Radiologic Errors and Malpractice: A Blurry Distinction

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Medical error: Failure of a planned action to be completed as intended [1].

Medical malpractice: Unreasonable lack of skill. Failure of a physician...to exercise that degree of skill and learning commonly applied under all the circumstances in the community by the average prudent reputable physician with the result of injury...to the [patient] [2].

Approximately 4% of radiologic interpretations rendered by radiologists in their daily practice contain errors [3]. Fortunately, most of these errors are of such minor degree, or if serious are found and corrected with sufficient promptness, that they do not cause injury to patients. Nevertheless, many radiologic errors do harm patients and, as a result, medical malpractice lawsuits are generated. If it is determined by a judge or jury that the diagnostic error committed by a defendant–radiologist was the result of negligence, in other words, a breach of the standard of medical care, the radiologist will be held liable and compensation will be awarded to the plaintiff–patient. On the other hand, if the defendant’s radiologic error is found not to be due to negligence, litigation is terminated without compensation. It follows then that certain radiologic errors result from radiologists’ negligent conduct, and others do not. One may then logically ask whether these two kinds of radiologic errors, those that constitute negligence and those that do not, can be distinguished and if so, how? This article will attempt to seek an answer to these questions.

Malpractice Defined

In order for a radiologist or any other physician to be found liable for—that is, “guilty” of—medical malpractice, four elements must be established. There must be a physician–patient relationship [4, 5], the radiologist must have committed a negligent act (a breach of the standard of care), the negligent act must have caused injury to the plaintiff–patient (proximate cause) [6], and the patient must have sustained an injury. Except in unusual circumstances, three of these four elements—the physician–patient relationship, proximate cause, and patient injury—are not contentious issues in a lawsuit. The remaining allegation that must be proven for a plaintiff to succeed in a malpractice lawsuit, the one claiming that the defendant’s conduct has breached the standard of care, is the most frequently contested. Inasmuch as nearly 75% of all medical malpractice lawsuits lodged against diagnostic radiologists allege negligence related to errors in diagnosis [7], our discussion here will be limited to the relationship between radiologic errors and malpractice.

American law derives from three sources: constitutional law, generated by federal and state constitutions and their subsequent interpretations by the courts; statutory law, rules and regulations enacted by state and federal legislatures; and the “common law,” based on judicial decisions that serve as precedents on which courts base future decisions. The common law is a legacy of America’s early English colonists [8]. It is the product of a continuum of state appellate and supreme court decisions and thus is constantly evolving.

At the conclusion of a medical malpractice trial, the “trier of fact” (usually the jury, occasionally the judge) determines whether the conduct of the defendant–physician constituted negligence. Before deliberation, jurors are instructed on the law by the presiding judge. The judge explains that medical negligence is a breach by the defendant–physician of the standard of medical care to which the physician is held. It is true, of course, that more than 90% of medical malpractice law-
suits are not resolved at trial but rather are settled before trial by the opposing parties and their respective attorneys and insurance advisors. Settlements are based on predictions of what a jury would likely decide.

Judicial instructions defining the standard of medical care are formulated from myriad previously published state appeals court decisions—that is, the common law. Appeals court decisions are usually written in precise and eloquent language by learned men and women who have earned the title, “Justice.” Because it is these Justices, writing in the name of “The Court,” who define the standard of medical care and what constitutes a breach of that standard, we shall review portions of a number of relevant appeals court decisions rendered over the past 175 years to see whether we can gain, by analyzing the language used, a clear-cut understanding of the distinction between radiologic errors and malpractice.

Decisions of Appeals Courts: The Common Law

One of the earliest state supreme court decisions in the United States that dealt with a physician’s standard of care was rendered in Connecticut in 1832. The court focused on the word “ordinary” [9]:

A physician and surgeon, in the performance of his professional duties, is liable for injuries resulting from the want of ordinary diligence, care and skill..."Ordinary" means usual, common....If in the performance of any operation there was a want of ordinary diligence, care, and skill, or if there was carelessness, then the defendant—physician is liable.

