

SUPREME COURT OF TEXAS

Kramer v. Lewisville Memorial Hospital

858 S.W.2d 397 (Tex. 1993) · No. D-2680 · Decided September 10, 1993

OPINION

PER CURIAM.

858 S.W.2d 397 (1993) Stephen C. KRAMER, Individually, and as Representative of the Estate of Jennie Roland Kramer, Deceased, and as next friend of Geoffrey Kramer and Lyndsey Kramer, minor children, Petitioners, v. LEWISVILLE MEMORIAL HOSPITAL, Respondent. No. D-2680. Supreme Court of Texas. June 30, 1993. Rehearing Overruled September 10, 1993. *398 Bruce A. Pauley, Michael S. Box, Les Weisbrod, Dallas, for petitioners.

Peter R. Meeker, Austin, for respondent. OPINION PHILLIPS, Chief Justice. The principal issue presented in this case is whether Texas permits recovery for lost chance of survival or cure in medical malpractice cases; that is, whether there is liability for negligent treatment that decreases a patient's chance of avoiding death or other medical conditions in cases where the adverse result probably would have occurred anyway.

We hold that such recovery is not authorized by the Texas Wrongful Death Act, TEX.CIV.PRAC. & REM. CODE §§ 71.002 & 71.004, and should not be permitted under the Texas Survivorship Statute, TEX.CIV.PRAC. & REM.CODE § 71.021, or under a separate common law cause of action.

Accordingly, we affirm the judgment of the court of appeals. 831 S.W.2d 46. I. Jennie Kramer was the wife of Stephen Kramer and the mother of Geoffrey and Lyndsey Kramer. In August 1985, Ms. Kramer visited Dr. Bruce Eich, her gynecologist, because she was experiencing unusual discharges and intermittent bleeding a few days before and after her menstrual period.

Dr. Eich, observing that her cervix was inflamed, diagnosed her condition as a yeast infection. He also performed a pap smear and sent a microscope slide made from the smear to Lewisville Memorial Hospital (the "Hospital") for screening. Cytotechnologist Frances Nightingale, the Hospital's laboratory director, screened the slide and detected no abnormal cells that might indicate cancer.

Dr. Richard Burgess, a pathologist employed by the Hospital who was Ms. Nightingale's supervisor, then reviewed the slide as part of the Hospital's quality control program. He also found the slide negative for cancer. Still suffering from irregular bleeding, Ms. Kramer consulted another doctor, Dr. Michael Burgess, in November 1985. Dr. Burgess was not associated with the Hospital and is apparently unrelated to Dr. Richard Burgess.

After conducting various other tests, not including a pap smear, he also diagnosed her condition as normal. Ms. Kramer's bleeding became more severe, however, and in December 1985 she detected a hardening in her cervix. She returned to Dr. Michael Burgess who, in spite of these new developments, concluded that nothing further needed to be done.

The following February, after continued episodes of irregular bleeding, Ms. Kramer detected a hard spot in her vagina. She again returned to Dr. Michael Burgess, who performed a cervical biopsy and diagnosed her cancer. Ms. Kramer was then admitted to the Hospital, where she underwent exploratory surgery in March 1986. She returned to the Hospital on one other occasion, in April, for emergency room treatment of hemorrhaging.

She then took radiation treatments and chemotherapy at another hospital under the care of other doctors, who were not sued in this case. The cancer spread to her lungs, however, and she died on October 31, 1986. Stephen Kramer, individually, as representative of Jennie Kramer's estate, and as next friend of their children, brought suit under the Texas Wrongful Death Act and the Texas Survivorship Statute against Dr. Bruce Eich, Drs.

Richard and Michael Burgess, Ms. Frances Nightingale, the Hospital, and other professional medical groups and centers of which the physicians were members. Pursuant to the Medical Liability and Insurance Improvement Act, TEX. REV.CIV.STAT. art. 4590i (Vernon Supp. 1993), the Kramers served notice to all defendants of their intention to bring health care liability claims against each of them.

All the defendants except the Hospital settled with the Kramers before trial. Prior to trial, the Kramers amended their petition to allege, under the same facts, a cause of action for the "significant and substantial reduction in the chance of saving" Ms. Kramer's life.

As they later explained in oral argument before this Court, the Kramers viewed this cause of action as based solely upon the common law, wholly independent of either the Wrongful Death Act or the Survivorship statute. At trial, Ms. Nightingale testified that she screened most pap smear slides at home instead of at the Hospital's laboratory, although she did not know whether this was true of Ms. Kramer's slide.

Based on her re-examination of the slide, she admitted that her failure to detect abnormal cells in the smear was a mistake in judgment. The Kramers introduced expert opinion testimony that the Hospital was negligent in allowing Ms. Nightingale to screen slides at home rather than at the laboratory.

The Kramers also offered undisputed evidence regarding the International Federation of Gynecology and Obstetrics' five-stage classification system for cervical cancer. Cancer diagnosed as "Stage 0" is limited to the surface of the cervix, and, if detected and treated, has a 100% five-

year survival rate. "Stage I" cancer has spread into the tissues of the cervix, and has a 95% survival rate.

"Stage II" cancer has spread beyond the cervix, and has a 70% to 80% survival rate. "Stage III" cancer has reached the pelvic wall, and has slightly less than a 50% survival rate. Finally, "Stage IV" cancer has spread to other organs, and has only a 0% to 5% survival rate.

The experts for the Kramers and the Hospital disagreed over the stage of Ms. Kramer's cervical cancer in August 1985, when Ms. Nightingale and Dr. Richard Burgess screened the pap smear. The Kramers' experts testified that while Ms. Kramer was either Stage 0 or Stage I at the time, she was at least Stage III by the time her cancer was diagnosed in February 1986.

