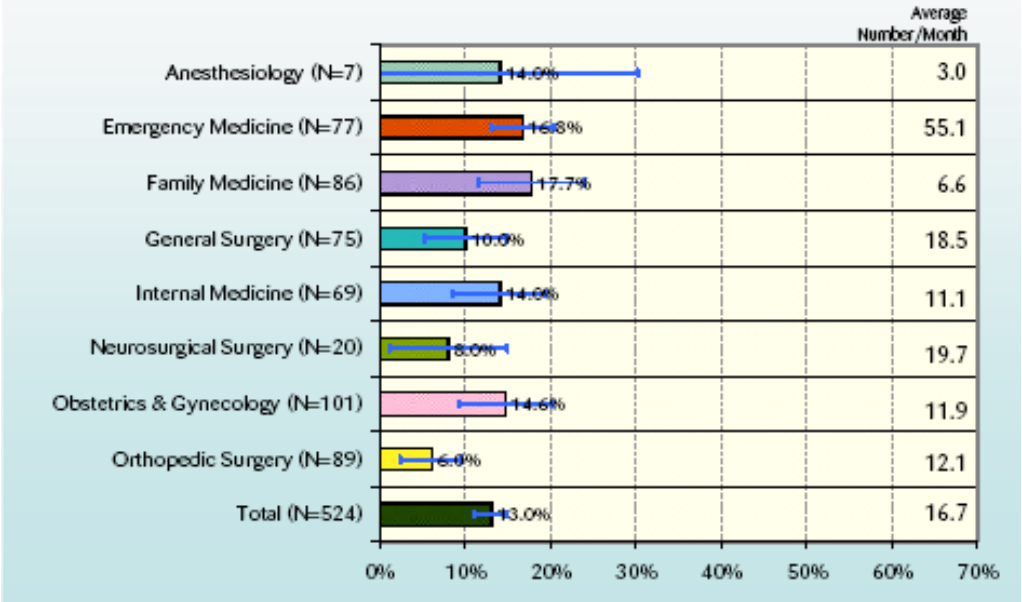

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Figure 11. Percent reducing number of high risk services or procedures over the past 5 years