Twenty-one years later, the Pennsylvania Supreme Court ruled similarly, emphasizing the word “reasonable,” in addition to “ordinary” [10]:

The implied contract of a physician or surgeon is not to care...but to treat the case with diligence and skill. The question is...whether the doctor had employed such skill and diligence as are ordinarily exercised in his profession....The rule [is] to be reasonable....The law demands...not extraordinary skill such as belongs only to a few men of rare genius and endowments, but that degree which ordinarily characterizes the profession.

In 1860, the Supreme Court of Illinois issued its first decision on what constitutes the standard of care of a medical physician. The lawsuit claimed that a physician, who incidentally was represented by a then-practicing attorney named Abraham Lincoln, had been negligent for improperly applying a cast to treat a wrist fracture that had been sustained by the plaintiff. The court declared [11]:

When a person assumes the profession of physician and surgeon, he must...be held to employ a reasonable amount of skill and care. For anything short of that degree of skill in his practice, the law will hold him responsible for any injury which may result from its absence. While he is not required to possess the highest order of qualification, to which men attain, still he must possess and exercise that degree of skill which is ordinarily possessed by members of the profession. And whether the injury results from a want of skill or the want of its application, he will, in either case, be equally liable.

In the same year the Supreme Court of Georgia echoed the Illinois decision, albeit with somewhat different wording [12]:

Every person who enters into a learned profession undertakes to bring to the exercise of his profession a reasonable degree of care and skill. He does not undertake to use the highest possible degree of skill, for there may be persons who, for having enjoyed a better education and greater advantages, are possessed of greater skill in their profession; but he undertakes that he will bring a fair, reasonable, and competent degree of skill...He is not responsible for an error in judgment...if such error arises from the peculiar circumstance of the case, and not from the want of proper care or competent skill on his part.

Nearly a half-century later, 10 years after Roentgen’s discovery of X-rays, a state of New York appeals court issued an opinion as to what constitutes the standard of care of a medical physician. Although the lawsuit did not involve radiology, the court decision could have well applied to radiologic interpretation [13]:

The law requires a physician to possess the skill and learning which is possessed by the average member of the medical profession...and to apply that skill and learning with ordinary reasonable care. He is not liable for a mere error in judgment, provided he does what he thinks is best after a careful examination. He does not guarantee a good result.

In 1944, the Nebraska Supreme Court rendered a decision regarding standard of care that also could have been applicable to radiologists [14]:

A patient is entitled to an ordinary, careful, and thorough examination...and, while he does not insure the correctness of his diagnosis, a physician or surgeon is required to use reasonable skill and care....If he omits to inform himself, by proper examination, as to the facts and circumstances and injury results, he is not relieved of liability of errors in judgment....It is the duty of a physician or surgeon in diagnosing a case to use due diligence in ascertaining all available facts and collecting data essential to a proper diagnosis.

The Minnesota Supreme Court in 1976 published its perspective [15]:

Negligence cannot be found when the facts show no more than an error in diagnosis [which]...may be the result of an error in judgment rather than negligence....A physician is not responsible for the consequences of an honest mistake or error in judgment in his diagnosis.

Five years later, an Illinois appellate court issued this commentary [16]:

The plaintiff must demonstrate what the average reasonable physician in good standing...would have done in a similar case. Proof of a bad result or a mishap is not evidence of lack of skill or negligence. If a doctor has given a plaintiff the benefit of his best judgment, assuming that judgment to be equal to that ordinarily used by reasonably well-qualified doctors in similar cases, he is not liable for negligence, even if that judgment is erroneous....Plaintiff has established that other physicians may have handled her case differently, but we find that a reasonably well-qualified doctor might well have proceeded in the same manner as defendant.
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and diligence would not have done under like or similar conditions or circumstances, or by the failure or omission to do some particular thing that such a physician would have done under like or similar conditions or circumstances. The standard of care for the physician...should be that of a reasonable [physician].

A decade ago the Illinois Supreme Court refined its opinions as follows [21]:

The term “standard of care” in common law is generally understood to mean a measure or rule against which a defendant’s conduct is to be measured....The established standard of care for all professionals is stated as use of the same degree of knowledge, skill, and ability as an ordinarily careful professional would exercise under similar circumstances.