Two experts for the Hospital conceded that while there was no objective evidence that Ms. Kramer was anything but Stage I in August 1985, retrospective analysis suggested that her cancer could have been as advanced as Stage IV.

Thus, the evidence most favorable to the Kramers showed that the Hospital's conduct was a proximate cause of Ms. Kramer's death, while the evidence most favorable to the defendants showed that any negligence by the Hospital had only a 0 to 5 percent chance of affecting her chances of survival. At the close of evidence, the Kramers requested jury instructions and questions that would have allowed the jury, if it failed to find that the Hospital was the proximate cause of Ms. Kramer's death, to impose liability for depriving her of the chance of survival she had at the time of the August 1985 pap smear.

The trial court refused all of these requested jury issues. The jury failed to find that Ms. Nightingale was negligent and, while it did find that Dr. Burgess and the Hospital were negligent, it failed to find that such negligence proximately cause Ms. Kramer's death.

On this verdict, the trial court rendered a take-nothing judgment in favor of the Hospital, and the court of appeals affirmed. II. A. Under the traditional standard of sufficiency of evidence for submitting a *400 medical malpractice case to the jury, plaintiffs are required to adduce evidence of a "reasonable medical probability" or "reasonable probability" that their injuries were caused by the negligence of one or more defendants, see, e.g., *Duff v. Yelin*, 751 S.W.2d 175, 176 (Tex.1988); *Lenger v. Physicians' Gen.*

Hosp., Inc., 455 S.W.2d 703, 706-07 (Tex.1970); Darrell L. Keith, *Loss of Chance: A Modern Proportional Approach to Damages in Texas*, 44 Baylor L.Rev. 759, 761-62 (1992), meaning simply that it is "more likely than not" that the ultimate harm or condition resulted from such negligence. See *Lenger*, 455 S.W.2d at 707; Keith, 44 BAYLOR L.REV. at 761.

As is true in other types of negligence cases, the ultimate standard of proof on the causation issue is whether, by a preponderance of the evidence, the negligent act or omission is shown to be a

substantial factor in bringing about the harm and without which the harm would not have occurred. See, e.g., *Havner v. E-Z Mart*, 825 S.W.2d 456, 459 (Tex.1992); *McClure v. Allied Stores of Texas, Inc.*, 608 S.W.2d 901, 903 (Tex.1981).

The effect of these standards is to bar recovery where the defendant's negligence deprived the tort victim of only a 50% or less chance of avoiding the ultimate harm. See Jim M. Perdue, *Recovery for a Lost Chance of Survival: When the Doctor Gambles, Who Puts Up the Stakes?* 28 SO.TEX. L.REV. 37, 43-44 (1987). Hence, where preexisting illnesses or injuries have made a patient's chance of avoiding the ultimate harm improbable even before the allegedly negligent conduct occurs i.e., the patient would die or suffer impairment anyway the application of these traditional causation principles will totally bar recovery, even if such negligence has deprived the patient of a chance of avoiding the harm.

Over the last twenty years, a number of states have sought to ameliorate this result by adopting some version of the so-called "loss of chance" doctrine. See *Thompson v. Sun City Community Hosp.*, 141 Ariz. 597, 608, 688 P.2d 605, 616 (1984); *Blackmon v. Langley*, 293 Ark. 286, 737 S.W.2d 455, 457 (1987); *DeBurkarte v. Louvar*, 393 N.W.2d 131, 137-38 (Iowa 1986); *Roberson v. Counselman*, 235 Kan.

1006, 686 P.2d 149, 159-60 (1984); *Hastings v. Baton Rouge Gen. Hosp.*, 498 So. 2d 713, 720 (La. 1986); *Falcon v. Memorial Hosp.*, 436 Mich. 443, 462 N.W.2d 44, 52-57 (1990); *Wollen v. DePaul Health Ctr.*, 828 S.W.2d 681, 684-86 (Mo.1992) (en banc); *Aasheim v. Humberger*, 215 Mont. 127, 695 P.2d 824, 828 (1985); *Perez v. Las Vegas Medical Ctr.*, 107 Nev. 1, 805 P.2d 589, 592 (1991); *Scafidi v. Seiler*, 119 N.J.

93, 574 A.2d 398, 405-08 (1990); *Kallenberg v. Beth Israel Hosp.*, 45 A.D.2d 177, 357 N.Y.S.2d 508, 510-11 (1974), *aff'd mem.*, 37 N.Y.2d 719, 374 N.Y.S.2d 615, 337 N.E.2d 128 (1975); *McKellips v. Saint Francis Hosp.*, 741 P.2d 467, 474-77 (Okla.1987); *Hamil v. Bashline*, 481 Pa. 256, 392 A.2d 1280, 1288-89 (1978); *Brown v. Koulizakis*, 229 Va. 524, 331 S.E.2d 440, 446 (1985); *Herskovits v. Group Health Cooperative of Puget Sound*, 99 Wash.2d 609, 664 P.2d 474, 477-49 (1983); *Thornton v. CAMC, Etc.*, 172 W.Va.

