

Review

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Medical errors, malpractice, and defensive medicine: an ill-fated triad

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Abstract: For the first 180 years following the founding of the US, physicians occasionally were sued for medical malpractice. Allegations of negligence were errors of commission – i.e. the physician made a mistake by doing something wrong, usually mistreatment of a fracture or dislocation, a complication or death following a surgical procedure, prescribing the wrong medication, and after the discovery of the X-ray by Roentgen in 1895, causing radiation burns. In the mid twentieth century malpractice allegations slowly changed from errors of commission to errors of omission – i.e. the physician failed to do something right: almost always, failed to make a diagnosis. The number of malpractice lawsuits increased at a geometric rate beginning in the 1960s, and in the 1970s physicians began practicing defensive medicine, which lead physicians to order unnecessary radiology exams and tests. In the past 20 years the number of malpractice lawsuits has been decreasing, but the practice of defensive medicine has continued. Unnecessary exams and tests increase the likelihood of overdiagnosis and overtreatment, i.e. a new kind of error of commission.

Keywords: defensive medicine; diagnosis; malpractice lawsuits; medical errors; overdiagnosis; overtreatment.

We can chart our future clearly and wisely only when we know the past which has led to the present.

Adlai Stevenson [1]



The Beginning

1765: British legal scholar Sir William Blackstone publishes a compendium of legal principles entitled *Commentaries on the Laws of England* in which he refers to “*Mala Praxis*,” which he defines as “Neglect or unskillful management of a physician or surgeon” [2]. It is from this term that the modern word “malpractice” is derived.

1789: America’s 13 English Colonies join to become the USA.

1794: The first recorded medical malpractice lawsuit in the US takes place in Connecticut where a patient died of a surgical complication [3].

Nineteenth century: Malpractice lawsuits begin emerging as a “tempting new growth area for aggressive lawyers” [4]. Most malpractice lawsuits are related to errors in treatment of fractures, dislocations, and amputations [5].

1895 through first half of twentieth century: Almost immediately following Roentgen’s discovery of the X-ray in 1895, radiographs become one of the nation’s most

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prolific sources for malpractice actions. During the first six decades of the twentieth century, virtually all malpractice lawsuits allege medical errors, i.e. errors of *commission*: the doctor does something wrong, such as causing injuries due to too much radiation, complications of surgical and non-surgical medical treatment and failure to properly interpret radiographic films, cardiac and other laboratory test results [4]. As the 1950s unfold, physicians' errors slowly undergo a transition from errors of *commission* to errors of *omission*, i.e. the doctor fails to do something right [5]. In the late 1960s and early 1970s, the number of malpractice lawsuits begins to surge, and the nature of malpractice allegations begin to change.

Medical negligence evolves from errors of commission to errors of omission: the malpractice crisis of the 1970s

Analysis of medical malpractice lawsuits in which the state supreme and appellate court decisions were rendered between 1794 and 1956 revealed sporadic cases focusing on radiographs not being ordered to diagnose fractures, but none alleging delayed diagnosis of neoplasm or other serious medical problems [3]. This is in stark contrast to a survey two decades later that identified an emerging malpractice allegation: lawsuits alleging patient injury resulting from the referring physician's failure to order radiologic studies [6]. From the early 1970s to the late 1980s, the number of lawsuits alleging failure to diagnose cancer increased 50% [7]. An American College of Radiology (ACR) Bulletin article in 1985 disclosed that missed fractures or dislocations were the leading cause of radiologic lawsuits in the US, but claims of failure to diagnose cancer were second in frequency [8]. Allegations against non-radiologic physicians for failure to order a radiologic exam doubled in the greater Chicago area between 1982 and 1994 [9]. A 1991 study disclosed that 75% of all adverse events due to negligence committed in New York hospitals in the late 1980s involved diagnostic mishaps, usually the result of a physician's failure to do something [10]. At approximately the same time, a report of malpractice claims involving government hospitals disclosed that a missed diagnosis of cancer had become the most common claim against radiologists, accounting for 30% of all cases [11]. Simply put, the nature of allegations of negligence against physicians underwent a major transformation: instead of being sued for doing something

wrong, they began being sued for failing to do something right.

The number of medical malpractice lawsuits increased 300% between 1965 and 1970 [12]. Jury verdicts and out of court settlements awarding millions of dollars to plaintiffs because of physicians' negligence in failing to order radiologic imaging and other tests began increasing in geometric fashion in the 1970s. The experience of having been sued in the past and the fear of being sued in the future for these types of errors of omission were a powerful motivation for physicians to order more tests. Their motivation to keep ordering more was further strengthened by the public's almost insatiable appetite in demanding radiologic and non-radiologic tests for screening, minor symptoms, and all varieties of medical illness. The threat of liability began to strongly influence the day-to-day practice of virtually all physicians [12].