The Wisconsin Court Addresses Radiologic Errors

In none of the decisions previously excerpted in this article did the respective courts deal specifically with radiologic errors. A 1997 Wisconsin appellate court decision is unique in having done so, however. In that case a Wisconsin radiologist had been sued for malpractice twice, once for missing a fracture of the proximal tibia and again for missing a carcinoma of the colon on a lower gastrointestinal examination. Both lawsuits were settled with payment made to the plaintiff-patients. Soon thereafter, the Wisconsin Department of Regulation and Licensing instituted legal action to suspend or revoke the radiologist’s medical license for conduct that it considered to be negligent. A lower court exonerated the radiologist of the charge of negligence and the department appealed to the state’s appellate court. The higher court upheld the lower court’s decision in favor of the radiologist in a written decision that included a detailed analysis of radiologic errors [22]:

A radiologist may review an X-ray using the degree of care of a reasonable radiologist but fail to detect an abnormality that, on average, would have been found....Radiologists simply cannot detect all abnormalities on all X-rays.... Errors in perception occur when a radiologist diligently reviews an X-ray, following all the proper techniques and fails to perceive an abnormality which in retrospect, is apparent....Several reasons for errors in perception include 1) humans differ in the perceptions of a single item, 2) the finding of one object may cause a physician to overlook another abnormality, and 3) the patient’s body structure may make an abnormality more difficult to detect....

Errors in perception by radiologists viewing X-rays occur in the absence of negligence. The medical literature...states that in controlled tests, radiologists miss a certain percentage of abnormalities despite using extraordinary efforts....There is no evidence in the record...to establish that [the defendant–radiologist’s] errors in having failed to detect those defects came as a result of his failure to conform to the accepted standard of care in the field of radiology...This record is devoid of any evidence or suggestion that [the defendant–radiologist] is anything but a fully competent, careful, and conscientious radiologist or that he was not competent, careful, and conscientious in his examination of the affected radiographs in this case.

What Is Meant by “Reasonable”? “Ordinary”? “Average”?

One, two, or all three of the following words—“ordinary,” “reasonable,” and “average”—appear in almost every appeals court decision that deals with the standard of care for physicians. Defining the exact meaning of these three words might seem simple but it is not. Webster’s dictionary [23] defines “reasonable” as “not extreme, not excessive, moderate, not demanding too much, possessing good sound judgment, well balanced, sensible.” “Ordinary” is defined as “common, lacking in excellence, not distinguished in any way from others, not above but rather below average, somewhat inferior level of quality.” “Average” is defined as “typical, usual, a representative type, mediocre, run-of-the-mill, so-so, midway between extremes, lack of distinction.”

The Wisconsin appellate court decision referred to previously that dealt with radiologic errors discussed the meaning of the words “average” and “reasonable” as follows [22]:

“Average physician” is not synonymous with “reasonable physician.” The fal-
lacy in the “average” formulation is that it bears no intrinsic relation to what is reasonable....Those that have less than...average skill may still be competent and qualified. Half of the physicians of America do not automatically become negligent in practicing medicine...merely because their skill is less than the professional average.

Reasonable care cannot be established by determining whether a physician provided care above or below the mean of the medical profession but rather must be determined by assessing whether a patient received the standard of care that he or she might reasonably expect from that practitioner, with due regard for the state of medical science at the time of treatment....

In determining whether a physician was negligent, the question is not whether a reasonable physician, or an average physician, should have detected the abnormalities, but whether the physician used the degree of skill and care that a reasonable physician, or an average physician would in the same or similar circumstances....A radiologist may review an X-ray using the degree of care of a reasonable radiologist but fail to detect an abnormality that, on average, would have been found.