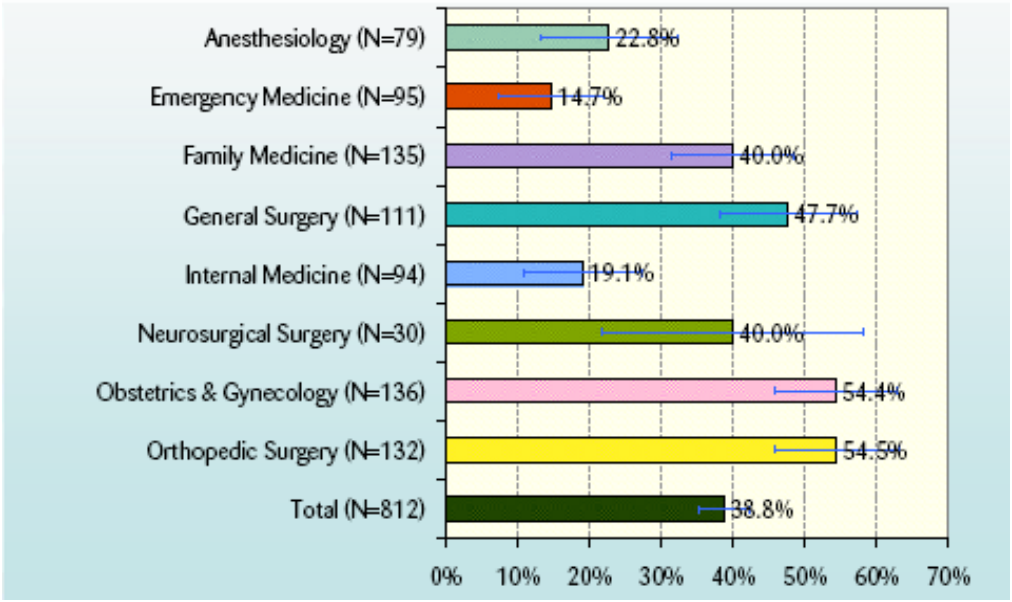


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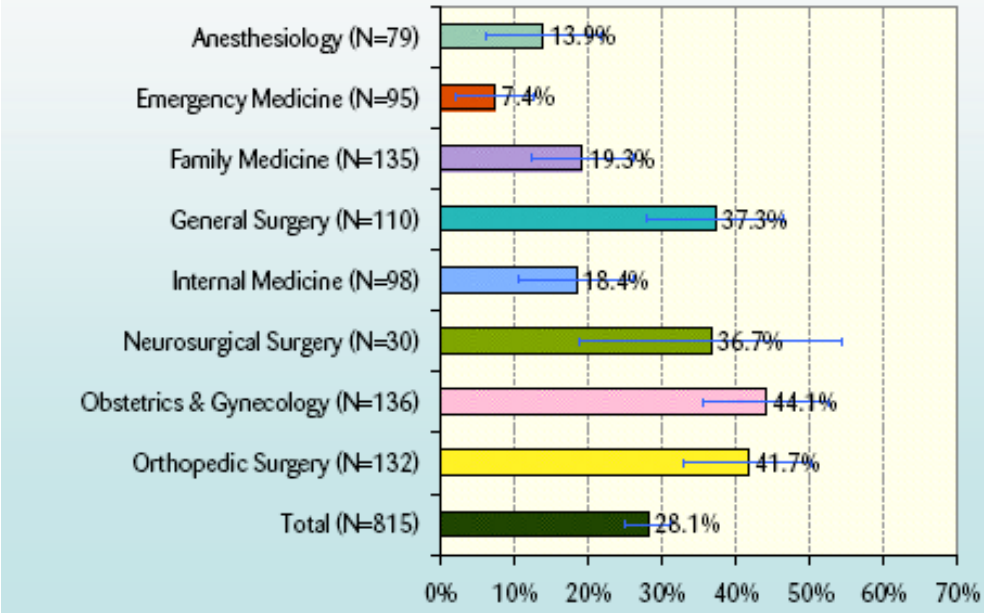
Figure 12. Percent reducing number of high risk patients over the past 5 years



