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Excusable Neglect in Malpractice Suits Against Radiologists: A Proposed Jury Instruction to Recognize the Human Condition*

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I. INTRODUCTION[¶]

Not all errors are negligent in medicine.¹ Doctors are expected to make mistakes during the course of their careers, and most would agree that no doctors would be able to retain their licenses if the standards required absolute perfection.² While malpractice suits attach liability when doctors depart from the ordinary level of care expected of their peers,³ exactly how juries evaluate manifest errors remains unclear. The dramatic increase in malpractice suits and related verdicts and settlements suggests that jurors cannot easily disregard an injury without attaching some degree of

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[¶] The authors very gratefully acknowledge the large and influential work of Dr. Leonard Berlin, whose knowledge and tireless efforts in the field of medical malpractice relating to Radiology have been a great inspiration.

1. Marshall B. Kapp, *Medical Error Versus Malpractice*, 1 DEPAUL J. HEALTH CARE L. 751, 754-55 (1997) (“[I]n both medicine and law, err and negligence are not synonymous . . . A mere ‘error in judgment’ is not the basis for finding liability.”).

2. Leonard Berlin, *Does the “Missed” Radiographic Diagnosis Constitute Malpractice?*, 123 RADIOLOGY 523, 525 (1977) (“If we consider every error malpractice, then malpractice is being committed every day by everybody.”).

3. See generally *McCandless v. McWha*, 22 Pa. 261, 269 (1853) (“[The law] demands *qualification* in the profession practised – not extraordinary skill such as belongs only to few men of rare genius and endowments, but that degree which ordinarily characterizes the profession.”).

culpability to the responsible provider.⁴ In fact, obvious errors tend to move juries even further towards finding for a plaintiff.

This problem of evaluating error is particularly acute in the specialty of Radiology.⁵ The ease with which a plaintiff can have films taken later in time invokes a variation of hindsight bias, to which the radiologist must answer why he or she did not identify the condition earlier in time.⁶ The bias may be justified if the errors are attributable to environmental conditions or matters of knowledge over which the providers have some degree of control. However, the bias is undeserved when providers have absolutely no control over the factors giving rise to the error.⁷ In Radiology malpractice suits, courts and juries indiscriminately attach blame to both variations of error, creating synthetic solutions that fail to improve the quality of care that radiologists deliver to future patients.⁸

This Article addresses the human condition in Radiology.⁹ It proposes a jury instruction that considers this condition and defines acceptable errors in the diagnoses of patients. Part II explores unique aspects of Radiology that distinguish it from other specialties involved in malpractice suits. Part III of this Article analyzes the most common sources of error that radiologists encounter. It also focuses on errors in judgment, perception, and knowledge, and describes the differences between these three categories. Part IV applies various legal theories to the practice of

4. Troyen A. Brennan, *Relation Between Negligent Adverse Events and the Outcomes of Medical-Malpractice Litigation*, 335 NEW ENG. J. MED. 1963, 1963 (1996) (“Among the malpractice claims we studied, the severity of the patient’s disability, not the occurrence of an adverse event or an adverse event due to negligence, was predictive of payment to the plaintiff.” Consequently, it is a familiar saying among hospital counsel that, “When a child gets hurt, money will change hands.”).

5. E. James Potchen & Mark A. Bisesi, *When is it Malpractice to Miss Lung Cancer on Chest Radiographs?*, 175 RADIOLOGY 29 (1990) (“Radiologists have less protection than many physicians because they are continually subjected to a radiographic review of the consequences of their interpretation.”).

6. See Leonard Berlin, *Failure to Diagnose Lung Cancer: Anatomy of a Malpractice Trial*, 180 AM. J. ROENTGENOLOGY 37, 44 (2003) (defining hindsight bias as “the tendency for people with knowledge of the actual outcome of an event to believe falsely that they would have predicted the outcome.”).

7. Celia Wells et al., *Disasters: A Challenge for the Law*, 39 WASHBURN L.J. 496, 499 (2000) (“In every occupation, there is a calculus of the probability of making mistakes and a certain amount of error remains normal, routine, and inevitable.”).

8. James C. Mohr, *American Medical Malpractice Litigation in Historical Perspective*, 283 J. AM. MED. ASS’N 1731, 1732 (2000) (indicating that, after all, it is one of the (purported) goals of the malpractice litigation to improve delivery of healthcare to patients. “In theory, the nation’s strongest and best-trained physicians might have welcomed . . . malpractice suits as a useful method of driving charlatans and amateur hacks from the field.”).

9. Keith Myers, *Medical Errors: Causes, Cures, and Capitalism*, 16 J.L. & HEALTH 255, 262 (2002) (“Humans make mistakes, and this includes doctors!”).

Radiology. This Part highlights common allowances for human error that relieve actors of liability in non-medical settings, and it draws analogies to existing precedents. Finally, Part V concludes by presenting the text of a proposed jury instruction. This proposed instruction appropriately takes into account the actual environment in which radiologists must operate by providing a spectrum of standards upon which to evaluate a radiologist's missed or erroneous diagnosis.

II. THE RADIOLOGIST'S PERSPECTIVE

This section reviews the specialty of Radiology with particular attention to the similarities and differences between Radiology and general medical practice. This section concludes with an examination of the consequences of these distinctions under the theory of medical malpractice as applied specifically to Radiology. The objective is not to absolve a particular specialty from actionable negligence. Rather, it is to recognize that medical specialties differ in crucial ways and that justice demands a careful (and heretofore unexamined) knowledge of these differences.

The principles and legal reasoning that form the basis for medical malpractice are well established and have a significant positive and productive legal history.¹⁰ The historical success of the legal system legitimizes the basic principles by which it is under-girded.¹¹ However, not all legal principles are entirely sound. For example, current legal theory treats all medical specialties identically for malpractice litigation purposes.¹² Although the concepts of duty, breach, harm, and causation seem sufficiently broad to encompass all medical practices, some critical distinctions must be drawn between specialties for each of these issues.

A. Similarities Between Radiology and Medical Practice

Medicine has been called the most scientific of the arts and the most artistic of the sciences.¹³ This colorful phrase illustrates that essentially every aspect of medicine involves making rational, scientific decisions under uncertain conditions. Decision-making under uncertainty is a topic of enormous intellectual and academic scrutiny, and a number of theories exist concerning how an individual makes decisions when he or she lacks certain,

10. See Mohr, *supra* note 8, at 1731-37 (providing a brief overview of the history of medical malpractice).

11. See generally *id.* at 1736-37.

12. Potchen & Bisesi, *supra* note 5, at 30-31.

13. H. Tristram Englehardt, Jr., *The Philosophy of Medicine: Framing the Field*, in *THE PHILOSOPHY OF MEDICINE AND BIOETHICS* 1, 5 (2000).

sometimes critical, pieces of information.¹⁴ In a medical setting, this process operates in four steps: 1) gathering empirical data; 2) applying statistical information; 3) assigning weights and values to various choices; and 4) settling on what seems to be the best choice.¹⁵ The following discussion of the medical implications of decision-making under uncertainty clarifies why the difficulties within this process are most acute in the field of Radiology.

The practices of medicine and Radiology proceed under the assumption of a so-called “physiologic basis of disease,” which has been the foundation of Western medicine for well over a century.¹⁶ When a patient suffers from an illness, the illness produces physiologic changes in the normal biochemical processes of the body, resulting in disordered homeostasis.¹⁷ Disordered homeostasis manifests itself in a certain pattern of physical symptoms and produces outwardly visible changes in the patient through signs of disease.¹⁸ Measurable alterations of certain biochemical processes that occur in predictable ways will also typically reflect disordered homeostasis.¹⁹

The primary approach to healthcare proceeds when a provider listens to a patient’s report of symptoms.²⁰ The physician then mentally considers a list of diseases that tend to produce such symptoms. During a physical examination, the physician looks for signs that suggest the presence of those diseases. As observation narrows the list of possibilities, the physician selects laboratory tests to assess the biochemical processes that are expected to be abnormal for one or more of the suspected disease states. The combination of symptoms, signs, and laboratory abnormalities should

14. See, e.g., Lawrence Joseph & Caroline Reinhold, *Introduction to Probability Theory and Sampling Distributions*, 180 AM. J. ROENTGENOLOGY 917 (2003); see, e.g., Barbara J. McNeil et al., *Primer on Certain Elements of Medical Decision Making*, 293 NEW ENG. J. MED. 211 (1975).

15. See generally Myers, *supra* note 9, at 259 (explaining various stages involving medical decisions that create potential for error).

16. ARTHUR C. GUYTON & JOHN E. HALL, *TEXTBOOK OF MEDICAL PHYSIOLOGY* 7-8 (10th ed. 2000) (explaining in this standard textbook for medical students, “Each functional structure provides its share in the maintenance of homeostatic conditions Extreme dysfunction leads to death, whereas moderate dysfunction leads to sickness.”); Merrill C. Sosman, *The Specificity and Reliability of Roentgenographic Diagnosis*, 242 NEW ENG. J. MED. 849, 850 (1950) (stating that similarly, the radiologist depends on the physiologic basis of disease to alter anatomy in a recognizable way: “Our diagnoses are based on gross pathology in the great majority of cases – certainly well over 90 percent.”).

17. GUYTON & HALL, *supra* note 16, at 7.

18. See *id.* at 7-8.

19. See *id.*

20. The following processes of healthcare generally and of Radiology reflect one of the author’s knowledge gained from training, practice, and research as a physician and radiologist.

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produce the most likely diagnosis. The physician then selects some form of medication or treatment with the expectation that if the original diagnosis was correct, the treatment will be efficacious and the patient's condition will improve. If the patient fails to improve, the physician then reevaluates the original list and begins to search for other less-likely disease processes that might produce that combination of signs, symptoms, and laboratory abnormalities.

Physicians rely on four implicit assumptions throughout this process: First, a given disease has a specific physiological basis, so that disease can be expected to produce a predictable pattern of signs and symptoms, as well as specific biochemical and radiographic abnormalities. Second, such diseases will respond to given therapies in a predictable way. Third, particular diseases affect predictable patient populations. Finally, a given patient may fit into a specific patient population, within which the physician can expect certain disease processes to occur.