360, 305 S.E.2d 316, 324-25 (1983); *Ehlinger by Ehlinger v. Sipes*, 155 Wis. 2d 1, 454 N.W.2d 754, 759 (1990); see also *Daniels v. Hadley Memorial Hosp.*, 566 F.2d 749, 757 (D.C.Cir.1977) (District of Columbia law); *Richmond County Hosp. Auth. v. Dickerson*, 182 Ga.App. 601, 356 S.E.2d 548, 550 (1987); *McBride v. United States*, 462 F.2d 72, 75 (9th Cir.1972) (Hawaii law); *Shumaker v. United States*, 714 F. Supp. 154, 164 (M.D.N.C.1988) (North Carolina law); *Morales v. United States*, 642 F. Supp. 269, 272 & n. 3 (D.P.R.1986) (Puerto Rico law); *Voegeli v. Lewis*, 568 F.2d 89, 94 (8th Cir.1977) (South Dakota law).

On the other hand, eight states have clearly rejected the doctrine. See *Grody v. Tulin*, 170 Conn. 443, 365 A.2d 1076, 1080 (1976); *Gooding v. University Hosp. Bldg., Inc.*, 445 So. 2d 1015, 1019-20 (Fla.1984); *Manning v. Twin Falls Clinic & Hosp., Inc.*, 122 Idaho 47, 51-52, 830 P.2d 1185, 1189-90 (1992); *Fennell v. Southern Maryland Hosp. Ctr.*, 320 Md. 776, 580 A.2d 206, 215 (1990); *Ladner v. Campbell*, 515 So.

2d 882, 888-89 (Miss.1987); *Clayton v. Thompson*, 475 So. 2d 439, 445 (Miss.1985); *Pillsbury-Flood v. Portsmouth Hosp.*, 128 *401 N.H. 299, 512 A.2d 1126 (1986); *Cooper v. Sisters of Charity, Inc.*, 27 Ohio St. 2d 242, 272 N.E.2d 97, 103 (1971); *Sherer v. James*, 290 S.C. 404, 351 S.E.2d 148, 150-51 (1986); see also *Alfonso v. Lund*, 783 F.2d 958 (10th Cir.1986) (New Mexico law); *Bromme v. Pavitt*, 5 Cal. App.

4th 1487, 7 Cal. Rptr. 2d 608, 613-18 (1992); *Dumas v. Cooney*, 235 Cal. App. 3d 1593, 1 Cal. Rptr. 2d 584 (1991); *Morgenroth v. Pacific Medical Ctr.*, 54 Cal. App. 3d 521, 126 Cal. Rptr. 681, 688-89 (1976); *La Bienic v. Baker*, 11 Conn.App. 199, 526 A.2d 1341 (1987); *Watson v. Medical Emergency Serv. Corp.*, 532 N.E.2d 1191, 1196 n. 2 (Ind.App.1989); *Cornfeldt v. Tongen*, 295 N.W.2d 638, 640 (Minn.1980) (adhering to "reasonable medical certainty" standard but not expressly considering case where the lost chance was 50 percent or less); *Joudrey v. Nashoba Community Hosp., Inc.*, 32 Mass.App.Ct.

974, 592 N.E.2d 769, 772 (1992) (same). In at least four other states, the law is unclear.[1] There are several variations of the loss of chance doctrine. One version, commonly termed the "relaxed causation" approach, simply loosens the traditional standard of evidentiary sufficiency, permitting the causation issue to be resolved by the fact finder even though there is no evidence of a reasonable probability that the defendant's negligence caused the patient's death or other ultimate harm.

Some jurisdictions following this approach permit the case to go to the jury based on evidence that the defendant negligently deprived the patient of a "substantial" or "appreciable" possibility of survival or recovery. See, e.g., *Roberson*, 686 P.2d at 159-60; *Brown*, 331 S.E.2d at 445-46. Other states, typically relying on the Second Restatement of Torts § 323(a),[2] allow the case to be submitted based on evidence that the defendant's negligence increased the risk of the ultimate harm.

See, e.g., *Thompson*, 688 P.2d at 616; *Hamil*, 392 A.2d at 1286. Under either permutation, the court generally may impose liability whenever the finder of fact determines that the increased risk of harm or loss of substantial chance to avoid harm is a "substantial factor" in bringing about the ultimate harm. See, e.g., *Roberson*, 686 P.2d at 159-60; *Jones v. Montefiore Hosp.*, 494 Pa. 410, 431 A.2d 920, 923-24 (1981); *Thornton*, 305 S.E.2d at 324-25; *Ehlinger*, 454 N.W.2d at 759.

In effect, the increased risk of harm/substantial lost chance is treated as a concurring cause of the ultimate result.[3] Under the relaxed causation approach, the patient's ultimate death or injury, and not the lost chance itself, continues to be treated as the relevant harm when determining proximate cause. Hence, even while the lost chance may be less than 40% even, full damages are awarded in the same manner as if the plaintiff had established causation under traditional principles.

See, e.g., *Kallenberg*, 357 N.Y.S.2d at 509-511. A second general approach to loss of chance conceptualizes the lost chance of survival or improved health as a distinct, compensable injury, creating a separate cause of action for its recovery. See, e.g., *Falcon*, 462 N.W.2d at 52-57; *Wollen*, 828 S.W.2d at 684; *Perez*, 805 P.2d at 592; *Herskovits*, 664 P.2d at 486-87 (Pearson, J., concurring).

As one commentator explained: To illustrate, consider a patient who suffers a heart attack and dies as a result. Assume that the defendant-physician negligently misdiagnosed the patient's condition, but that the patient would have had only a 40% chance of survival even with a timely diagnosis and proper care. Regardless of whether it could be said that the defendant caused the decedent's death, he caused the loss of a chance, and that chance interest [would] be completely redressed in its own right.

Joseph H. King, Jr., *Causation, Valuation, and Chance in Personal Injury Torts Involving Preexisting Conditions and Future Consequences*, 90 Yale L.J. 1353, 1382 (1981). As in "relaxed causation" jurisdictions, many "separate injury" jurisdictions permit recovery only for "substantial" or "appreciable" lost chances. See, e.g., *Falcon*, 462 N.W.2d at 56.