In 1969, the Subcommittee on Executive Reorganization of the US Senate released a 1060-page report that disclosed that the "growing menace to physicians and the American public of malpractice litigation is raising premiums for malpractice insurance coverage which in turn is forcing some insurance companies to go out of business and raising medical costs in this nation.... The report concluded that "the malpractice situation threatens to become a national crisis, forcing some physicians to leave the practice of medicine" [13].

The emergence and cost of defensive medicine

Against the background of rising incidence of malpractice litigation, the more frequent use of radiography began drawing considerable attention. A 1971 article by radiologists at the University of Washington pointed out that the increasing use of X-ray evaluation of head injuries was adding to the cost of medical care and producing diminishing yields of useful information. The researchers concluded that much of this increasing utilization was due to "medicolegal reasons," and could raise healthcare costs by \$15 million annually [14]. Two years later, the US Department of Health, Education, and Welfare reported that the cost of medical and hospital malpractice liability insurance was "skyrocketing" during the 1960s and early 1970s average premiums paid by general surgeons rose 950%, by other physicians 541%, and by hospitals 263%. The report concluded that physicians' high level of fear of being sued was forcing them to over-utilize healthcare resources in the interest

of “*defensive medicine* ...which is improper and abusive to patients” [15].

In a 1974 lecture, the General Counsel of the AMA pointed out that “the only way to avoid malpractice litigation is not performing surgery, not prescribing drugs, not touching patients, and praying a lot.” He went on to say, however, that he cannot recommend such drastic measures, but instead, he would recommend “defensive medicine.” The Counsel explained that many physicians order extra and unnecessary tests solely because of fear of malpractice claims which he termed to be “positive defensive medicine.” He added that “some physicians refuse to perform essential but hazardous procedures solely because of that fear, and this was considered to be “negative defensive medicine.” He concluded that “defensive medicine” is like “defensive driving,” where one foresees probable hazards and automatically takes appropriate action to reduce the risk of an unfortunate occurrence [16].

A physician writing in JAMA asserted that the fear of malpractice is a major problem, and unless physicians order simple tests and x-rays, patients are “likely to perceive our care as substandard, and malpractice lawyers can make a physician seem utterly careless” [17]. Another commentator predicted that because cancer is the condition most frequently cited in failure-to-diagnose claims and increasing, more pressure will be placed on physicians to increase ordering so as to avoid being sued [18].

What has been and continues to be the cost of defensive medicine? There are no known exact figures, but there are many estimates. A decade ago a Federal Government official estimated the cost of defensive medicine to be \$70 billion to \$126 billion annually [19]. Other estimates range from \$56 billion [20] to \$162 billion annually [21].

Defensive medicine and the failure to diagnose

“Failure to Diagnose Is the Number One Allegation In Liability Lawsuits” was the headline in an article in the *American Medical News* in March 2006. The article identified physicians’ “failure to diagnose” as the “most common allegation in medical liability lawsuits,” and it quoted an executive of a large malpractice insurance company as saying it was the most common allegation of malpractice in lawsuits involving 75% of radiologists, 64% of pediatricians, 54% of family medicine physicians, 51% of internal medicine physicians, 20% of general surgeons, 16% of orthopedic surgeons, and 15% of obstetrician-gynecologists [22].

A survey of high-risk specialists in Pennsylvania revealed that 90% practice defensive medicine. Over-ordering of diagnostic tests such as CT, MRI, and radiography that were not clinically necessary occurred among more than half of emergency physicians, orthopedic surgeons, and neurosurgeons.... Radiologists reported referring patients with ambiguous mammograms for surgical biopsy, and ordering close follow-up repeat imaging of low risk abnormalities on chest radiographs [23].

Another survey of more than 1200 physicians across a range of all medical specialties revealed similar findings: 91% ordered more tests and procedures than needed in order to protect themselves from malpractice suits [24]. A legal researcher writing in the University of Chicago Law Review analyzed malpractice litigation data and concluded that most physicians would rather err on the side of overtreating patients, because of the perceived consequences of ordering unnecessary medical tests and performing unnecessary treatment are far less severe than the consequences of failing to do so [25].