Although these assumptions are generally useful, they rely on statistical information and thus permit only limited inferences.²¹ Statistics infer that when some individuals in a particular population have a certain set of signs, symptoms, and laboratory and radiographic findings, only a certain percentage will have a particular disease.²² Conversely, when all patients within a group have a particular disease, only a certain percentage of them will show the expected signs, symptoms, and laboratory and radiographic abnormalities.²³ In addition to statistical inferences, physicians must make further assumptions because patients do not always report symptoms in precise terms, and patients may even report conflicting or opposite answers when different examiners ask identical questions.²⁴ Thus, when establishing whether a patient has disease X, simply evaluating whether that patient has the expected set of symptoms is not necessarily a straightforward proposition. While a patient may actually have a disease, the patient may or may not report a symptom, exhibit a typical sign, have a specific laboratory abnormality, or show a specific radiographic abnormality. Physicians practice medicine under these constraints on a daily basis.

21. See Joseph & Reinhold, *supra* note 14, at 917.

22. See *id.*

23. See generally *id.* at 917, 923.

24. L. Henry Garland, *Studies on the Accuracy of Diagnostic Procedures*, 82 AM. J. ROENTGENOLOGY 25, 26 (1959) (describing an early study in which researchers discovered that the same patients often provide different physicians with varying descriptions of the same physical condition. In fact, "answers to even the simplest questions are not always reproducible.").

Radiology fits into this scheme when the physician suspects certain diseases or ailments for which there are specific findings on a radiograph, such as pneumonia or congestive heart failure. Radiologists follow a similar general approach in making diagnoses and accept the same fundamental assumptions about disease processes, their physiological basis, and their statistical nature. This specialty also proceeds under the assumption that disease states will alter components of human anatomy in understandable and predictable ways by utilizing the concept of the physiologic basis of disease.²⁵ Thus, the daily practice of Radiology consists mainly of evaluating radiographs in search of altered anatomy. When a radiologist observes such altered anatomy, he or she will attempt to elucidate the cause of the alteration. In doing so, radiologists make use of the same notions of population statistics: the expectation that certain disease states are common while others are rare; the recognition that diseases tend to cluster in certain populations (age, gender, ethnicity, etc.); the understanding that diseases produce observable alterations on a statistical basis; and the expectation that diseases tend to follow a statistically predictable course.²⁶

Radiologists also make decisions through the process of *defeasible reasoning*.²⁷ “Reasoning is defeasible when the corresponding argument is rationally compelling but not deductively valid.”²⁸ The truth of the premises underlying a good defeasible argument provides support for the conclusion, although it is possible for the premises to be true and the conclusion false.²⁹ The relationship of support between the premises and conclusion is tentative and may be potentially defeated by additional

25. See generally Sosman, *supra* note 16, at 850.

26. E.g., *id.* (“As roentgenologists, I am sure that much of our accuracy depends upon the mathematical probabilities in a given case or set of circumstances.” These statistics, as applied to patients, are multi-layered. In a laboratory test, for example, only a certain percentage of patients with a particular disease will actually have an abnormal result for a specific lab test, while only a certain percentage of patients with an abnormal lab result will actually have the given disease. Put in other terms, a patient may have a certain disease, but the lab test is normal; while another person may show an abnormal result on a lab test, but not actually have the disease. Those familiar with this statistical phenomenon will recognize this as a test’s sensitivity and specificity. Neither of these values is ever, as a practical matter, 100 percent. Further, these two values are competitive, in that the more sensitive a test is, the less specific it is, while the more specific a test is, the less sensitive it is.)

27. The process described here is based on one of the authors’ personal experience of work in several medical specialties over the course of the last twenty-five years, and developed based on careful reflection of the literature on this topic as it relates to that experience and the reported experience of numerous colleagues.

28. Robert Koons, *Defeasible Reasoning*, THE STANFORD ENCYCLOPEDIA OF PHILOSOPHY (Edward N. Zalta ed., 2005), available at <http://plato.stanford.edu/entries/reasoning-defeasible/>.

29. *Id.*

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information.³⁰ Physicians can never achieve absolute certainty with regard to disease processes and diagnostic procedures. Instead, they are bound by statistical inferences at multiple levels, all of which must be combined, collated, prioritized, and then accepted or rejected based on judgment and experience. Defeasible reasoning is neither incontrovertible nor necessarily deductively sound because any one of the premises upon which the conclusion is based may be false.

When a radiologist reads a radiograph, he or she cannot reach a final conclusion without utilizing a defeasible reasoning process. The fact that subsequent information shows the original conclusion to be false cannot stand as a *prima facie* error in judgment. The mere possibility that another radiologist may come to a different conclusion based on the same information, or that one discovers over time that the conclusion was in error, cannot directly imply negligence. The assessment of negligence due to an error in judgment must be stringently controlled, and the serious constraints that are constantly in play with the interpretation of every radiograph must be fully recognized. Thus, although the practice of Radiology is similar to other medical specialties in terms of its reliance on the physiologic basis of disease, the statistical approach to diagnoses, and the use of defeasible reasoning, characteristics unique to Radiology must be considered.

B. Unique Characteristics of Radiology

Radiology diverges from the normal path of other medical specialties in that it depends entirely on visual perception and on the identification of specific characteristics on a radiograph. Mechanical, physiologic, and psychological factors contribute to an intricate interplay that has yet to be explained completely.³¹ Much of this interplay occurs instantly, simultaneously, and unconsciously. The way in which a radiologist perceives objects appears to be innate in large measure. Although training can modify perception, it seems to be mostly encoded at such a primal and fundamental level that it is largely beyond the radiologist's control.³² This instinct injected into the visual perception of images is known as the "human factor."³³

In approaching the diagnostic task of the radiologist, Gestalt theory best describes how the human eye and brain interact to perceive and interpret a

30. *Id.*

31. See William J. Tuddenham, *Visual Search, Image Organization, and Reader Error in Roentgen Diagnosis*, 78 *RADIOLOGY* 694, 702-03 (1962).

32. *Id.* at 703.

33. *Id.*

visual stimulus. The essence of Gestalt theory relates to the brain's attempt to assimilate visual input into patterns, which are then compared with stored information relating to the nature of those patterns.³⁴ Essentially, a radiologist views a radiograph and instantly generates a gestalt, determining whether the image is normal or abnormal.³⁵ Following this basic determination, the radiologist conducts a series of directed searches. If the radiologist initially considers the film to be normal, he or she will either search places in the film that are most likely to contain subtle abnormalities, or look for specific clues to the suspected diagnosis.³⁶ If the radiologist considers the film to be abnormal, he or she will alter that search routine to test a series of hypotheses regarding the nature of the abnormality.³⁷ Alternation of the search pattern depends on the presence or absence of key features of the film that either confirm or refute the current hypothesis under consideration.³⁸

Whether considered from a philosophical, physiological, or practical standpoint, no single theory or construct will explain precisely how the interaction between perception and cognition takes place, or indeed how it fails. In recognizing this, scholars have concluded that "mechanisms of detection, recognition, and interpretation of visual images" must be considered as part of a "single interactive process in which the acquisition of visual information is integrated with recognition and interpretation, and

34. Lauretta Bender, *A Visual Motor Gestalt Test and its Clinical Use*, AM. ORTHOPSYCHIATRIC ASS'N 3-4 (1938) ("The gestalt function may be defined as that function of the integrated organism whereby it responds to a given constellation of stimuli as a whole; the response itself being a constellation, or pattern or gestalt."); *id.* ("Integration occurs not by summation or subtraction or association but by differentiation, or by increasing or decreasing the internal complexity of the pattern in its setting. It appears that the integrated organism *never responds in any other way.*") (emphasis added).

35. Harold L. Kundel & Calvin F. Nodine, *Interpreting Chest Radiographs Without Visual Search*, 116 RADIOLOGY 527, 531 (1975) ("[T]he context of the visual scene is rapidly established and deviations from a known normal pattern are identified and in some instances even classified during one fixation interval in what is called a *global response*." This experiment established that global response occurred in two-tenths (0.2) of a second – too short of a period for eye movement or shift of gaze.).

36. See generally Sosman, *supra* note 16, at 850-51 (explaining levels of abnormality that a radiologist may diagnose).

37. See generally *id.* (explaining generally the nature of abnormalities a radiologist might consider).

38. Kundel & Nodine, *supra* note 35, at 527 ("[A] search sequence of eye fixations is initiated only after an overall impression or gestalt is formed by a preattentive global response similar to that proposed by gestalt psychologists" It is interesting to note Dr. Kundel's comment that "[a]nalysis of a radiological image is an enormously complex perceptual task that only a highly trained human observer is able to perform").

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even consciousness.”³⁹ This inseparability of systems illustrates the inescapable nature of the human condition.

An interesting pattern emerges when these theories are applied to a practicing radiologist as he or she examines films. Initially, an experienced radiologist will make a large number of positive findings within the first few seconds of looking at an image.⁴⁰ In fact, he or she will make these findings during a single fixated gaze prior to any directed search of the radiograph.⁴¹ However, despite the ability to identify some abnormalities very quickly, and even under ideal circumstances with unlimited viewing time, the radiologist will inevitably miss other abnormalities. Neither the radiologist nor any other person will be capable of predicting which abnormalities will be missed and when. These errors cannot be predicted and the cause of the errors cannot always be explained. This emphasizes a recurring human problem.

A very useful analogy to the experience of evaluating radiographs appears in a popular visual search game called *Where's Waldo?*⁴² This game features a crowded scene with hundreds of cartoon figures, one of which is Waldo.⁴³ The object is to look over the scene and locate Waldo among hundreds of other figures.⁴⁴ Anyone who has seen these games recognizes how frustrating it can be trying to ferret out a single individual from among hundreds, some of whom look similar, but only one of whom is actually Waldo. Often, one player will find Waldo very quickly, while another player may remain stumped perpetually. Once the player finally detects Waldo, his or her eyes go immediately to Waldo upon seeing the same puzzle again, simply unable to imagine why he or she failed to find Waldo in the first place.⁴⁵

Evaluating a radiograph is similar to finding Waldo in a number of ways, although on a much more complicated level. Waldo is recognizable by certain key features, such as dark hair, black glasses, and a striped knit cap. In this game, Waldo will have all those features, and *only* Waldo will have those features. Radiology presents a similar need to identify diseases by certain features visible on a radiograph, but the search entails more

39. WILLIAM R. HENDEE & PETER N. T. WELLS, *THE PERCEPTION OF VISUAL INFORMATION* 154 (2d ed. 1997).

40. Edward E. Christensen et al., *The Effect of Search Time on Perception*, 138 *RADIOLOGY* 361, 364 (1981).

41. *Id.*

42. *See generally* MARTIN HANFORD, *WHERE'S WALDO?* (2d ed. 1997).

43. *Id.*

44. *Id.*

45. *See* Ronald W. Hendrix, *In Defense of a Missed Lesion*, 195 *RADIOLOGY* 578 (1995) (illustrating the usefulness of this analogy in explaining to juries the inherent difficulties in finding a specific condition on a radiograph).

convoluted problems. With rare exceptions, there is not an “all and only” set of criteria associated with a disease that correlates with the constant features associated with Waldo.