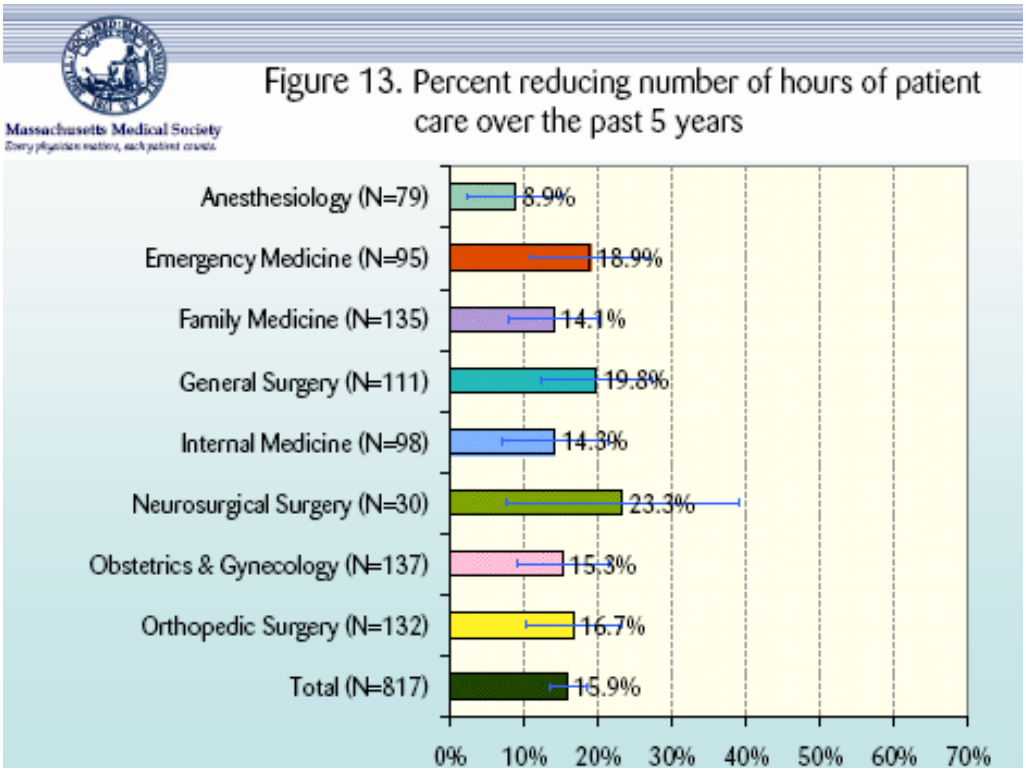

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Figure 13. Percent reducing number of hours of patient care over the past 5 years
Anesthesiology (N=79)
8.9%
Emergency Medicine (N=95)
18.9%
Family Medicine (N=135)
14.1%
General Surgery (N=111)
19.8%
Internal Medicine (N=98)
14.3%
Neurosurgical Surgery (N=30)
23.3%
Obstetrics & Gynecology (N=137)
15.3%
Orthopedic Surgery (N=132)
16.7%
Total (N=817)
15.9%
0%
10%
20%
30%
40%
50%
60%
70%

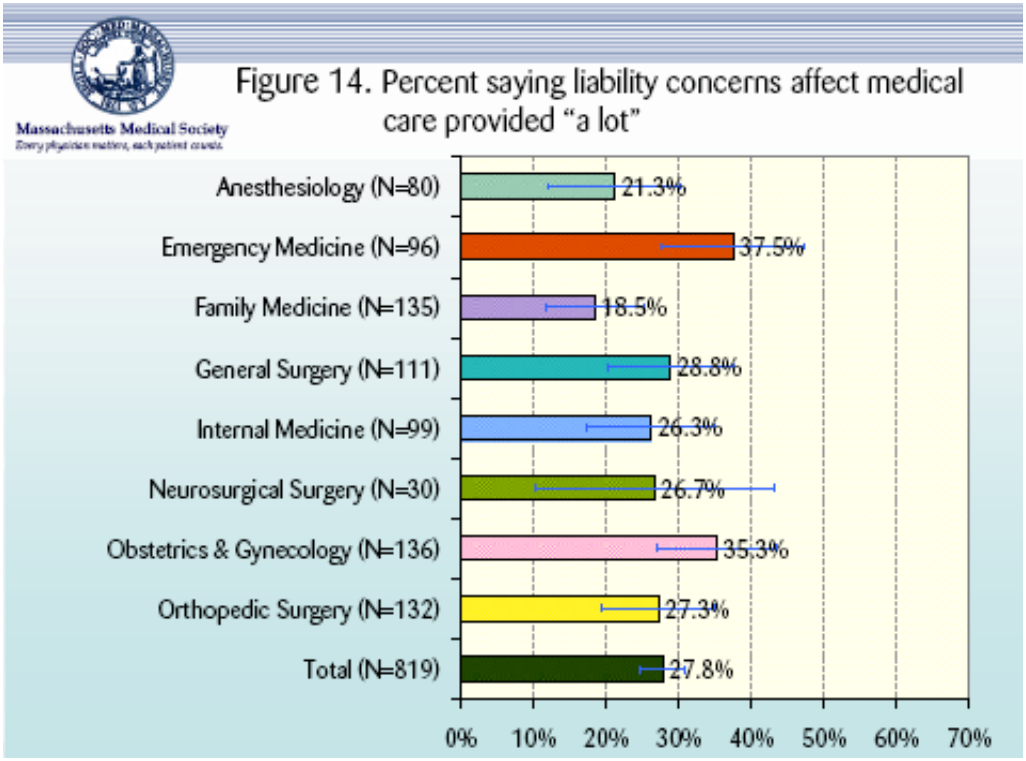
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Figure 14. Percent saying liability concerns affect medical care provided "a lot"
Anesthesiology (N=80)
21.3%
Emergency Medicine (N=96)
37.5%
Family Medicine (N=135)
18.5%
General Surgery (N=111)
28.8%
Internal Medicine (N=99)
26.3%
Neurosurgical Surgery (N=30)
26.7%
Obstetrics & Gynecology (N=136)
35.3%
Orthopedic Surgery (N=132)
27.3%
Total (N=819)
27.8%
0%
10%
20%
30%
40%
50%
60%
70%