Under this approach, damages are limited solely to the value of the lost chance. See, e.g., *Herskovits*, 664 P.2d at 487 (Pearson, J., concurring). For the same reasons, this "separate injury" approach, at least in theory, avoids disturbing the traditional standards of proving causation because "[i]n cases where the plaintiff prevails, it can be said that the medical malpractice more likely than not decreased a... chance of survival."

Perez, 805 P.2d at 592 (emphasis in original). Still other jurisdictions appear to utilize a hybrid, applying the relaxed causation approach while limiting damages to the value of the lost chance. See *Scafidi*, 574 A.2d at 405-08; *McKellips*, 741 P.2d at 474-77. These jurisdictions, along with those that follow the separate injury approach, differ in the manner in which they value the lost chance.

Some require the finder of fact to determine total damages from the ultimate injury or death and the percentage chance that was lost through the negligent conduct, with the former being multiplied by the latter to ascertain the appropriate judgment. See, e.g., *Falcon*, 462 N.W.2d at 57; *McKellips*, 741 P.2d at 476-77, see also *King*, *supra*, at 1382 (advocating "proportional damages" approach).

Other states allow the jury to value the chance directly through a more open-ended analysis. See DeBurkarte, 393 N.W.2d at 138; see also Perdue, 28 SO.TEX.L.REV. at 62 (advocating "jury valuation" approach). B. This case presents a question of first impression for this Court.[4] The Kramers *403 urge us to adopt any of three versions of the loss of chance doctrine: (1) the separate injury approach; (2) a "hybrid" relaxed causation approach under Section 323(a) of the Restatement (Second) of Torts, with damages limited to the value of the lost chance; or (3) a "hybrid" relaxed causation approach under the "substantial or appreciable chance" analysis.

The Hospital urges that we reject any effort to change the traditional proof requirements in medical malpractice cases. At the outset, we must determine whether this doctrine is permissible in Texas in personal injury actions where, as in this case, the victim has died. At common law, a cause of action for personal injury did not survive to deceased tort victims' heirs.

See, e.g., *Moreno v. Sterling Drug, Inc.*, 787 S.W.2d 348, 356 & n. 7 (Tex.1990). Moreover, no separate cause of action lies in the victim's heirs for their own losses at the victim's death. See *id.* These types of actions are now permitted solely by virtue of the Wrongful Death Act and Survivorship Statute.

The Kramers' loss of chance theory, then, can be viable only if such actions are permitted under one or both of these statutory schemes.[5] The Kramers' Requested Special Issues 3 and 6 asked whether the negligence of Ms. Nightingale or the Hospital "proximately caused any reduction in any chance of survival which Jennie Kramer might have had." Requested Special Issues 10, 12, and 14 asked the jury to determine the monetary sum that would fairly compensate Stephen, Geoffrey, and Lyndsey Kramer for their pecuniary losses, losses of companionship and society, and mental anguish attributable to "Jennie Kramer's lost chance of survival."

These elements of damages are only recoverable under the Wrongful Death Act. TEX.CIV.PRAC. & REM.CODE §§ 71.002 & 71.004. Requested Special Issue 8 asked the jury to determine the monetary sum, based on Ms. Kramer's conscious pain, mental anguish, and medical expenses, that would fairly compensate her "for any reduction of any chance of survival she may have had."

This element of damage is recoverable by the Kramers solely under the Survivorship Statute. TEX.CIV.PRAC. & REM.CODE § 71.021. *404 Under the Wrongful Death Act, liability may be predicated only on "an injury that causes an individual's death." TEX. CIV.PRAC. & REM.CODE § 71.002(b). Two features of this language have important implications for the loss of chance theories that the Kramers espouse.

First, the Act authorizes recovery solely for injuries that cause death, not injuries that cause the loss of a less-than-even chance of avoiding death. Hence, the Act on its terms does not authorize recovery under the separate injury approach to loss of chance. Cf. *Weimer v. Hetrick*, 309 Md. 536, 525 A.2d 643, 652 (1987) (cause of action for loss of chance not authorized by wrongful

death statute that authorized cause of action for torts "caus[ing] the death of another"); Wollen, 828 S.W.2d at 685-86 (cause of action for lost chance of survival could not be brought under Missouri wrongful death statute); see also Perez, 805 P.2d at 598 (Steffen, J., dissenting) ("[t]here is no latitude in the statute for shifting the basis for damages from conduct causing death to conduct lessening the prospects for survival").

Second, the Act authorizes claims only for actions that actually cause death. In construing a statute, if the Legislature does not define a term, we will apply its ordinary meaning. *Hopkins v. Spring Indep. School Dist.*, 736 S.W.2d 617, 619 (Tex.1987).

Under this construction, negligent conduct is a cause of harm to another if, in a natural and continuous sequence, it produces an event, and without the negligent conduct such event would not have occurred. *Lear Siegler, Inc. v. Perez*, 819 S.W.2d 470, 471 (Tex.1991). Either the separate injury or relaxed causation approaches allow a plaintiff to recover for the wrongful death of another without establishing this statutorily-required link between injury and death.

The Kramers would thus have us interpret the term "cause" to fasten liability for injuries that probably did not cause Ms. Kramer's death. We do not believe that the plain language of the statute permits such a reading. Cf. *Bromme*, 7 Cal.Rptr.2d at 613-18.

We therefore hold the Kramers are not entitled to recover under the Texas Wrongful Death Act for their claims of pecuniary losses, losses of companionship and society, and mental anguish sustained as a result of the Hospital's negligent deprivation of Ms. Kramer's less-than-even chance of survival.