Continuing the Waldo analogy illustrates the overwhelming nature of the problem in Radiology. For example, assume that Waldo is a Caucasian male figure who wears a red and white striped knit cap, has dark hair, and wears black glasses. Suppose we see a figure from the back and only see the striped knit cap, but the rest of the features are unclear or obscured. Just how much of Waldo do you need to see before you can say with certainty, “There’s Waldo!”?

Waldo is only one figure out of hundreds found on the image. However, the field of Radiology is not concerned solely with finding Waldo. A radiologist must search constantly for hundreds of other characters as well.⁴⁶ Any of these figures may or may not be on the image. Also, any one of them may have a number of distinguishing characteristics when considered as a whole, but may present only one or two of those characteristic features. Thus, a radiologist must not only analyze whether any of the dozens of characters on the image have any of the features he or she is looking for, but also whether there are *enough* of those features to actually identify the character as the one in question. A radiologist must also determine whether *none* of the suspected characters are on the image.

Furthermore, a radiologist will have a stack of perhaps three hundred images, and he or she must inspect each one for signs of “Waldo or his friends.” While many of the images will not have any of the characters at all, some will have a suggestion of one or more characters (i.e., they may have a knit cap and black glasses, but the gender is unclear), and only a few will actually have a clearly identifiable individual. At some point, the radiologist must simply conclude that neither Waldo nor any of his friends are on this image and move to the next set of images. In the practice of Radiology, this process goes on film after film, hour after hour, and day after day.

The Waldo analogy illustrates the enormity of the task inherent in radiographic analysis. Such a task lends itself to the “satisfaction of search” phenomenon, which describes the relationship between visual search and perception.⁴⁷ When someone is given a search task, finding one target may

46. See Leonard Berlin & Ronald W. Hendrix, *Malpractice Errors in Radiology: Perceptual Errors and Negligence*, 170 AM. J. ROENTGENOLOGY 863, 865 (1998) (citing a Nebraska Supreme Court ruling that acknowledged that a patient is entitled to ordinarily careful and thorough examination).

47. See Salim Samuel et al., *Mechanism of Satisfaction of Search: Eye Position Recordings in the Reading of Chest Radiographs*, 194 RADIOLOGY 895, 895 (1995).

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cause blindness to other possible targets.⁴⁸ Sometimes, once a target is found, the brain tends to reach satisfaction and it will ignore the presence of other targets.⁴⁹ While this idea is commonsensical, this “satisfaction of search” is apparently unavoidable in any absolute sense. While initially presumed to explain a majority of missed findings on radiographs,⁵⁰ the phenomenon failed to account for an appreciable or predictable number of errors. Instead, investigations revealed the following: identification of the majority of true abnormalities occurred quite quickly;⁵¹ some abnormal areas did not receive a significant fixation of gaze by the radiologist;⁵² some abnormal areas did receive a significant fixation of gaze, but were discounted; a shorter search time did not necessarily lead to more missed findings;⁵³ and sometimes a longer search time produced a worse result because it led to mistakenly identifying normal structures as abnormal.⁵⁴ Hence, the best any radiologist can do is to recognize this phenomenon and make every effort to avoid it. However, no one can function as a machine, and a radiologist will inevitably face times when his or her best efforts are not completely successful.

III. SOURCES OF ERROR IN RADIOLOGY

Errors made in radiographic diagnoses are typically divided into errors of knowledge, errors of perception, and errors of judgment. Errors of knowledge frequently, though not always, result in culpability determinations. Errors of perception and errors of judgment afford sufficiently unique challenges and concerns to the field of Radiology' to merit separate consideration in the area of human error.

A. Errors of Knowledge

A radiologist's error of knowledge exists if he or she either did not learn, or learned but had forgotten, some crucial bit of medical information that

48. *Id.*

49. Tuddenham, *supra* note 31, at 694 (explaining that this phenomenon is not isolated to the field of Radiology; it was described at least as far back as 1954: “[M]ilitary photointerpreters, in a roughly parallel study (15), failed to report an average of 54 per cent of the recorded and significant findings in the material presented to them!”).

50. *See id.* (“[F]ailure of perception must, therefore, account for a substantial fraction of all our diagnostic errors.”).

51. Kundel & Nodine, *supra* note 35, at 531; Christensen et al., *supra* note 40, at 363.

52. Samuel et al., *supra* note 47, at 900.

53. Christensen et al., *supra* note 40, at 363.

54. Kevin S. Berbaum et al., *Satisfaction of Search in Diagnostic Radiology*, 25 INVESTIGATIVE RADIOLOGY 133, 139 (1990).

the “average radiologist” should know.⁵⁵ If this lapse or lack of knowledge results in the misinterpretation of a radiograph, then that misinterpretation could potentially fail to meet the standard of care.⁵⁶ While other specialties are also held to this standard of care, Radiology differs in that a radiograph is essentially a picture of anatomy, and the radiologist is looking for distorted or abnormal anatomy.

There is an old saw in Radiology circles that says, “You look for what you know, and you see what you look for.”⁵⁷ For example, if a radiologist does not know or recall that a particular disease produces some subtle change in anatomy, and thus has a specific radiographic manifestation, he or she will not likely look for or discover the abnormality. For instance, sometimes what seems clinically to be an ankle fracture can actually be a fracture of the outside of the foot.⁵⁸ This area is difficult to see on radiographs of the ankle, and a radiologist must specifically look for it when evaluating a patient with a suspected ankle fracture. If a radiologist is unaware of this information, he or she might only examine the bones of the ankle and miss the fact that a foot fracture actually exists. In this regard, errors of knowledge are typically categorized as either a lack of knowledge or a lapse of knowledge.⁵⁹ However, while an error attributed to lack or lapse of knowledge may seem like a fairly *de facto* case of negligence, one must bear several key issues in mind.

First, a radiologist must meet the standard of possessing and exercising “that degree of skill which is ordinarily possessed by members of the profession.”⁶⁰ All practitioners of Radiology face the problem of a continuing accumulation of an overwhelming amount of new information.⁶¹

55. See MARCUS J. SMITH, *ERROR AND VARIATION IN DIAGNOSTIC RADIOLOGY* 64 (1967) (explaining that, in a major work on errors in diagnostic Radiology, lack of knowledge represented the smallest percentage of causes of error).

56. See Leonard Berlin, *Possessing Ordinary Knowledge*, 166 AM. J. ROENTGENOLOGY 1027, 1027-29 (1996) (describing three malpractice lawsuits that involved lack or lapse of knowledge).

57. The analogous statement made by primary care providers is, “If you don’t take a temperature, you can’t find a fever.”

58. This example is based on one of the authors’ personal experience and knowledge obtained through work as a radiologist.

59. Berlin, *supra* note 56, at 1028.

60. *Ritchey v. West*, 23 Ill. 329, 330 (1860).

61. SMITH, *supra* note 55, at 67 (explaining that this type of problem is indeed significant and can be seen by the fact that the situation was realized as problematic even in the 1960s: “On occasion, an entity which was evident to others was unknown to him. This is not surprising in view of the inordinate volume of factual material that the Radiologist must amass and retain for professional competency.”). It should be pointed out that this statement was made *prior* to the introduction of ultrasound, CT, MRI, nuclear medicine, or even mammography into the field of Radiology.

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As a result, many radiologists elect to specialize in a particular field in order to keep up. While sub-specialization is laudable in the profession, it creates a disparity in knowledge as the sub-specialist has substantially more information than the general radiologist.⁶² When a plaintiff brings suit, the plaintiff typically obtains testifying experts who are sub-specialists.⁶³ For example, it is commonplace, though extremely problematic, for an experienced neuroradiologist to testify as to what he or she believes a general radiologist should know about Neuroradiology.⁶⁴ Sub-specialists frequently see rare and unusual diseases that general radiologists rarely see. Therefore, most general radiologists may have never seen something that a sub-specialist would consider common knowledge.

The second issue plaguing the practice of Radiology is how to manage the volume of ordinary knowledge in play. A cursory review of standard Radiology textbooks shows that the “basic information” for a particular area is rarely contained within a single-volume book; the vast majority of areas are housed in multi-volume books. Even books that purport to provide the “bare facts” contain tens of thousands of informational bits, which are all considered “basic.”⁶⁵ Radiologists learn a majority of this information during residency training. However, just as in law school, information that is not used frequently tends to fade from memory over time. A general radiologist in a typical community might come across only common diseases and ailments, so what was once part of the knowledge base during training may no longer be available to the practicing radiologist’s immediate recall. This illustrates the so-called lapse of knowledge.⁶⁶ Thus, when assessing the degree of culpability for a lapse of knowledge, one must consider the rarity of the disease or ailment that the radiologist missed.⁶⁷ While errors of knowledge are not part of the typical

62. See generally *Stallworth v. Boren*, 54 P.3d 923, 934 (Haw. Ct. App. 2002) (citing expert testimony that stated a general radiologist would not be able to make every diagnosis that a Radiology specialist or sub-specialist would).

63. See generally *Campbell v. Attanasio*, 862 A.2d 1282, 1289 (Pa. Super. Ct. 2004) (noting that plaintiff’s expert, a sub-specialist, attempted to set standard of care for a non-sub-specialist); see generally *Trapp v. Cayson*, 471 So.2d 375, 379-80 (Miss. 1985) (noting that plaintiff’s expert, a sub-specialist in Neuroradiology, attempted to set standard of care for general radiologists).

64. See *Stallworth*, 54 P.3d at 934.

65. Two examples of “basic” Radiology review books are respectively 1,064 pages long and 1,214 pages long, even in outline format. See generally RALPH WEISSLEDER ET AL., *PRIMER OF DIAGNOSTIC IMAGING* (3d ed. 2003); see also WOLFGANG DAHNERT, *RADIOLOGY REVIEW MANUAL* (5th ed. 2003).

66. SMITH, *supra* note 55, at 65 (“[D]ue to failure to see rare conditions from many years, one tends to forget about their existence . . . the entity no longer (has) real significance for the observer.”).

67. One author can attest to the very large amount of information concerning

human error equation we discuss here, courts should nevertheless point out to juries certain nuances about errors of knowledge.

B. Errors of Perception

As noted above, possible errors in diagnostic Radiology may be grouped into errors of knowledge, errors of perception, and errors of judgment. When a radiologist makes an error in interpreting a radiograph, the error typically overlaps these categories. This section will limit the discussion of errors of perception to those circumstances where a radiologist completely fails to see an abnormality on the radiograph that is readily evident. Circumstances in which the radiologist sees but misinterprets or discounts the abnormality will be treated *infra* as errors of judgment.