Aside from this Wisconsin court decision that made an effort to define the words “average” and “reasonable” (but not the word “ordinary”), clear-cut definitions of these words have never been spelled out by the courts. Radiologists who are trained and expected to pinpoint radiologic abnormalities with precision and then render interpretations in specific and meaningful terms will probably be perplexed if not frustrated at the vagueness of the words “reasonable” and “ordinary” as used by the courts in defining the standard of medical care. Unfortunately, the courts have not been able to give us a more concrete definition of standard of care as it applies to radiologists or other physicians. All courts have been consistent, however, in holding that the physician’s level of knowledge and skill must at least be that which is minimally acceptable but need not be perfect [24]. Nevertheless, a substantial chasm exists between the courts’ perceptions of the meaning of the words “average,” “reasonable,” and “ordinary,” and Webster’s definitions. It would seem incongruous if not self-defeating for a defendant–radiologist to argue before a jury that the radiologist met the standard of care even though the radiologist’s radiologic interpretation was “mediocre, not above but rather below average, somewhat inferior level of quality.”

It is clear that the theoretic legal issue that must be determined by a jury in cases that focus on an alleged missed radiologic diagnosis is not whether the radiologist missed a lesion but rather whether missing the lesion is acceptable within the usual and customary standards of the radiology community. Considering that the standard of care is not absolute and the jury during a trial will have been exposed to conflicting testimony from expert medical witnesses and arguments presented by the attorneys representing the plaintiff and defendant, this determination is far from simple. Often the standard of care becomes whatever a contest of experts can persuade a jury is the most appropriate standard of care for the specific case on trial [25]. Nevertheless, ultimately the jury will render a decision in a given case as to whether the defendant–radiologist did or did not breach the standard of care. Whatever the verdict, another jury, hearing the same evidence and pondering the same arguments, could well render a different verdict.

The Prevalence of Medical Negligence and Radiologic Errors

The prevalence of adverse medical events and medical errors, and their relationship to medical negligence, has been well documented. A Mayo Clinic study of autopsies comparing clinical diagnoses with postmortem diagnoses revealed that in 26% of cases a major diagnosis was missed clinically [26]. Harvard Medical Practice Study investigators reported that adverse events occurred in 3.7% of hospitalizations in New York and that 27% of these were due to negligence [27]. Researchers in Utah and Colorado determined that adverse events occurred in 2.9% of hospitalizations and that up to 33% were due to negligence [28].

The frequency of radiologic errors has been the subject of numerous articles published in radiology journals for more than a half-century. A review of the data published earlier this year revealed that the retrospective error or “miss” rate among radiologic studies harboring significant pathologic findings averages 30%, but the “real-time” error rate among radiologists in their day-to-day practices averages 3–5% [29]. Notwithstanding averages, articles published in the radiology literature that have evaluated previous “normal” chest radiographs of patients who subsequently were diagnosed with lung carcinoma revealed that the carcinoma could be seen in retrospect in as many as 90% of cases [30]. A similar study that evaluated previous “normal” mammograms of patients who subsequently were diagnosed with breast cancer revealed that the carcinoma could be seen in retrospect in as many as 75% of cases [31].

The presence of error is a necessary but not a sole requisite for the determination of negligence [32]. Negligence occurs not when there is merely an error, but when the degree of error exceeds an acceptable norm. What is an acceptable norm? How many of the radiologic interpretations in the 90% missed lung cancer group and the 75% missed breast cancer group just referred to were within the radiologic standard of care, and how many were the result of a breach of that standard? The answers to these questions elude us.

Defending Radiologic Misses: Hindsight and Outcome Biases

It is difficult to defend a radiologist who has failed to perceive a radiologic abnormality that in retrospect can be readily perceived by both medical and nonmedical observers alike. This difficulty is in part the result of two kinds of biases: hindsight and outcome. Hindsight bias is the tendency for people with knowledge of the actual outcome of an event to believe falsely that they would have predicted the outcome [33]. Although most people are not consciously aware that they are being influenced by hindsight bias, physicians, the lay public, and obviously jurors, remain susceptible to such bias in their judgments. A study conducted by researchers at the University of Pennsylvania indicated that the determination of negligence is substantially influenced by whether the patient has sustained injury [34]. One legal observer has pointed out that although our legal system promises not to hold defendants liable if they have conducted themselves reasonably before an injury occurs, hindsight bias ensures that some reasonably acting defendants will be unfairly subjected to adverse liability judgments when after-injury evaluation has taken place [35].