Accordingly, the court of appeals did not err in affirming the trial court's refusal to submit the Kramers' requested special issues 10, 12, and 14. Unlike the Wrongful Death Act, however, the Survival Statute does not create a new cause of action. Rather, it simply provides that "[a] cause of action for personal injury to the health, reputation, or person of an injured person" survives the death of the injured party "to and in favor of the heirs, legal representatives, and estate of the injured person."

TEX.CIV.PRAC. & REM.CODE § 71.021. Assuming we were to adopt the loss of chance doctrine as part of the common law, Ms. Kramer's cause of action for damages from her lost chance, if any existed, would survive under this statute.

Therefore, to determine whether the court of appeals erred in refusing to reverse the trial court's denial of the Kramers' proposed special issue 8, we must consider whether Texas should adopt the loss of chance doctrine as a part of its common law. C. The dissent suggests at least five arguments in support of the loss of chance doctrine.

First, given the nature of the doctor-patient relationship, physicians are retained by patients not merely to cure disease or injury when such cure is possible, but to maximize whatever chances of recovery a patient has. See, e.g., *Falcon*, 462 N.W.2d at 52.

To refuse to impose liability when physicians negligently fail to effectuate this duty would "declare[] open season on critically ill or injured persons[,] as care providers would be free of liability for even the grossest malpractice if the patient had only a fifty-fifty chance of surviving the disease or injury even with proper treatment." *Roberson*, 686 P.2d at 160.

Second, the traditional rule undermines the *405 loss allocation and deterrence functions of the tort scheme by failing to assign the cost of these losses to their tortious causes, see, e.g., *King*, 90 YALE L.J. at 1377, and by giving the tortfeasor the benefit of uncertainty created by his or her own negligence.

Third, the defendant's negligence prevents the fact finder from ever knowing whether the victim would have recovered in the absence of that negligence. Thus, fundamental fairness dictates that the cost of that uncertainty should be imposed on the tortfeasor rather than on its victim. See *id.* at 1378. Fourth, the application of traditional causation principles leads to the unfairly arbitrary results of permitting full recovery for plaintiffs who can prove any greater-than-even lost chance, while absolutely barring recovery for plaintiffs who can show only a 49.9% or 50% lost chance.

See *id.* at 1377. Finally, traditional principles of causation ignore the reality that chances, particularly those of survival, have value. See *id.* at 1378. We are not persuaded by any of these arguments. We acknowledge that in searching for truth, the law does not, and should not, require proof of an absolute certainty of causation or any other factual issue.

It always settles for some lower threshold of certainty, whether beyond a reasonable doubt in criminal law, clear and convincing evidence in certain civil matters involving constitutional rights, or the more typical civil burden of reasonable probability. See, e.g., JOHN WILLIAM STRONG, ET AL., MCCORMICK ON EVIDENCE §§ 339-341, at 437-49 (4th ed. 1992). Below reasonable probability, however, we do not believe that a sufficient number of alternative explanations and hypotheses for the cause of the harm are eliminated to permit a judicial determination of responsibility.

As explained by then Chief Justice Riley of the Michigan Supreme Court: Imperfect as it may be, our legal system attempts to ascertain facts to arrive at the truth. To protect the integrity of that goal, there must be some degree of certainty regarding causation before a jury may determine as fact that a... defendant did cause the plaintiff's injury and should therefore compensate the plaintiff in damages.

To dispense with this requirement is to abandon the truth-seeking function of the law. *Falcon*, 462 N.W.2d at 66 (Riley, C.J., dissenting). The more likely than not standard is thus not some

arbitrary, irrational benchmark for cutting off malpractice recoveries, but rather a fundamental prerequisite of an ordered system of justice.

To be sure, the Kramers profess to seek recovery only for Jennie Kramer's lost chance of survival, either by viewing the lost chance as a discrete compensable injury or simply by limiting damages to an amount approximating its value. With respect to its implications for the truth-seeking function of the law, however, it should matter not that the Kramers' theory of recovery limits damages in some metaphysical sense to the value of the lost chance.

The true harm remains Ms. Kramer's ultimate death. Unless courts are going to compensate patients who "beat the odds" and make full recovery, the lost chance cannot be proven unless and until the ultimate harm occurs. See *Perez*, 805 P.2d at 592. Hence, legal responsibility under the loss of chance doctrine is in reality assigned based on the mere possibility that a tortfeasor's negligence was a cause of the ultimate harm.

See *Fennell*, 580 A.2d at 213. That damages for loss of chance may be reduced to some degree is ultimately beside the point. Nor do we agree with the Kramers that Restatement Section 323 compels our adoption of the loss of chance doctrine. While this section is the law in Texas, see *Colonial Savings Ass'n v. Taylor*, 544 S.W.2d 116, 119-20 (Tex.1976), it does not determine or suggest the appropriate standard of causation.

See *Sherer*, 351 S.E.2d at 150; *Curry v. Summer*, 136 Ill.App.3d 468, 91 Ill. Dec. 365, 371, 483 N.E.2d at 717 (1985); see also *Taylor*, 544 S.W.2d at 119-20 (discussing Section 323 only as it bore upon duty). The only exception we have recognized to our longstanding causation principles is where the inextricable combination of joint tortfeasors combines to cause harm in a manner where individual responsibility cannot be fixed.

See *Landers v. East Texas Salt Water Disposal *406 Co.*, 248 S.W.2d 731, 734 (Tex.1952). In these situations, liability is fastened only after a judicial determination that the claimant's injuries were caused by someone, but proof of that responsibility is impossible. Such cases are clearly distinguishable from those where the preponderance of the evidence suggests that no known person was at fault.