Radiology literature and practice recognize that occasions arise when, despite the best of efforts, a radiologist simply will not perceive an obvious abnormality.⁶⁸ How exactly this occurs is a matter of long-standing debate.⁶⁹ While the exact cause of perceptual errors remains elusive,⁷⁰ it is most likely multi-factorial. The most common explanations are known as “satisfaction of search,” discussed *supra*, and the “search for meaning.” The “search for meaning” principle explains our ability to fill in missing gaps of visual information in order to make sense of partial or incomplete images.⁷¹ Another explanation, while not as well investigated, is termed the “cocktail-party effect.”⁷² The cocktail-party effect is an auditory phenomenon whereby a listener, in a room full of people engaged in various conversations, can tune out the speaker closest to him or her and actually direct his or her attention to a separate conversation occurring some distance away.⁷³ In fact, the listener can tune out all other unwanted conversations to the exclusion of the conversation of interest.⁷⁴ A visual analogy to this phenomenon may be seen whereby an observer looking at an image can focus on one isolated aspect and effectively tune out the

radiographic findings that was painfully learned during residency, for diseases that he has not seen in over fifteen years of practice.

68. See Tuddenham, *supra* note 31, at 701 (“The findings which we overlook are most often gross and, in retrospect, perfectly obvious.”).

69. See Sosman, *supra* note 16, at 849 (noting that a wide divergence of opinion occurs when radiologists consider the frequency of their own errors).

70. Berlin & Hendrix, *supra* note 46, at 864 (“[T]he missing of an overt lesion remains as much a mystery and enigma today as it was 50 years ago.”).

71. Tuddenham, *supra* note 31, at 697.

72. ALLAN G. REYNOLDS & PAUL W. FLAGG, COGNITIVE PSYCHOLOGY 18 (Scott Foresman & Co. 1983) (1977).

73. See *id.*

74. See *id.*

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remainder of the image. This results in an incredible amount of the image remaining essentially “unseen,” even though it may be otherwise obvious.

While the fact that such oversights occur is disconcerting, these oversights are not only much more common than recognized, but they are also absolutely unavoidable. The fact that such perceptual “misses” occur in Radiology is simply part of the inescapable human condition, and it strikes at the very heart of our discussion. Neither the standard of care in the medical community nor the courts require that radiologists practice perfectly.⁷⁵ Results will sometimes be imperfect, even in the absence of negligence.

Defining the legal error is the attempt to apply a universal law to a specific instance without simultaneously recognizing the inapplicability of that universal law to every case. In effect, the universal law that “radiologists have a duty to interpret radiographs correctly,” becomes “radiologists have a duty to read *this* particular radiograph correctly.” A plaintiff’s attorney’s inferential argument that a missed finding on a particular radiograph is *de facto* malpractice is simply incorrect.⁷⁶ While the application of legal standards to specific instances of conduct may indeed be the cornerstone of most legal reasoning, it fails to consider the human condition and the nature of medicine as a scientific, and therefore statistical and probabilistic, enterprise. These two factors combine to create necessary fallibility, which is not necessarily culpable.⁷⁷ Some courts have recognized this phenomenon and have attempted to draw attention to the more appropriate area of evaluation or to the process by which the particular radiographs were handled.⁷⁸

In retrospect, it may be very difficult to understand why a radiologist did not see a particular abnormality. Even experienced and competent radiologists sometimes miss obvious abnormalities, without realizing it at the time. This makes it extremely difficult for anyone, even an expert radiologist, to state with certainty that he or she would not have missed the abnormality under the same set of circumstances.⁷⁹ Notwithstanding

75. See generally Potchen & Bisesi, *supra* note 5, at 30-31.

76. E.g., *id.* at 30 (observing expectations of plaintiffs that a *res ipsa loquitur* standard will apply to all cases of chest x-rays).

77. Samuel Gorovitz & Alasdair MacIntyre, *Toward a Theory of Medical Fallibility*, in 1 SCIENCE, ETHICS AND MEDICINE 263 (H.T. Engelhardt, Jr. & Daniel Callahan ed. 1976) (exploring the mistake of applying general scientific law to particular cases in medicine, and the notion of necessary fallibility).

78. Dep’t of Regulation & Licensing v. Wis. Med. Examining Bd., 572 N.W.2d 508, 513 (Wis. Ct. App. 1997) (“Errors in perception by radiologists viewing x-rays occur in the absence of negligence.”).

79. Nonetheless, expert witnesses routinely testify that they would not have missed the finding that the defendant radiologist missed. Why they offer such testimony is beyond the

courtroom testimony, the degree to which a radiographic abnormality is obvious does not in any way impact the determination as to whether or not such a miss constitutes negligence.

C. Errors of Judgment

While errors in perception occur when a radiologist fails to perceive a pertinent abnormality on a radiograph, errors in judgment occur when a radiologist perceives the abnormality, but either discounts or misinterprets it. That is, the area of interest may be perceived but discounted, or perceived as abnormal but given a lower level of significance than actually turns out to be the case.⁸⁰ In this circumstance, similarities and significant differences again exist between Radiology and other medical specialties. Here, we have another situation in which an error does not always entail malpractice.

When investigating instances where abnormalities are discounted, all specialties of medicine require the application of a learned skill in order to make a specific determination regarding a patient. In primary care, this might typically mean performing a physical exam to search for signs of disease. It has certainly been reported, but is not well appreciated, that experts disagree substantially on the presence or absence of physical findings.⁸¹ That is, even highly trained experts cannot always agree on whether a physical finding that suggests an abnormality is actually present.⁸² Radiologists are no different in this respect. Published reports frequently illustrate the fact that trained, expert radiologists do not always agree on whether a particular film is abnormal.⁸³ However, the fact that the radiologist is evaluating an image, rather than a patient, establishes two key

topic of this paper, but not beyond the considered and thoughtful musings of one of its authors.

80. See Jonathan W. Berlin & Leonard Berlin, *Radiographic Errors: When and Why Do We Make Them? How Can We Eliminate or Minimize Them? Do They Constitute Malpractice?*, CONTEMPORARY DIAGNOSTIC RADIOLOGY, March 30, 2001, at 1, 4.

81. See Garland, *supra* note 24, at 25.

82. See Leonard Berlin & Jonathan W. Berlin, *Malpractice and Radiologists in Cook County, IL*, 165 AM. J. ROENTGENOLOGY 781, 786 (1995) (explaining that published reports include disagreements over such things as enlargement of the spleen, enlargement of the liver, abnormal fluid within the abdominal cavity, and abnormal lung sounds); see also *id.* (arguing that this is not a new phenomenon; a study performed in 1952 with experienced Internists regarding well-known physical signs of emphysema showed an agreement rate of only sixty-seven percent).

83. This has been most frequently reported regarding the evaluation of chest radiographs and mammography. See, e.g., G. R. Tudor et al., *An Assessment of Inter-Observer Agreement and Accuracy When Reporting Plain Radiographs*, 52 CLINICAL RADIOLOGY 235, 235 (1997); see also J. G. Elmore et al., *Variability in Radiologists' Interpretations of Mammograms*, 331 NEW ENG. J. MED. 1493 (1994).

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differences between Radiology and other specialties regarding judgment errors. First, the radiograph will be available for review at any point in the future, whereas physical findings noted in a living patient may change at any time.⁸⁴ Second, interpreting a radiograph often entails a specific decision about whether or not to characterize the image as normal, which is a judgment that can be neither perfect nor necessarily reproducible.⁸⁵

As with perceptual errors, this phenomenon is best explained by the human factor.⁸⁶ The result is an observational threshold or a point in time on a given image at which a radiologist will call the film abnormal.⁸⁷ However, this threshold is simply not a clearly fixed point, even among experts.⁸⁸ For example, expert mammographers demonstrate “substantial disagreement over the optimal threshold in breast cancer screening.”⁸⁹ Radiologists practice in a similar way to other physicians when making judgments in terms of the physiologic basis of disease and the statistical and probabilistic nature of the manifestations of disease in various populations. However, significant differences exist in terms of how that information is presented to the radiologist (i.e., in radiographs *of* a patient, rather than the actual patient), and in how that information is processed (i.e., separating “mostly normal” from “barely abnormal,” and “finding Waldo”).⁹⁰ Trained and highly experienced radiologists may disagree over a matter of judgment relating to a particular radiograph, thus illustrating that there are clearly times when an erroneous judgment is not unreasonable, and therefore not negligent.⁹¹

Further, “[i]t is not enough to prove medical malpractice on the part of the defendant in a medical malpractice case for the [p]laintiff to show that

84. See Leonard Berlin, *Is a Radiologic “Miss” Malpractice? An Ominous Example*, 140 AM. J. ROENTGENOLOGY 1031, 1033 (1983) (“The diagnostic radiologist is far more vulnerable to retrospective review than other doctors. It is difficult to disagree with a previously recorded physical sign But radiographs are different . . . [they] are available for years to come, for any future observer to review . . .”).

85. See generally *id.* at 1032 (describing how a radiologist issued x-rays with a report indicating abnormality status).

86. This is described as the near-impossibility of distinguishing “mostly normal” from “barely normal.” NESTOR L. MULLER ET AL., *RADIOLOGIC DIAGNOSIS OF DISEASES OF THE CHEST* 279 (4th ed. 1999) (“[Differences in interpretation] may be more realistically ascribed to a ‘state of mind’ that is continually fluctuating and represents an intangible influence on one’s approach to a problem. Intraobserver disagreements are bound to occur . . .”).

87. See William C. Black & H. Gilbert Welch, *Screening for Disease*, 168 AM. J. ROENTGENOLOGY 3, 5 (1997).

88. *Id.* at 5-6.

89. *Id.*

90. How judgments are made on a radiograph is best explained by the concept of defeasible reasoning, briefly discussed *supra* Part II.A.