Defensive medicine and medical error rates

A half-century ago a radiology researcher shocked the medical community by revealing a surprising degree of inaccuracy in clinical, laboratory, and radiologic practice. He found a 34% error rate in the diagnosis of myocardial infarction, 85% disagreement among internists in diagnosing emphysema, 93% disagreement among pediatricians in determining malnutrition in children, a 20% error rate in the interpretation of electrocardiograms, a 28% error rate in clinical laboratory tests, and a 30% error rate in the interpretation of chest radiographs [26, 27]. Other investigators reported similar data: large autopsy studies uncovered frequent clinical errors and missed diagnoses, with error rates as high as 47% [28, 29].

In 1999, the Institute of Medicine (IOM) published a landmark report that drew worldwide attention: medical care was responsible for up to 98,000 deaths annually in the US [30]. Seventeen years later, Johns Hopkins University researchers Makary and Daniel estimated that more than 250,000 deaths occur every year in the US due to medical errors [31]. The accuracy of these figures has been questioned and, in fact, no one knows the exact number of deaths per year caused by medical errors. Nevertheless, one thing is certain: from the time that defensive medicine became part of medical practice 45 years ago, medical errors have increased substantially, while during the same

period the number of medical malpractice lawsuits filed annually has decreased.

Defensive medicine and overdiagnosis: resurgence of errors of commission?

The figurative malpractice-litigation-pendulum that swung from allegations of physicians' negligence due to errors of *commission*, to physicians' negligence due to errors of *omission*, caused a surge in lawsuits in the 1970s that led to the birth of defensive medicine. Ironically, however, the mantra of defensive medicine is "do something, not nothing; do more, not less." "Intervention is the capstone of modern medicine; it simply self-defeating to argue that it is better to do nothing than something," heralded one observer [32]. "The United States has created the perfect storm for overutilization of healthcare," observed others [33].

Thus, as defensive medicine began to be practiced across the entire spectrum of medical services among America's physicians, the medical-practice pendulum began swinging away from errors of omission, and back toward errors of commission – but a new and different kind of error of commission, known as overdiagnosis [34]. As already discussed, *failure to order* diagnostic tests and initiate appropriate treatment can injure patients, but the opposite is true as well: *ordering too many tests* and *administering too much treatment* can be problematic to patients because of *overdiagnosis*. Risks of tests and treatments can outweigh the benefits [35]. False positives can lead to serious consequences such as unnecessary surgery and medical regimens [36]. Overdiagnosis of a disease that would never cause symptoms or death occurs with breast cancer associated with mammography, thyroid cancer associated with ultrasound screening, melanoma associated with widespread screening for skin cancer, lung cancer associated with low dose chest CT screening, prostate cancer associated with prostate-specific antigen testing, abdominal aortic aneurysm associated with ultrasound, and other diseases for which screening is performed [37, 38].

A recent survey disclosed that 42% of primary care physicians acknowledge that patients within their own practices receive too much medical care, yet 76% identify malpractice concerns as the major reason causing them to practice more aggressively. Eighty percent of physicians think they can easily be sued for failing to order a test that

was indicated, but very few think they could be sued for ordering a test that was not indicated. Simply put, physicians believe they are exposed to legal punishment *if they do less* [39].

A recently published comprehensive study of physicians' expectations of the benefits and harms of medical intervention is very informative [40]:

Clinicians rarely had accurate expectations of benefits and harms of intervention....they more often overestimated rather than estimated benefits, and underestimated rather than overestimated harms.... This supports the existence of therapeutic illusion (an unjustified enthusiasm for treatment on the part of both doctors and patients.

In a *New York Times* OP Ed piece entitled *More Treatment, More Mistakes*, neurosurgeon Sanjay Gupta wrote the following [41]:

Here lies a stunning irony. Defensive medicine is rooted in the goal of avoiding mistakes. But each additional procedure or test, no matter how cautiously performed, injects a fresh possibility of error. CT and MRI scans can lead to false positives and unnecessary operations, which carry the risk of complications like infections and bleeding. The more medications the patients are prescribed, the more likely they are to overdose or suffer an allergic reaction. Even routine operations like gallbladder removals require anesthesia, which can increase the risk of heart attack and stroke.... More procedures, more testing, and more treatment is not always better.... The delivery of medical care is to do as *much nothing as possible*. *First, do no harm*.

Other observations are equally thought provoking: "Do as much as possible *for* the patient and as little as possible *to* the patient [42]; Medicine is science of uncertainty and art of probability: ironically only uncertainty is a sure thing, certainty is an illusion [43]. Three recently published books contain similar perspectives and detailed data [44–46].