Furthermore, assuming we adopt the loss of chance doctrine in the context of this medical malpractice action, it is doubtful that there is any principled way we could prevent its application to similar actions involving other professions.[6] If, for example, a disgruntled or unsuccessful litigant loses a case that he or she had a less than 50 percent chance of winning, but is able to adduce expert testimony that his or her lawyer negligently reduced this chance by some degree, the litigant would be able to pursue a cause of action for malpractice under the loss of chance doctrine.

See Perez, 805 P.2d at 599 n. 3 (Steffen, J., dissenting); Dumas, 1 Cal.Rptr.2d at 593; but see Daugert v. Pappas, 104 Wash.2d 254, 704 P.2d 600, 605 (1985) (en banc). Likewise, the logic of the loss of chance doctrine would upend our long settled rules requiring some degree of certainty in establishing lost profits for a new business. See Holt Atherton Indus., Inc. v. Heine, 835 S.W.2d 80, 84 (Tex.1992); Southwest Battery Corp. v. Owen, 115 S.W.2d 1097, 1098-99 (1938).

Only a business with no chance of success would be foreclosed from some recovery. The indistinguishability is shown by the fact that one of the cases upon which the Kramers rely involved not medical malpractice, but purely economic losses. See Kansas City M. & O. Ry. Co. v. Bell, 197 S.W. 322 (Tex.Civ.App.-Amarillo 1917, no writ).[7] We see nothing unique about the healing arts which should make its practitioners more responsible for possible but not probable consequences than any other negligent actor.

See, e.g., Gooding, 445 So.2d at 1019-20. Finally, we reject the notion that the enhanced deterrence of the loss of chance approach might be so valuable as to justify scrapping our traditional concepts of causation. If deterrence were the sole value to be served by tort law, we could dispense with the notion of causation altogether and award damages on the basis of negligence alone.

Cf. STEPHEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW § 5.1.5, at 108 (1987). *407 For all of these reasons, we do not adopt the loss of chance doctrine as part of the common law of Texas. Therefore, the court of appeals did not err in affirming the trial court's overruling of the Kramers' proposed special issues 3, 6, and 8. III.

We proceed to consider appellant's other assignments of error. The Kramers argue that the trial court should have excluded the testimony of three defense witnesses, Drs. J. Sloan Leonard, John H. Burrows, and John C. Bagwell, because the Hospital did not properly verify the supplemental answers to interrogatories in which those witnesses were first identified.

The supplemental answers were verified based on mere "knowledge and belief," while Texas Rule of Civil Procedure 168(5) requires original answers to interrogatories to be verified under oath. See TEX.R.CIV.P. 168(5).

We have held similar requirements not to be satisfied by verification upon "information and belief." See, e.g., Burke v. Satterfield, 525 S.W.2d 950, 954-55 (Tex. 1975). However, Rule 166b(6), which imposes the duty to supplement discovery responses, contains no specific verification requirement. See TEX.R.CIV.P. 166b(6).

Thus, at least two courts of appeals have held that where the initial interrogatory responses were properly verified, Rule 166b(6) does not require additional verification, see Circle Y of Yoakum v. Blevins, 826 S.W.2d 753, 756 (Tex.App.-Texarkana 1992, writ denied); Jones v. Kinder, 807 S.W.2d 868, 872 (Tex.App.-Amarillo 1991, no writ), while two others, including the court below,

have held that a trial court did not abuse its discretion in refusing to exclude witnesses as a sanction for failure to verify a supplemental discovery response.

See *Kramer*, 831 S.W.2d at 48; *State v. Munday Enterprises*, 824 S.W.2d 643, 651-52 (Tex.App.-Austin 1992, writ pending). Even if Rule 166b(6) does in fact require additional verification, the Kramers waived whatever complaint they might have had concerning the manner in which the supplemental answers were verified.

The Hospital served its supplemental answers on the Kramers two months before trial, yet the Kramers waited until trial to raise their objections. More significantly, the Kramers actually called Drs. Leonard and Burrows during their case in chief by introducing portions of their depositions into evidence. Only when the Hospital re called these witnesses to testify during its case in chief did the Kramers finally object.

See *Ebeling v. Gawlik*, 487 S.W.2d 187, 189 (Tex.Civ.App.-Houston [1st Dist.] 1972, no writ) (trial court abused its discretion in striking plaintiff's pleadings for failure to verify supplemental interrogatory answers where defendant did not raise defect earlier in proceedings); WILLIAM V. DORSANEO III, TEXAS LITIGATION GUIDE § 91.06[3], at 91-16 to 91-17 (1992).

Finally, the Kramers challenge the admissibility of certain testimony by Dr. Leonard that an informal "experiment" with three cytotechnologists demonstrated that Frances Nightingale's failure to detect abnormal cells when screening Ms. Kramer's pap smear slide was not negligent. While the jury ultimately agreed with Dr. Leonard in failing to find Ms. Nightingale negligent, her acts were only one of three possible bases of the Hospital's vicarious liability; as we have seen, the jury found that the Hospital was negligent in permitting Ms. Nightingale to screen slides at home and Dr. Burgess was negligent in failing to diagnose cancer when he screened Ms. Kramer's slide.

Hence, even assuming that the trial court did in fact err in admitting this particular testimony, it would not be such a denial of the Kramers' rights as was calculated to cause the rendition of an improper judgment. TEX. R.APP.P. 81(b)(1).