91. *Todd v. Eitel Hosp.*, 237 N.W.2d 357, 361-62 (Minn. 1975) (“Negligence cannot be found when the facts show no more than an error in diagnosis.”).

some other physician would personally have acted any differently than the [d]efendant.”⁹² The essential matter to establish is whether the radiologist exercised reasonable judgment based on the information at hand.⁹³ In determining this, it should be noted that radiologists must make certain statistical inferences even though other inferences are possible, though other radiologists might have reached a different conclusion, and though the judgment can turn out to be erroneous or even harmful in retrospect.⁹⁴

IV. EXISTING LEGAL PRECEDENTS

The law recognizes occasions when negligence is excused in the treatment of patients.⁹⁵ Some of these instances are general. For example, a patient arrives at a hospital suffering an injury from a criminal act. If the patient dies from the hospital’s failure to treat a resulting infection, the ordinary negligence of the hospital will not relieve the original criminal actor from liability for homicide.⁹⁶ The injurer’s act is still considered the “proximate cause” of the death because ordinary negligence is a foreseeable consequence of hospitalization.⁹⁷

Other instances of excuse shield medical professionals from liability. These usually consider specific circumstances that the provider faces at the time of treatment. For example, under the “Good Samaritan” doctrine, a provider’s negligence when treating unscheduled emergency victims in the field will be excused unless the injuring act was reckless, grossly negligent, or intentional.⁹⁸ This theory holds that “an actor who is confronted with an emergency is not to be held to the standard of conduct normally applied to one who is in no such situation.”⁹⁹ Providers face unique situations that can alter the way courts view culpability, and this fact is critical to recognize when assessing the proposed jury instruction. Although this realization provides a foundation for excusable neglect, further building is necessary to

92. *Riggins v. Mauriello*, 603 A.2d 827, 829 (Del. 1981) (citing jury instructions).

93. See Berlin, *supra* note 56, at 1028-29 (citing an 1860 Supreme Court of Illinois case, the standard of which remains essentially unchanged today in every state).

94. *Riggins*, 603 A.2d at 829 (Del. 1981).

95. *Supra* Part III.C. (discussing the notion of “mere” or “honest” errors of judgment as valid excuses for misdiagnosis or treatment on the part of physicians, and that courts have recognized that doctors are not presumed to be infallible).

96. WAYNE R. LAFAYE, CRIMINAL LAW § 6.4(f)(3), at 344-45 (4th ed. 2003).

97. *Id.* at 345 (“[I]f A shoots B and then Dr. C gives B improper medical treatment (response), the basic question is whether the treatment was abnormal (generally, negligent treatment is not so viewed).”).

98. E.g., Eric A. Brandt, *Good Samaritan Laws – The Legal Placebo: A Current Analysis*, 17 AKRON L. REV. 303, 304 (1983) (discussing various statutory protections for professionals who treat injury in the field).

99. W. PAGE KEETON ET AL., THE LAW OF TORTS § 33, at 196 (5th ed. 1984).

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adequately recognize the conditions that radiologists regularly encounter when analyzing films. In this respect, we must look to areas of the law in which businesspeople and professionals are regularly relieved of liability specifically because of inevitable human mistakes.

A prime example of how the law excuses professionals for human mistakes may be seen with criminal defense attorneys. The legal field analogy to a radiological misdiagnosis of a dangerous condition may be a criminal conviction due to ineffectiveness of counsel. While the Sixth Amendment of the United States Constitution guarantees the right to effective representation in a criminal trial,¹⁰⁰ criminal defendants are neither guaranteed assistance of the “best lawyer,”¹⁰¹ nor assistance from a lawyer who could have “done more” with the case.¹⁰² Rather, criminal defendants are entitled to attorneys who perform in a reasonable manner under a totality of the circumstances.¹⁰³ Ineffectiveness of counsel occurs when, applying prevailing norms of legal practice, the attorney’s “performance was deficient, and that deficiency prejudiced the defense.”¹⁰⁴

Similar to medical malpractice allegations in Radiology, variations of errors by defense counsel rely heavily on hindsight bias.¹⁰⁵ Clearly, criminal defendants have little motivation to search out error in their representation unless and until they have lost their cases. While some lawyers have been categorically labeled as ineffective based on easily identifiable situations such as conflicts of interest, failure to file appeals, or failure to appear in court,¹⁰⁶ other common allegations challenge attorneys’

100. U.S. CONST. amend. VI (“In all criminal prosecutions, the accused shall enjoy the right . . . to have the assistance of counsel for his defence.”).

101. *Boyd v. State*, 573 S.E.2d 52, 56 (Ga. 2002) (“The test for reasonable attorney performance has nothing to do with what the best lawyers would have done.”).

102. *Putman v. Head*, 268 F.3d 1223, 1245 (11th Cir. 2001) (noting that the “[t]est for ineffectiveness is not whether counsel could have done more; perfection is not required. . . . Nor is the test whether the best criminal defense attorneys might have done more.”).

103. *Strickland v. Washington*, 466 U.S. 668, 688 (1984).

104. *Wiggins v. Smith*, 539 U.S. 510, 521 (2003) (citing *Strickland*, 466 U.S. 668 (1984)).

105. *E.g.*, Chris Guthrie et al., *Inside the Judicial Mind*, 86 CORNELL L. REV. 777, 800 (2001) (“[T]he hindsight bias likely influences claims of ineffective assistance of counsel (decisions a lawyer makes in the course of representing a criminal defendant can seem less competent after the defendant has been convicted).”).

106. *See generally* Jeffrey L. Kirchmeier, *Drink, Drugs, and Drowsiness: The Constitutional Right to Effective Assistance of Counsel and the Strickland Prejudice Requirement*, 75 NEB. L. REV. 425, 446-51 (1996).

strategic choices during the course of a trial. Courts normally defer to the attorney's discretion in such cases, unless the error is particularly egregious:

[S]trategic choices made after thorough investigation of law and facts relevant to plausible options are virtually unchallengeable; and strategic choices made after less than complete investigation are reasonable precisely to the extent that reasonable professional judgments support the limitations on investigation. In other words, counsel has a duty to make reasonable investigations or to make a reasonable decision that makes particular investigations unnecessary. In any ineffectiveness case, a particular decision not to investigate must be directly assessed for reasonableness in all the circumstances, applying a heavy measure of deference to counsel's judgments.¹⁰⁷

Consequently, those cases in which strategy is found to be ineffective usually involve a lack or lapse of knowledge, failure to research applicable law and subsequent reliance on a flawed theory,¹⁰⁸ and failure to properly investigate the facts surrounding a case.¹⁰⁹ Generally, the failure to call a particular witness, object to a certain piece of evidence, or argue a particular theory will fail to meet the standard for ineffectiveness unless it can be shown that the witness, objection, or theory was so obvious and necessary to the defense that its omission constituted a prejudicial defect.¹¹⁰

Interestingly, one major difference between legal and medical malpractice claims has been the courts' willingness to forgive errors of perception based on purely human causes.¹¹¹ Courts have found attorney assistance to be effective despite the fact that counsel may have intermittently dozed off during the course of a protracted trial. For example, in *United States v. Peterson*, the Ninth Circuit Court of Appeals

107. *Strickland*, 466 U.S. at 690-91.

108. *E.g.*, *People v. Soriano*, 194 Cal. App. 3d 1470, 1482 (Cal. Ct. App. 1987) (finding that a general warning to an alien that conviction may result in deportation consequences was not sufficient representation given that "[h]ad she researched the matter she would have known that his guilty plea, absent a recommendation from the sentencing court against deportation, made him deportable.").

109. *E.g.*, *Sullivan v. Fairman*, 819 F.2d 1382, 1391-92 (7th Cir. 1987) (finding ineffective representation when defense counsel failed to contact key witnesses that were indicated on records in his possession, and who had information that directly contradicted a government witness).

110. The courts have found no obligation on the part of defense attorneys to raise futile objections or motions, *Koch v. Puckett*, 907 F.2d 524, 527 (5th Cir. 1990), provide new reasons for deciding the case beyond established precedents, *Elledge v. Dugger*, 823 F.2d 1439, 1443 (11th Cir. 1987), or extensively prepare witnesses if they performed reasonably nonetheless, *United States v. Molina*, 934 F.2d 1440, 1448 (9th Cir. 1991).

111. These are the same sorts of inevitable subconscious errors of perception that occur during the review of radiographs on a regular basis.

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implicitly permitted minimal dozing off as a subconscious bodily function and enforced the standard that such conduct offends the Constitution only when the behavior occurs during a “substantial portion” of the criminal proceedings.¹¹² After all, it is a known fact that even some judges cannot help from succumbing to the same uncontrollable behavior at times.¹¹³ The Second Circuit Court of Appeals expanded on the reason for such allowances:

Prolonged inattention during stretches of a long trial (by sleep, preoccupation or otherwise), particularly during periods concerned with other defendants, uncontested issues, or matters peripheral to a particular defendant, may be quantitatively substantial but without consequence. At such times, even alert and resourceful counsel cannot affect the proceedings to a client’s advantage.¹¹⁴

This recognition of the human condition in legal settings is quite unusual because the allowance acknowledges that judges cannot always control the behavior of attorneys, even when they are seated mere feet away. However, unlike the arena of medicine, in the legal realm judges usually *are* expected to monitor the conduct of attorneys on a constant basis in *every* trial, both inside and outside of the courtroom.¹¹⁵ Such monitoring often results in sanctions for repeatedly postponed appearances, deceit during the course of negotiations, or unnecessary stall-tactics during the course of discovery.¹¹⁶ All of these measures constitute procedural safeguards to minimize errors within the observation and control of the court. The permissible dozing rulings collectively recognize situations where the realities of legal adjudication still make the human condition inevitable, despite potential humiliation, monetary loss, and even disbarment.

Despite the obvious differences between examining radiographs in the reading room and observing testimony in a courtroom, both situations may

112. 777 F.2d 482, 484 (9th Cir. 1985); *but cf.* Jason Hoppin, *Law on Sleepy Lawyers Could Use a Tucking In*, THE REPORTER, June 6, 2002, available at <http://www.law.com/jsp/ca/PubArticleCA.jsp?id=1024079070996#> (citing a judge in a similar case where ineffectiveness was raised: “The constitution says everyone’s entitled to the attorney of their choice. The constitution doesn’t say the lawyer has to be awake.”).

113. *E.g.*, Shari Seidman Diamond et al., *Juror Discussions During Civil Trials: Studying an Arizona Innovation*, 45 ARIZ L. REV. 1, 36 (2003) (“Jurors not infrequently comment that the judge looks as bored as they are during tedious examination of a witness or that the judge occasionally appears to fall asleep.”).

114. *Tippins v. Walker*, 77 F.3d 682, 686 (2nd Cir. 1996). Such standards, of course, have not been without criticism. *E.g.*, Kirchmeier, *supra* note 106, at 467-70 (criticizing court decisions which allow for some degree of dozing off or involuntary human action).

115. *E.g.*, Judith A. McMorrow et al., *Judicial Attitudes Toward Confronting Attorney Misconduct: A View From the Reported Decisions*, 32 HOFSTRA L. REV 1425, 1445 (2004).