Malpractice litigation decreasing

The threat of being sued for malpractice that was the major factor in instigating defensive medicine has lessened over the past decade. Malpractice lawsuits have decreased in virtually every state. "Claims frequency is at historic lows; the malpractice environment today for doctors is probably the best in the last 40 years," according to a prominent medical liability consultant [47]. To some extent this is due to better medical diagnosis and treatment, but to an apparent greater extent it is due to the high cost of undertaking and prosecuting medical malpractice litigation. A

recent law review article of medical malpractice litigation in the US points out that insufficient damages and high litigation expenses are the primary reasons for many attorneys to reject cases. Because of the contingency system, attorneys have to cover the legal expenses of court costs and procedures and payment of expert witnesses, and surveys disclose that many will not accept cases unless expected damages are at least \$250,000. For a case in which winning is less certain, most attorneys require minimum expected damages of \$500,000 [48].

Defensive medicine: here today, still here tomorrow?

For the first 180 years following the founding of the USA, doctors were occasionally sued for malpractice, generating displeasure, grumbling, complaints, uneasiness, but relative quiet acceptance. The malpractice maelstrom of the 1970s changed everything. The number of malpractice suits started rising in geometric fashion, more frivolous lawsuits were filed, malpractice insurance premiums started rising, and a crisis was created that gave birth to defensive medicine, anticipating that it would eliminate or at least markedly reduce malpractice lawsuits. Contrary to expectation, as the number of malpractice lawsuits decreased, medical errors increased. One would expect that as malpractice lawsuits decreased, defensive medicine would also decrease, but there is no indication that it has and, in my opinion, it will not. Although it was the malpractice crisis of the 1970s that gave birth to defensive medicine, defensive medicine seems to have perpetuated itself on its own, independent of the changes in the malpractice environment. Defensive medicine remains as rampant today as it was 45 years ago. It has been passed down from one generation of physicians to another generation to yet another generation. Defensive medicine is introduced early in the education of young physicians. A survey of 4th year medical students and 3rd year residents at a prominent university academic medical center found that 94% of students and 96% of residents have seen or experienced examples of defensive medicine in their clinical training. The survey found that physicians' provision of additional services that are of little clinical value to the patient are particularly common. Ninety two percent of the students and ninety six percent of residents witnessed such behaviors, and 34% of the students and 43% of residents saw physicians avoid providing services to patients for fear of medical liability risk [49, 50].

Can defensive medicine be ended, and if so how? A recent survey shows that 77% of responding physicians agree that substantial tort reform would cause them to stop practicing defensive medicine [51]. However, there is no data to support this contention. Another survey seemed to disclose that greater numbers of tort reform laws were associated with a reduction in radiography orders [52].

Defensive use of technology is self-reinforcing. Ironically, defensive medicine may be counterproductive and actually increase malpractice risk. The more doctors order tests without predictive values, the more likely such practices are to become the legal standard of care [53]. Second and third generation-physicians following the 1970s malpractice crisis have been inculcated and trained in an environment that is imbued with defensive medicine. Whereas the fear of malpractice litigation unequivocally gave birth to defensive medicine, the practice of defensive medicine continues to operate on a life of its own.

Although physicians are less worried today about being sued than in the past, nevertheless they remain concerned about being held accountable for errors they commit. State medical licensing boards often initiate disciplinary proceedings against physicians if payment by settlement is agreed upon or jury verdict because of physician error. All such payments must legally be reported to the National Practitioner Data Bank, physicians' privileges in a hospital may become restricted and the physicians' ability to continue as a provider in a given managed care organization might be jeopardized; committing an error can lead to censure or increased surveillance, colleagues may regard them as incompetent or careless, and no physician wants to be criticized at a peer review conference. It is not just the fear of liability, but more often the fear of being perceived as a lesser-quality physician that supports the survival of defensive medicine. The pattern to over-test becomes the standard of care and the progression of doing the unnecessary becomes self-promulgating. Thanks to defensive medicine, errors of omission (failure to diagnose) have clearly declined; however, unfortunately, errors of commission (overdiagnosis and overtreatment) appear to be on the rise.

In a 1999 Commentary, *The Lancet's* editor Robert Horton wrote the following [54]:

The current prevailing culture regarding medical errors – naming, shaming, suspending, and punishing colleagues must stop The issue is not whether errors occur, but what doctors learn from them.

To what degree, if any, the medical community has responded favorably to Horton's exhortation is not known, but his words are as cogent and instructive today as they were 18 years ago.

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