The judgment of the court of appeals is affirmed. Dissenting Opinion by HIGHTOWER, J., joined by DOGETT and GAMMAGE, JJ. HIGHTOWER, Justice, dissenting. Because the Court fails to join the majority of other states that have addressed this issue and allow an injured party to recover for loss of chance in medical malpractice actions, I dissent.

As the Court concedes, at least sixteen states have abandoned its "all or nothing" *408 approach in favor of some version of the loss of chance doctrine.[1] While these courts have not all applied the doctrine in the same way, they permit some type of recovery for individuals whose lives are damaged by medical negligence but who cannot meet the arbitrary standard advocated by the Court.

Under the Court's approach, only if a plaintiff can establish that she was negligently deprived of a *409 greater-than-even chance of avoiding the ultimate death or condition can she recover all damages resulting from that outcome, but if she can show the loss only of some smaller chance, she can recover nothing. See, e.g., Darrell L. Keith, Loss of Chance: A Modern Proportional Approach to Damages in Texas, 44 BAYLOR L.REV.

759, 778 (1992). This just does not make sense. This "all or nothing" approach, as the Kansas Supreme Court pointed out, effectively [D]eclares open season on critically ill or injured persons as care providers would be free of even the grossest malpractice if the patient had only a fifty-fifty chance of surviving the disease or injury even with proper treatment.

Under such rationale, a segment of society often least able to exercise independent judgment would be at the mercy of those professionals on whom it must rely for life-saving health care. Roberson v. Counselman, 235 Kan. 1006, 686 P.2d 149, 154 (1984).

The "all or nothing" approach further undermines the deterrence and loss allocation functions of tort law. While in a given case the negligent deprivation of a less than even chance may not be the cause in fact of the ultimate illness or death, in many such cases, the defendant's negligence causes statistically demonstrable losses.

The all or nothing approach thus fails to allocate the cost of these losses to their tortious causes. Jim Perdue, Recovery for Lost Chance of Survival: When the Doctor Gambles, Who Puts Up the Stakes, 28 S. TEX.L.REV. 37, 46 (1987). Additionally, the all or nothing approach gives this particular class of defendants the benefit of an uncertainty created by their own negligence.

Because of the defendant's negligence, it can never be known whether the plaintiff would have recovered his health in the absence of that negligence. Finally, the "all or nothing" approach is contrary to the concept that a chance of a future benefit is a legally compensable interest. At least one Texas court has accepted the notion that "the chance which a competitor has of being awarded a prize... is a right which may be of value, and that one wrongfully impairing or destroying such right ought to be held liable therefor in damages."

Kansas City, M. & O. Ry. v. Bell, 197 S.W. 322, 323 (Tex.Civ. App.-Amarillo 1917, no writ). Logically, the same rule should apply to the loss of a chance to avoid harm as applies to the loss of a chance to acquire a benefit. Joseph King, Jr., Causation, Valuation, and Chance in Personal Injury Torts Involving Preexisting Conditions and Future Consequences, 90 YALE L.J.

1353, 1378 (1981). The Bell case recognized a cause of action for a lost chance to enter a hog competition. Since Texas law has allowed recovery for this lost chance, surely it should accord similar rights to a woman's lost chance of surviving cervical cancer. Unfortunately, while the Court recognizes this inconsistency, it chooses to lower the protection for hogs rather than to raise the protection for humans.

I would adopt the "separate injury" version of the loss of chance doctrine, under which the harm to be compensated would be the loss of the chance of recovery, rather than the injury or death which ultimately ensues.

In other words, I believe the harm to be redressed is the loss of chance of survival, however small, instead of the Court's position that the only harm that can be redressed is the ultimate death of the patient.[2] Thus, a loss of chance plaintiff would have to prove by the familiar standard of reasonable medical probability that the defendant's negligence caused the loss of the chance of improved health. *410 Having adopted the loss of chance approach to causation in medical malpractice cases, I would adopt the jury valuation approach for determining damages.[3] This approach leaves the assessment of lost chance damages to the discretion of the jury "based on evidence of the plaintiff's lost opportunity for recovery or survival and factors pertinent to the individual plaintiff's circumstances." [4] King, 90 Yale L.J. at 1378.

Under this approach, the jury may consider such factors as the physical and mental pain and anguish that accompany the lost chance of improved health, as well as other physical losses and consequential damages, including medical costs. Perdue, 28 S. Tex.L.Rev. at 62. While a defendant in a lost chance case should no more be liable for the entirety of a plaintiff's pain and suffering or medical expense damages than a defendant adjudicated comparatively but not solely negligent in an ordinary tort case, juries are very capable of weighing these considerations and determining the amount of damages in these cases.

Finally, adoption of the loss of chance doctrine would not lead to wholesale changes in all areas of law. The State of Washington, for example, explicitly rejected the application of the loss of chance doctrine outside of medical malpractice cases. See *Daugert v. Pappas*, 104 Wash.2d 254, 704 P.2d 600 (1985). Other courts have limited the doctrine even further.

See *McKellips v. Saint Francis Hosp.*, 741 P.2d 467, 474-75 (Okla.1987) ("a limited type of medical malpractice case where the duty breached was one imposed to prevent the type of harm which a patient ultimately sustains and because of the inherent nature of such a case a plaintiff is unable to produce evidence of causation sufficient to meet the traditional rule of causation"); *Thompson v. Sun City Community Hosp.*, 141 Ariz. 597, 608, 688 P.2d 605, 616 (1984) ("this rule fits only in those situations where the courts traditionally have allowed juries to deal more loosely with causation the cases where the duty breached was one imposed to prevent the type of harm sustained").