116. *See id.* at 1444-46.

involve unique variations of error that arise from uncontrollable aspects of human nature. In the legal profession, courts review allegations of ineffectiveness of counsel in light of multiple aspects of the attorney's performance when determining the quality of representation. In diagnostic Radiology, application of this rule will offer a fresh perspective that would refuse to automatically equate a radiologist's missed diagnosis with malpractice. This rule would require courts to consider multiple factors, including the unavoidable risks that come with human performance, when evaluating a radiologist's liability.

When analyzing these unavoidable risks, courts should recognize that diagnostic Radiology consists of image analysis, which is a unique type of medical practice.¹¹⁷ It involves a limited universe of evaluative behavior that occurs repetitively throughout the day.¹¹⁸ An inherent risk of mechanical error exists in such behavior in both medical and non-medical settings. That is, most agree that some unintended error by even the most highly trained personnel or quality-assured machinery is inevitable.¹¹⁹ As the court stated in *White Industries, Inc. v. Cessna Aircraft Co.*, to address inaccuracies in summaries of court records prepared for trial, "this requirement [for accurate summarization] must be approached sensibly . . . since some human error in transcribing or collating a 'voluminous' mass of figures, dates and names is practically inevitable."¹²⁰ That court also emphasized that, "[n]o hard and fast rules can be established, [and] one can only be guided by the relative significance and frequency of any demonstrated error."¹²¹ The analysis of radiological errors in perception should begin in the courts' treatment of mechanical error.

Although many specialties of law highlight essential components of excusable neglect,¹²² contract law in particular provides the best framework

117. See Thomas R. McLean, *The Offshoring of American Medicine: Scope, Economic Issues and Legal Liabilities*, 14 ANNALS. HEALTH L. 205, 215-16 (2005) (distinguishing Radiology on the basis that it consists of "specialty care based on image analysis"); see also Marc D. Ginsberg, *Beyond the Viewbox: The Radiologist's Duty to Communicate Findings*, 35 J. MARSHALL L. REV. 359, 359 (2002) (expressing how, in the context of liability, "[t]he radiologist occupies an interesting place on the medical treatment team.").

118. *Supra* Part II.A. (comparing diagnostic Radiology to the completion of endless *Where's Waldo* problems, hour after hour, day after day).

119. Melvin A. Eisenberg, *Mistake in Contract Law*, 91 CAL. L. REV. 1573, 1585 (2003). See generally COMMITTEE ON QUALITY OF HEALTH CARE IN AM., INST. OF MED., TO ERR IS HUMAN: BUILDING A SAFER HEALTH SYSTEM (Linda T. Kohn et al., ed. 2000) (describing the proliferation of error in the medical profession). If this inevitability of error applies to general medicine, it most certainly applies to the practice of Radiology, given the unique character of the specialty.

120. 611 F. Supp. 1049, 1070 (W.D. Mo. 1985).

121. *Id.*

122. See *supra* Part IV.

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for understanding the legal principles that attach to radiological error.¹²³ In contract law, mechanical errors are unintended blunders that result from physical or mental lapses.¹²⁴ They commonly occur in construction bids, transcriptions, and other activities.¹²⁵ More common examples of such errors might include spilling coffee on a contract or transposing two adjacent numbers in writing.¹²⁶ While these errors are often labeled as “clerical” or “computational”¹²⁷ and result only in monetary but not physical harm, this limitation should not prevent application of such principles to the field of medicine.¹²⁸ Importantly, as evident in the following analysis, these exact principles apply equally to errors in activities where harm often does result (i.e., during inherently dangerous sporting activities).¹²⁹

The general rule in contracts permits reformation of the contract when an error is mechanical.¹³⁰ The quality that separates the mechanical error from a post-hoc change in preference or faulty assumption “is not that one party was mistaken, but [is] rather the character of the mistake – that is, the fact that the mistake consisted of a transient error in the party’s mental machinery.”¹³¹ In such cases, it is not only efficient for contracts, but morally correct, to not attach liability to the mistaken party.¹³² It is appropriate to presume that the error was not a culpable one because such errors will occur even when the mistaken actor takes “optimal precautions.”¹³³ To hold otherwise would be detrimental to both society and the very nature of contracts.

In the regular course of contracting, “a legal regime that provided an incentive for triple- and quadruple-checking might inefficiently require an unduly high level of precaution.”¹³⁴ Additionally, such a rule in Radiology would cause many providers to misdiagnose nonexistent conditions as a

123. For an extensive treatment of errors in contract law, *see generally* Eisenberg, *supra* note 119, at 1577-78 (explaining that among the five traditional forms of mistakes in contracts, one distinct area is “mechanical error,” which exists separate from evaluative error, mistranscriptions, mistakes in interpretation, or shared mistaken factual assumptions).

124. *Id.* at 1577.

125. *Id.*

126. *Id.* at 1584.

127. *Id.* at 1585.

128. *E.g.*, McLean, *supra* note 117, at 251 (suggesting that radiologic errors are different from billing errors in the sense that radiologic errors could result in physical harm).

129. *Infra* Part IV.

130. *See generally* Eisenberg, *supra* note 119 (applying the *Restatements* and other legal decisions to reach this conclusion).

131. *Id.* at 1596.

132. *Id.* at 1586-87.

133. *Id.* at 1585.

134. *Id.* at 1579.

means of erring on the side of caution. Webster Riggs, Jr., described one common situation where radiologists over-diagnose conditions based on information provided by referring providers:

Referring doctors often tell the radiologist that their patients have fever and pain in a particular area of their chest and that with the stethoscope they hear evidence of pneumonia in that location . . . It is easy to over-read pneumonia when it has been so strongly suggested. But if a radiologist does go along with the suggested diagnosis, he or she may be hurting rather than helping the patient.¹³⁵

This is only one result of a biasing occurrence after which the radiologist is “apt to look too hard for something that would fit the clinical picture.”¹³⁶ Fear of strict liability for errors in perception could similarly produce results that hurt rather than help patients.¹³⁷

Unintended mechanical errors do not excuse all mechanical errors committed by radiologists any more than they excuse all mechanical errors made by a party to a contract. Clearly, a mistaken party will still be held accountable for an error if he or she is oblivious to what is written. However, the essential foundation for analysis of mechanical errors of perception, whether in contract or Radiology, is the presumption of excusal without proof of such advance deliberation and calculation.

To illustrate, this analysis is similar to athletes who mistakenly harm other competitors while engaged in the activity. As an accidental kick to the head or groin during a soccer game is inevitable during play, the injuring party will be relieved of tort liability unless his or her act was intentional or reckless.¹³⁸ These injuries happen to and are caused by even

135. WEBSTER RIGGS, JR., *THE YOU YOU DON'T KNOW: COVERT INFLUENCES ON YOUR BEHAVIOR* 18 (1997).

136. *Id.* See also Webster Riggs, Jr., *Why Radiologists Tend to Overcall Pediatric Chest Radiographs*, 25 *APPLIED RADIOLOGY*, 38, 38-39 (1996) (discussing reasons why radiologists overcall diseases, including medico legal pressures).

137. After all, various studies have demonstrated that individuals who are directed to consciously avoid negative outcomes often receive subconscious impulses to act in the prohibited manner. DANIEL M. WEGNER, *WHITE BEARS AND OTHER UNWANTED THOUGHTS: SUPPRESSION, OBSESSION AND THE PSYCHOLOGY OF MENTAL CONTROL* 31 (Guilford Press 1994) (“The more we try to control our thoughts, the more inclined we are to suffer a relapse.”). In other words, radiologists who are directed to look specifically for conditions they would otherwise miss, could end up finding nonexistent conditions and misdiagnose patients – exactly the action they are supposed to be avoiding.

138. *E.g.*, *Geiersbach v. Frieje*, 807 N.E.2d 114, 118 (Ind. Ct. App. 2004) (“Sports, by their nature, involve a certain amount of inherent danger. We believe that the proper standard of care for sporting events and practices should be to avoid reckless or malicious behavior or intentional injury.”).

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the most skilled players, so they are not liable for human errors in perception when behaving mechanically in the gaming courts.

In Radiology, the mechanical error analysis would not attach to errors of judgment because these errors address conditions observed consciously by the radiologist and then discounted for some reason. Mechanical errors are akin to the navigation of waters, an activity that often calls for trained tug-masters to steer vessels properly according to a combination of technical knowledge and then-existing environmental conditions.¹³⁹ When accidents occur at the hands of the tug-master, human errors may nonetheless be excused.¹⁴⁰ As one maritime law expert observed in a survey of cases:

Unfamiliarity with the waters or the special hazards of wind and tides is a frequent source of trouble (and collision) for tug-masters who are expected to know *everything on the charts*, plus many things *not* on the charts, but which should be known to persons habitually navigating the specified waters. This obligation of familiarity in no way imposes strict liability on the tugboat. Substantial “leeway” is afforded to the tugs for “mere judgment errors.”¹⁴¹

In such cases, courts avoid second-guessing the master based on circumstances deduced long after the fact of the accident, and instead hold him or her liable for error only when it is “gross and flagrant.”¹⁴²

Similar recognition of the human condition excuses professional error to varying extents in many areas of law, including the brokering of securities,¹⁴³ tabulating of votes,¹⁴⁴ summarizing of voluminous court documents,¹⁴⁵ disclosing of privileged information,¹⁴⁶ and, to an extent, the

139. Joseph C. Sweeney, *Collisions Involving Tugs and Tows*, 70 TUL. L. REV. 581, 586 (1995).

140. *See id.* at 590-92 (describing various responsibilities of tugboat operators, which could easily overwhelm even the most experienced skipper).

141. *Id.*

142. *E.g.*, *Imoan v. Moran Towing*, 67 F.2d 603, 605 (2d Cir. 1933) (refusing to charge a master for simply choosing one route over another under the circumstances, or for conduct that was not outside the range of possible discretion).

143. *See generally id.* *E.g.*, *Newman v. Pershing & Co., Inc.*, 412 F. Supp. 463 (S.D.N.Y. 1975) (noting that to invalidate a securities contract for violations that resulted from accidental error would far more impede than promote the purposes of federal securities laws).

144. *Hennings v. Grafton*, 523 F.2d 861, 864 (7th Cir. 1975) (refusing to order a recount and finding no constitutional violations when there is an absence of “invidious or fraudulent intent” and irregularity results only from “mechanical or human error”).

145. *E.g.*, *White Indus., Inc. v. Cessna Aircraft Co.*, 611 F. Supp. 1049, 1071-72 (W.D. Mo. 1985).