Massachusetts Medical Society

Figure 15. Percent increasing liability coverage

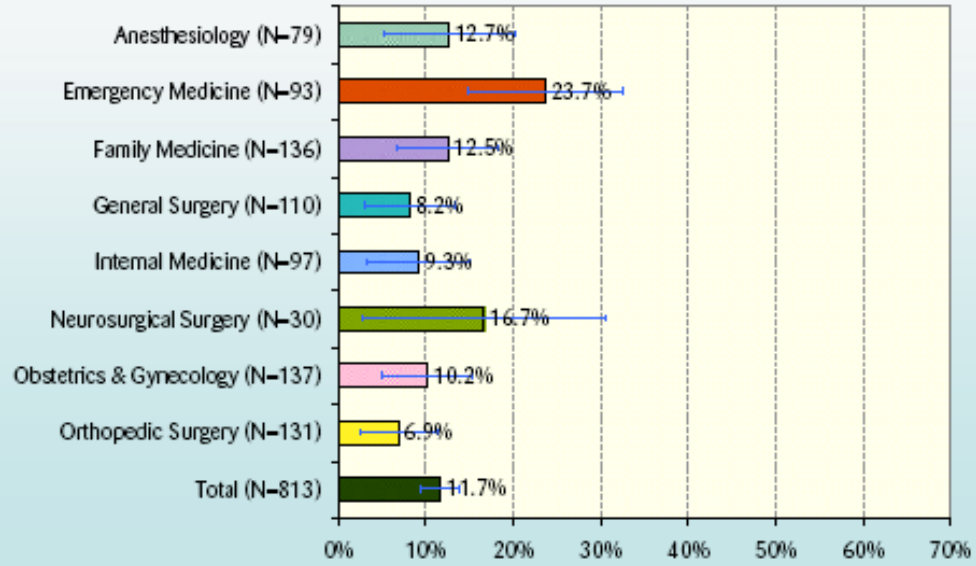


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Figure 16. Percent saying liability insurance premiums are "very burdensome"