Closely related is outcome bias: the tendency for people to attribute blame more readily when the nature of the outcome is serious than they would if the outcome were comparatively minor. According to some researchers [36], the attribution of blame satisfies a psychologic need to find an object to punish because by punishing another, we annul the wrong and lessen the hurt.
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Neither hindsight nor outcome bias should influence jurors sitting in a medical malpractice trial in their determination of whether medical negligence has occurred and if so, the extent of compensation that should be awarded to the plaintiff. The fact is, however, that knowledge of the nature and severity of the injury sustained by the patient has been shown to substantially influence juries’ findings of both the defendant’s liability and the amount of the plaintiff’s compensatory damages [37]. Indeed, researchers have shown that the severity of the patient’s disability, not the occurrence of the actual negligence, was predictive of payment to the plaintiff [38].

Summary and Conclusions

The question of whether a missed radiologic diagnosis constitutes malpractice has confounded radiologists, patients, attorneys, judges, jurors, and the general public for more than a century, and it is not likely that the question will be resolved to the satisfaction of any of these parties in the foreseeable future. Radiologists continue to be subjected to malpractice litigation more for missing radiologic diagnoses than for any other reason. Furthermore, radiologists who are sued for missing diagnoses are likely to have more indemnification paid on their behalf to satisfy a settlement or an adverse jury verdict than for any other malpractice allegation. Obviously, if radiologic errors could be eliminated, the prevalence of medical malpractice lawsuits would be immediately curtailed. Indeed, one radiology observer for a brief period pondered whether improved training could minimize mistakes but quickly concluded that mistakes are unlikely to be significantly reduced until we have “perfect diagnostic tests” and “perfect observers” [39]. Such perfection is not likely to occur [29]. Furthermore, surveys have disclosed that two thirds of the public believe that a physician should be sued for malpractice if he or she commits a medical error that leads to a fatality or other serious injury [40]. In fact, more than half of physicians also believe that a physician should be sued for committing an error if the error leads to the death of or other serious injury to the patient. Thus, neither a reduction in radiologists’ error rates nor a reduction in malpractice litigation alleging a missed diagnosis is likely to occur.

Many in the medical community, including radiologists, attorneys, and lay people alike, believe that if a radiologist has missed an important finding that can be seen retrospectively on radiographs, the miss cannot be considered anything but negligence. The blunt fact is that it is difficult to argue in the courtroom that a radiologist who is supposed to be well trained and well paid to detect all abnormalities should be excused for failing to perceive a radiologic abnormality that, many years later with the benefit of “20/20” hindsight, can be seen not only by the radiologist but by other observers as well. Nevertheless, presenting data that include statistics regarding the frequency of errors committed by radiologists during the course of ordinary everyday practice, explanations about why certain radiologic abnormalities appear inconspicuous, evidence that the conduct of the defendant radiologist has been careful and prudent, and expert testimony that it is not possible for any radiologist or other professional to adhere to a standard of perfection can at times be sufficiently persuasive to effect a jury verdict in favor of the defendant radiologist.

There is yet another way by which the malpractice burden on radiologists might possibly be lessened. Recognizing that unique and inevitable errors of perception and judgment occur among even the most learned radiologists, two medical–legal researchers [41] have recently proposed that judges should instruct juries to consider during their deliberation the following “inescapable realities” of radiologic practice:

There is an absolutely unavoidable “human factor” at work in the review of films; some abnormalities may be missed, even the obvious ones; the mere fact that a radiologist misses an abnormality on a radiograph does not mean that he or she has committed malpractice; and not all radiographic “misses” are excusable. Therefore, the focus of attention should be on issues such as proof of competence, habits of practice, and use of proper techniques.

Whether the judiciary will ever be disposed to adopt this proposal is unknown. In an opinion article published 30 years ago [42], I observed:

Despite all that has been written, and the various legal opinions that have been rendered, there is still no practical answer to the question, “When is a radiographic error simply an error and when is it malpractice?”

Three decades later, the answer to this question still eludes us; the distinction between radiologic errors and malpractice remains as blurry as ever.

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