146. *E.g.*, *Federal Deposit Ins. Corp. v. Marine Midland Realty Credit Corp.*, 138 F.R.D. 479, 481 (E.D. Va. 1991) (recognizing that attorney-client privilege should be waived only in circumstances where the attorney took so few precautions to avoid such disclosure that his

drafting of wills.¹⁴⁷ Often in these situations, unless the error rose to a manifest level, the defendant should be relieved of liability. Furthermore, the contract law analogy here appropriately takes several circumstances into account. Aside from recognizing the intentional withholding of information, contract law also envisions culpability when a party is “consciously ignorant” of certain information.¹⁴⁸ Conscious ignorance here does not merely stop at gross disregard. Rather, it sets a higher standard by finding liability when a party is “consciously aware that he has only limited knowledge with respect to a fact, but treat[s] his limited knowledge as sufficient.”¹⁴⁹ For the purpose of this discussion, the proposed jury instruction would attach a similar standard to the evaluation of judgment errors. In shaping the instruction, conscious ignorance could manifest when a radiologist refuses to research a potential explanation for an abnormality based solely on the inconvenience of retrieving the reference volume.

Each of the above examples is informative, though not directly controlling, in the case of the radiologist’s human error. They illustrate that professional errors should be excused from both a legal and moral perspective, especially when they are inevitable despite optimal levels of training and precaution. The following section applies this principle to the unique concerns of radiologists in the form of a jury instruction that raises “Excusable Neglect” as a defense to a negligence action.

V. THE DOCTRINE OF “EXCUSABLE NEGLIGENCE”

While radiologists may be less likely than referring physicians to be sued for malpractice,¹⁵⁰ this does not absolve them from lawsuits.¹⁵¹ Some courts have absolved radiologists of liability under the “captain of the ship” doctrine, which holds the referring surgeon responsible on the basis of a non-delegable duty.¹⁵² Under this rule, courts find “surgeons responsible

or her conduct can be viewed as willful).

147. *E.g.*, Joseph W. deFuria, Jr., *Mistakes in Wills Resulting from Scriveners’ Errors: The Argument for Reformation*, 40 CATH. U. L. REV. 1, 20 (1990) (explaining that the testator’s intent should be honored despite the scrivener’s error).

148. Eisenberg, *supra* note 119, at 1630.

149. *Id.*

150. McLean, *supra* note 117, at 228 (“Considering the enormous number of radiographic images created each year, very few radiologists are sued.”).

151. *See also* R. James Brenner, *Mammography and Malpractice Litigation: Current Status, Lessons, and Admonitions*, 161 AM. J. ROENTGENOLOGY 931, 931 (1993) (explaining that in 1993, the American Medical Association estimated that “nearly [forty-one percent] of the nation’s practicing Radiologists have been sued at least once in their career since 1987.”).

152. *E.g.*, Long v. Hacker, 520 N.W.2d 195, 201 (Neb. 1994) (finding that, despite the surgeon’s reliance on a misdiagnosed film, he was solely responsible for removing the

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for any negligent conduct in the operating room, just as the captain of a ship is responsible for the actions of its crew.”¹⁵³ Other courts have ruled that the radiologist has no duty to a patient because the review of films lacks the traditional components of a doctor-patient relationship.¹⁵⁴ However, despite suggestions that radiologists are not liable for misdiagnoses, plaintiffs may often successfully sue them.

Upon closer analysis, the “captain of the ship” doctrine depends on the surgeon’s right of control over the staff member who errs.¹⁵⁵ In many states, while the surgeon may be responsible for the acts of the anesthetist-resident, the same is not true of the anesthesiologist given his or her function in providing routine hospital service.¹⁵⁶

Furthermore, courts have increasingly recognized that radiologists may still be responsible for failures to diagnose or report conditions on the basis of public policy. For example, in *Stanley v. McCarver*, the Arizona Supreme Court held that “the absence of a formal doctor-patient relationship does not necessarily preclude the imposition of a duty of care.”¹⁵⁷ Rather, the radiologist places himself or herself in a unique position to prevent future harm to the patient by undertaking to review an x-ray, even if that radiologist is merely conducting a standard pre-employment screening.¹⁵⁸ The scope of the duty is “to use care and professional skill in reading [the patient’s] x-ray and to reasonably report the results of the x-ray.”¹⁵⁹ In fact, while some state precedents require traditional doctor-patient relationships, the *Stanley* court noted a modern trend away from such rulings.¹⁶⁰ The prevailing view favors imposing a duty in line with Section 324A of the *Second Restatement of Torts*, which contemplates the recognition of a duty in “one who undertakes, gratuitously

wrong vertebrate since it was a surgeon’s nondelegable duty to localize the area of the surgery).

153. Jason R. Yungtum, Note, *The “Captain of the Ship” Sets Sail in Nebraska: Long v. Hacker*, 29 CREIGHTON L. REV. 379, 379 (1995).

154. See generally *Wilcox v. Salt Lake City Corp.*, 26 P.2d 1200, 1201 (Utah 1971) (finding that radiologists’ duty was to the city, rather than to the thousands of people that were x-rayed).

155. See generally Yungtum, *supra* note 153, at 421-23 (applying the “right to control” test in the context of the “captain of the ship doctrine”).

156. E.g., *Oberzan v. Smith*, 869 P.2d 682, 685 (Kan. 1994) (refusing to apply “captain of the ship” doctrine to surgeon for the negligent acts of an x-ray technician who perforated the rectum of a patient).

157. 92 P.3d 849, 856 (Ariz. 2004).

158. *Id.* at 853.

159. *Id.* at 851.

160. *Id.* at 853.

or for consideration, to render services to another which he should recognize as necessary for the protection of a third person”¹⁶¹

Radiologists are sued to the extent that specific instructions have been crafted to address their liability as medical specialists. One such prominent instruction reads as follows:

[1]—Instruction

If you find from the greater weight of the expert evidence presented in this case that the care provided by the defendant radiologist, in that [state nature of act or omission alleged as negligence] did not conform to the standard of practice [among members of the same profession in similar communities at the time] [state other applicable locality rule] and that it was such deviation from the standard of care that resulted in this plaintiff’s injuries, your verdict must be for the plaintiff.¹⁶²

In the commentary to this instruction, the authors note that malpractice liability can be predicated upon “[e]rrors resulting in a delayed or inaccurate diagnosis.”¹⁶³ However, the instruction fails to touch upon the nature of a radiologist’s practice and makes no mention of the inevitable types of errors, such as the errors in perception or judgment addressed above.

As these instructions provide little useful guidance, courts often permit radiologist-defendants to add a hindsight instruction, which has been held particularly apt to address malpractice claims in this venue.¹⁶⁴ Such instructions advise, for example:

I charge you that in a medical malpractice action against a physician, the physician cannot be found negligent on the basis of an assessment of a patient’s condition which only later or in hindsight proved to be incorrect, as long as the initial assessment was made in accordance with the then reasonable standards of medical care. The concept of negligence does not encompass hindsight. Negligence consists of not foreseeing and guarding against that which is probable and likely to happen, not against that which is only remotely and slightly possible.¹⁶⁵

161. RESTATEMENT (SECOND) OF TORTS § 324A (1965).

162. JURY INSTRUCTIONS ON MEDICAL ISSUES § 7-15 (MB 2005).

163. *Id.* at § 7-15[3].

164. *E.g.*, Horton v. Eaton, 452 S.E.2d 541, 545 (Ga. Ct. App. 1994) (approving hindsight instruction on the basis that the radiologist became aware of the patient’s complaints only after evaluation of the films).

165. Barnes v. Wall, 411 S.E.2d 270, 273 (Ga. Ct. App. 1991).

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These precautions do little to properly recognize and situate inevitable errors of judgment or perception. While the hindsight instruction may assist the radiologist with respect to matters following the missed diagnosis, the instruction fails to address the human condition that caused the error and ultimately provides only partial assistance at best.

One final type of instruction that exists to potentially aid radiologists is the “honest error of judgment” or “mere error of judgment” instruction.¹⁶⁶ Though numerous courts have questioned its recent use, the differences between Radiology and general medical practice actually make the instruction far more suitable to the radiologist-defendant. Namely, in some malpractice cases, physicians have raised this instruction in defense of an unintended result. Apparently, as many as twenty-nine states have cited the doctrine with approval in past precedent.¹⁶⁷ This doctrine may shield the provider from liability if the physician shows that he or she exercised the appropriate degree of care despite the unfavorable outcome.

Most often, this defense is raised when doctors are accused of selecting the wrong method of treating a diagnosed condition. For example, in the case of *Sleavin v. Greenwich Gynecology & Obstetrics*, the treating gynecologist allegedly provided improper postoperative care after performing a caesarean delivery.¹⁶⁸ The thrust of his defense hinged on his interpretation of the patient’s reaction to antibiotics.¹⁶⁹ The doctor explained that he considered factors that other doctors normally considered when treating such conditions and that he exercised his best judgment, even though it proved to be erroneous.¹⁷⁰ In response to the testimony, the trial court permitted the plaintiff to instruct, *inter alia*: “The central issue in a negligence case such as this is whether the defendant . . . deviated from the required standard of reasonable care expected of a physician in his care and treatment of the plaintiff, not his mental state at the time of the conduct which constitutes the deviation.”¹⁷¹ Correspondingly, the court permitted the physician to instruct on errors in judgment as follows:

He is *not liable for a bona fide error in judgment* provided he concludes as best he can and does what he thinks best after careful examination and acts in good faith subject to the rules of care, skill and diligence as I have

166. *E.g.*, W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS 186 (5th ed. 1984).

167. *Ouellette v. Subak*, 391 N.W.2d 810, 814 (Minn. 1986).

168. 505 A.2d. 436, 437 (Conn. App. Ct. 1986).

169. *Id.* at 437.

170. *Id.* (finding that this argument permitted the doctor to raise the defense of honest error in judgment).

171. *Id.* at 437-38.

defined that to you. . . . *He is not to be judged by the result, nor is he necessarily to be held liable for an error in judgment.*

However, the fact that he may have acted to the best of his ability will not avoid legal liability for damages resulting from substandard treatment. An obstetrician/gynecologist cannot adopt a course of treatment which would be a breach of his duty to use due care. And even though he has used his best judgment he still may be found guilty of malpractice if he has failed to perform one of the duties which he owed to the patient.