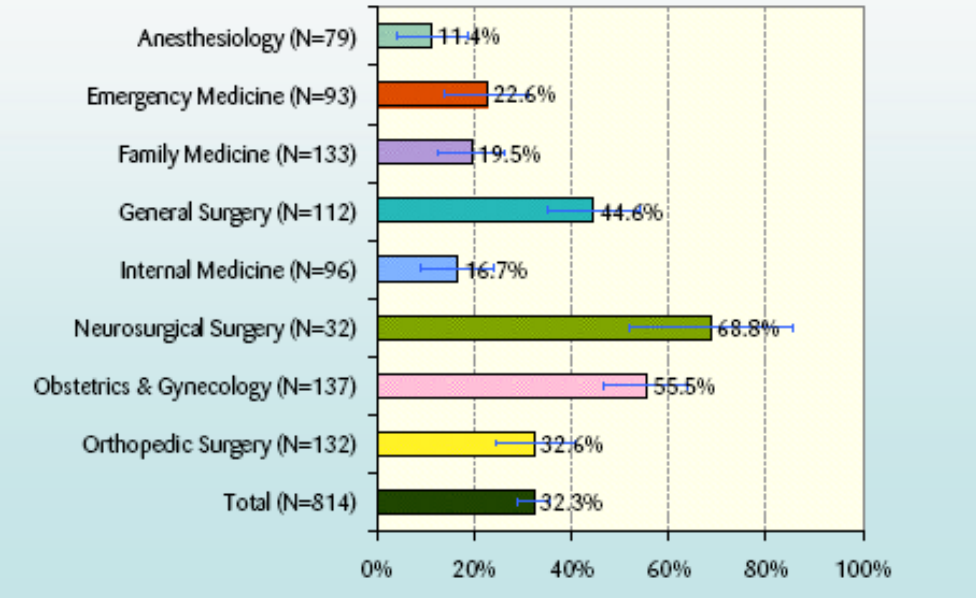

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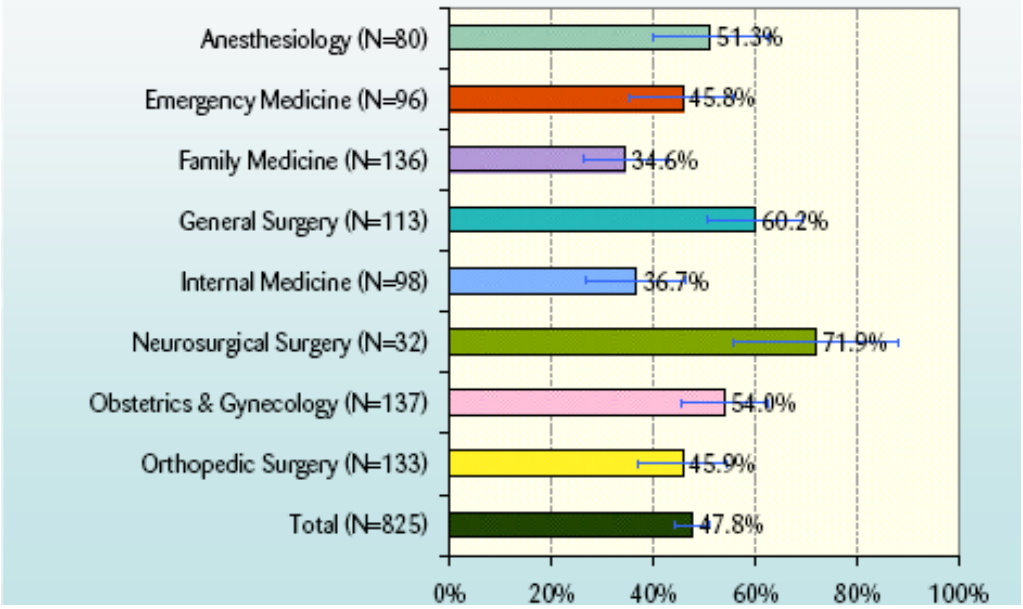
Figure 17. Percent "very concerned" about the impact of a lawsuit on their practice

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*Every physician matters, each patient counts.*

**Table 1. Estimated cost of selected defensive acts reported by Massachusetts physicians in eight specialty areas**

| | A | B | C | D |
|---|---|---|---|---|
| Test/ | % Defensive | Total # Tests/ Per Year[1] | Weighted Ave. Cost[2] | Total Cost of Defensive Practices (= A * B * C) |
| Xrays | 23.50% | 5,930,260 | $25.60 | $35,676,446 |
| CT scans | 30.70% | 1,704,087 | $90.83 | $47,518,141 |
| MRI | 26.70% | 1,111,237 | $252.58 | $74,940,554 |
| Ultrasound | 23.90% | 2,037,964 | $45.23 | $22,030,328 |
| Referrals | 27.00% | 3,431,910 | $67.15 | $62,222,237 |
| Lab tests | 21.20% | 19,866,746 | $9.15 | $38,537,514 |
| | | | | = $280,925,220 |

[1] Estimated using physician self-reports of typical monthly tests/procedures and extrapolating to the total population of Mass physicians in these eight specialty areas.

[2] Calculated using 2006 Massachusetts expenditure data from the Center for Medicaid Services.

***Addendum to Response Rate***

N=883 physicians completed either version of the survey: original=484, abbreviated=399. N=98 surveys were returned as undeliverable with no forwarding address and deemed ineligible, resulting in an overall response rate of 24.9%. Follow-up telephone calls were attempted with a random subsample of 150 non-respondents. Sixteen members of this subsample (10.6%) were determined to be ineligible due to practice location, employment status, or current licensure. Projecting this rate of ineligibility to the entire sample resulted in an adjusted response rate of 27.0%. By specialty, response rates were: anesthesiology, 18%; emergency medicine, 22%; family medicine, 30%; general surgery, 26%; internal medicine, 24%; neurological surgery, 24%; obstetrics/gynecology, 30%; and orthopedic surgery, 30%.