The rule that an obstetrician/gynecologist is not liable for a mistake of judgment is not ironclad but rather it exempts the doctor from liability only where there is reasonable doubt as to the nature of the physical condition involved or as to the proper course to be followed or where good judgment may differ. Errors in judgment which accrue with the best of intentions may constitute negligence if they result from a failure to use reasonable care.¹⁷²

In many jurisdictions, courts traditionally permitted these instructions for some time on the basis that doctors were not considered insurers of their diagnoses or treatments if they did everything within reasonable means; otherwise, the standard would demand infallibility.¹⁷³ Despite the continued existence of such instructions in some jurisdictions,¹⁷⁴ more recent court decisions have found these instructions erroneous, as they have been inflammatory, confusing, misleading, or “unduly exculpatory.”¹⁷⁵ In the *Sleavin* example cited above, the appellate court relied on the modern position and found error in the trial court’s instruction, mainly on the basis

172. *Id.* at 438. *But cf.* Logan v. Greenwich Hosp. Ass’n, 465 A.2d 294, 303 (Conn. 1983) (emphasis added) (stating that a physician who uses skill, care, and diligence is not liable simply because a bad result occurs, and that bad results do not solely raise a presumption of such want of skill or care).

173. *E.g.*, Dickens v. Everhart, 199 S.E.2d 440, 443 (N.C. 1973) (“[A] qualified physician, who forms his judgment after a careful and proper examination or investigation of the particular patient’s condition, is not an insurer of his diagnosis or the success of his treatment and is not liable for an honest error of judgment.”).

174. *See* Miller v. Kennedy, 588 P.2d 734, 738 (Wash. 1978) (“A physician or surgeon is not liable for an honest error of judgment if, in arriving at that judgment, the physician or surgeon exercised reasonable care and skill, within the standard of care he was obliged to follow.”); *see* Joan P. Dailey, Comment, *The Two Schools of Thought and Informed Consent Doctrines in Pennsylvania: A Model for Integration*, 98 DICK. L. REV. 713, 715 (1994) (observing the continued validity of the Washington instruction).

175. Dailey, *supra* note 174, at 715 (“[T]here is a growing trend, however, to reject honest error language as unduly exculpatory and to instruct with less argumentative and misleading language.”).

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that the instruction confused jurors and distracted them from determining the primary inquiry of whether his conduct at the time was reasonable.¹⁷⁶

Whether courts would treat a radiologist-defendant's use of the honest error in judgment defense differently, given the nature of his or her duties, is unclear. The standard instruction raises concerns that are fundamental to the defense of Excusable Neglect. Instructions on Excusable Neglect, as it relates to errors in judgment, would likely produce the same grounds for challenge. Therefore, concluding this review of cases that have balanced the issues, we will turn to the language and rationale adopted by the Minnesota Supreme Court in framing the proposed instruction.

Ouellette v. Subak addressed the court's underlying concern that the language, "honest error," in the state's longstanding error in judgment instruction was "inherently subjective and inject[ed] into a negligence action irrelevance of good or bad faith."¹⁷⁷ Rather than eliminating the basis for the instruction, the *Ouellette* court struck a balance between competing concerns¹⁷⁸ and developed the following comprehensive standard:

A doctor is not negligent simply because his or her efforts prove unsuccessful. The fact a doctor may have chosen a method of treatment that later proves to be unsuccessful is not negligence if the treatment chosen was an accepted treatment on the basis of the information available to the doctor at the time a choice had to be made; a doctor must, however, use reasonable care to obtain the information needed to exercise his or her professional judgment, and an unsuccessful method of treatment chosen because of a failure to use such reasonable care would be negligence.¹⁷⁹

It is with a similar aversion to subjective judgment that we approach the proposed instruction.

176. *Sleavin v. Greenwich Gynecology & Obstetrics*, 505 A.2d. 436, 438 (Conn. App. Ct. 1986).

177. 391 N.W.2d 810, 814-15 (Minn. 1986); *see also* 4 MINN. DIST. JUDGES ASS'N, MINNESOTA PRACTICE, JIG II, 425 G-S (2d ed. 1974) ("A [physician] is not a guarantor of a cure or a good result from his treatment and he is not responsible for an honest error in judgment in choosing between accepted methods of treatment.").

178. *Oulette*, 391 N.W.2d at 814-15 (noting that if two methods of treatment for a particular condition are both accepted by the medical profession, using the best professional judgment or opinion to choose is not ordinarily negligence. If the two methods of treatment depend on different factual bases, then the doctor must use reasonable care to ascertain necessary facts in making the choice. Otherwise, a doctor should not ordinarily be liable for honest errors of judgment where there is reasonable doubt as to the nature of the physical conditions involved or as to what should have been done).

179. *Id.* at 816.

VI. PROPOSED LANGUAGE

The jury instruction proposed below takes into account the unique and inevitable errors of perception or judgment among even the most learned and best-equipped radiologists. Accordingly, it should be incorporated into general instructions on the evaluation of radiologists as specialists or introduced as a separate defense any time a radiologist's standard of care for a missed diagnosis is at issue. Below, the proposed instruction follows the format of a standard instruction, including the text of the instruction and definitions. Where required, we provide additional supporting authority and commentary in the footnotes.

§ 1-1 Defenses: Radiologists: Excusable Neglect

[1]—Instruction

If you find from the greater weight of the expert evidence presented in this case that the Defendant radiologist's failure to diagnose [state abnormality] resulted solely due to an error in judgment, perception, or knowledge, that is, the error occurred regardless of reasonable precautionary measures or the error was beyond the conscious control of the Defendant, then your verdict must be for the Defendant.

[2]—Definitions

(a) As addressed above, "precautionary measures" are measures commonly and widely used in the specialty of Radiology to ensure the accuracy of a reading, including:

(1) Measures instituted by the radiologist to compensate for his or her own physical conditions, *e.g.*, taking prescribed medications, responding appropriately to bouts of sickness, preventing fatigue with enough sleep, or maintaining the proper prescription for eyewear.¹⁸⁰

(2) Measures instituted by the radiologist to compensate for environmental conditions, *e.g.*, reducing noise, avoiding conversation, ensuring the functionality of equipment, adjusting lighting to the appropriate level, and avoiding other sources of surrounding distraction while reviewing films.

(3) Measures instituted by the radiologist to evaluate the referral, including a review of the presenting issue to determine the need for further analysis.¹⁸¹

180. Berlin & Hendrix, *supra* note 46, at 866-67 (describing the necessity of considering multiple factors particular to the radiologist as well as his or her technique).

181. *See, e.g.*, Horton v. Eaton, 452 S.E.2d 541 (Ga. Ct. App. 1994) (recognizing, based

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(b) As addressed above, an “error of perception” occurs when the radiologist totally fails to detect a patent abnormality.¹⁸² The failure to detect an abnormality alone does not automatically indicate negligence.¹⁸³

(c) As addressed above, an “error of judgment” occurs when the radiologist notes the abnormality but discounts it after detection or attaches to it an inappropriate level of significance. The failure to diagnose a particular condition when alternative diagnoses might equally apply does not automatically indicate negligence.¹⁸⁴

(d) As addressed above, an “error of knowledge” occurs when the radiologist fails to obtain or maintain the minimal education required to analyze the abnormality within his or her own specialty of Radiology. For example, in considering such educational attainment, a generalist in Radiology should be responsible only for maintaining the level of knowledge in Neuroradiology expected of general radiologists. A generalist will not be held to the same standard as a neuroradiologist. Here, special attention should be given to the frequency at which the abnormality normally occurs within a given population.¹⁸⁵

(e) As addressed above, beyond one’s “conscious control” refers to absence of deliberation, consideration, or purposeful avoidance.

In line with the prevailing view of tort law as a means to encourage preventive planning, the standards indicated above assist radiologists in maximizing conditions over which they have control. At the same time, the same standards recognize that every radiologist is susceptible to unavoidable errors of perception, judgment, or knowledge. Further, part of the objective of tort law is to encourage risk management through behavior

on expert testimony, the significance of descriptions such as “fell out of a tree” versus “complains of pain in neck” in creating the scope of care, the latter requiring additional testing).

182. See *Dep’t of Regulation & Licensing v. State Med. Examining Bd.*, 572 N.W.2d 508, 514 (Wis. Ct. App. 1997) (applying identical test to determine negligence in civil tort and professional disciplinary contexts, and stating that several non-negligent reasons for errors in perception include that: (1) humans differ in their 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).

183. *Id.* at 513 (“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.”).

184. *Ouellette v. Subak*, 391 N.W.2d 810, 816 (Minn. 1986).

185. *E.g.*, *Bergren v. Maine Med. Ctr.*, No. 80-325, 1983 Me. Super. LEXIS 154, at *9 (Me. Sup. Ct., Aug. 26, 1983) (considering whether the abnormality was a “rare event” and recognizing the estimated half of one percent frequency in which osteochondral fractures occur in presenting patients).

modification. If an individual recognizes that he or she will be held legally liable if his or her risk-taking behavior results in injury to others or damage to property, he or she will theoretically be motivated to modify his or her behavior.¹⁸⁶ However, if a radiologist feels that, despite the fact that he or she has taken absolutely every possible precaution, he or she will still be held to a standard of strict liability where any error results in a claim and a potentially adverse judgment, just imagine what sort of behavior modification could occur. Some may choose to forego practice altogether, which would potentially exacerbate problems with access to care. This is surely not the intent of tort law. It does not serve society's interests. It does not further the pursuit of justice.

VII. CONCLUDING REMARKS

The purpose of a civil action is to determine the facts of the matter, to establish whether malpractice has in fact occurred, and to apportion liability accordingly. Civil cases undeniably involve matters of justice.¹⁸⁷ Unfortunately, juries often confuse compassion with justice. Research has shown that the results of malpractice actions are often attributable to the degree of disability and injury, rather than to whether the physician committed negligence or to the nature of the adverse event.¹⁸⁸ In the evaluation of malpractice claims against radiologists, juries should recognize the following inescapable realities of the 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;
- Not all radiographic "misses" are excusable; and therefore, the focus of attention should be on issues such as proof of competence, habits of practice, use of proper techniques; and
- Other factors that can normally be controlled by a radiologist when taking reasonable precautions.¹⁸⁹

186. See, e.g., Arthur Ripstein, *Philosophy of Tort Law*, in THE OXFORD HANDBOOK OF JURISPRUDENCE AND PHILOSOPHY OF LAW 662 (Jules Coleman & Scott Shapiro eds., 2002).

187. See, e.g., Catherine Pierce Wells, *Tort Law as Corrective Justice: A Pragmatic Justification for Jury Adjudication*, 88 MICH. L. REV. 2348 (1990).

188. See generally Brennan, *supra* note 4, at 1963.

189. Berlin & Hendrix, *supra* note 46, at 865.

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Without imposing a reasonable method for evaluating such error, the remaining framework reflects an unrealistic mandate for infallibility in the practice of Radiology. The proposed instruction on Excusable Neglect offers a balanced perspective to improve this patent abnormality in the system of civil justice.