In this case, the jury should have had the opportunity to determine whether the negligence of the physicians in failing to diagnose Ms. Kramer's cervical cancer deprived her of a chance of survival.[5] In sum, I would join the majority of other states that have addressed this issue and allow an injured party to recover for loss of chance.

Because the Court fails to do so, I respectfully dissent. DOGETT and GAMMAGE, JJ., join in this dissent. NOTES [1] See *Kaiser Found. Health Plan v. Sharp*, 741 P.2d 714, 718 (Colo.1987) (en banc); compare *Northern Trust Co. v. Louis A. Weiss Memorial Hosp.*, 143 Ill.App.3d 479, 97 Ill. Dec. 524, 530, 493 N.E.2d 6, 12 (1986) (suggesting loss of chance approach) with *Russell v. Subbiah*, 149 Ill.App.3d 268, 102 Ill. Dec.

516, 519, 500 N.E.2d 138, 141 (1986) (adhering to traditional principles of causation); compare *Wiley v. Montgomery*, 861 F.2d 145, 146-47 (6th Cir.1988) (Kentucky law) and *Richard v. Adair Hosp. Found. Corp.*, 566 S.W.2d 791, 794 (Ky.App.1978) (suggesting loss of chance approach) with *Walden v. Jones*, 439 S.W.2d 571, 576 (Ky.App.1968) (adhering to traditional principles of causation); compare *Truan v. Smith*, 578 S.W.2d 73, 76 (Tenn.1979) with *Boburka v. Adcock*, 979 F.2d 424, 430-31 (6th Cir.1992) (holding that Tennessee law adheres to the traditional approach to causation) and *Alessio v. Crook*, 633 S.W.2d 770, 776 (Tenn.App.1982) (distinguishing *Truan*).

[2] One who undertakes... to render services for another which he should recognize as necessary for the protection of the other's person or things, is subject to liability to the other for physical harm resulting from his failure to exercise reasonable care to perform his undertaking, if (a) his failure to exercise such care increases the risk of such harm....

RESTATEMENT (SECOND) OF TORTS § 323(a) (1965). [3] As one court explained: Assuming that the jury determines that the [negligence] increased the risk of harm from the preexisting condition, we use the "substantial factor" test of causation because of the inapplicability of "but for" causation to cases where the harm is produced by concurrent causes.

The "substantial factor" standard requires the jury to determine whether the deviation, in the context of the preexistent condition, was sufficiently significant in relation to the eventual harm to satisfy the requirement of proximate cause. *Scafidi*, 574 A.2d at 406. (citations omitted).

[4] Each Texas court that has explicitly considered adopting loss of chance has, like the court below, refused to adopt or apply it. See *Kramer*, 831 S.W.2d at 50; *Karl v. Oaks Minor Emergency Clinic*, 826 S.W.2d 791 (Tex.App.-Houston [14th Dist.] 1992, writ denied) (motion for rehearing pending); *Crawford v. Deets*, 828 S.W.2d 795, 797 (Tex.App.-Fort Worth 1992, writ denied) (refusing to recognize the loss of chance doctrine because instituting a new cause of action "is better left to the legislature or the supreme court").

On the other hand, language in two cases, which the *Kramers* rely upon extensively, appears sympathetic to the doctrine. See *Valdez v. Lyman-Roberts Hosp., Inc.*, 638 S.W.2d 111, 116 (Tex.Civ.App.-Corpus Christi 1982, writ ref'd n.r.e.) ("Even if it be assumed that [the patient's] chances for recovery were remote, the hospital would still be liable for depriving her of any chance she might have had"); *Bellaire Gen.*

Hosp., Inc. v. Campbell, 510 S.W.2d 94, 98 (Tex. Civ.App.-Houston [1st Dist.] 1974, writ ref'd n.r.e.) ("Even if it be assumed that [plaintiff's] chances for recovery... were remote, the Hospital would still be liable for depriving her of any chance she might have had"); see also Perdue, 28 SO.TEX.L.REV. at 57 ("Texas law clearly permits loss of a chance recovery."); John D. Hodson, Annotation, Medical Malpractice: "Loss of Chance" Causality, 54 A.L.R.

4th 10, 46-48 (1987) (describing the state of Texas law as uncertain). Upon closer examination, however, it is clear that these are not loss of chance cases. The issue of whether the loss of chance doctrine should be adopted or applied was not actually raised in either case. Furthermore, what are alleged to be references to the loss of chance doctrine appear only in dicta; both cases purport to apply traditional standards of causation and find them to be satisfied by the evidence.

See Valdez, 638 S.W.2d at 114-16; Bellaire, 510 S.W.2d at 97-98. Subsequent to oral argument, the Corpus Christi Court of Appeals vindicated this view with respect to its Valdez decision, confirming that any loss of chance allusions in that case were merely dictum, and reaffirming that medical malpractice plaintiffs are required to prove causation by a reasonable probability.

See Niemann v. Refugio County Memorial Hosp., 855 S.W.2d 94, 97 (Tex.App.-Corpus Christi 1993). [5] The dissent contends that we need not consider the applicability of the Wrongful Death Act because the injury for which the Kramers seek redress is not the death of Ms. Kramer, but her lost chance of survival. From this premise, it argues that a deceased tort victim's spouse or children might bring a common law cause of action to recover loss of consortium damages, which, under its premise, could be viewed as arising from the lost chance.

See 858 S.W.2d at 409 n. 2 (Hightower, J., dissenting); cf. Herskovits, 664 P.2d at 487 n. 1 (Pearson, J. concurring); see also Perez, 805 P.2d at 592-93. As we suggest *infra*, unless courts are prepared to compensate even those loss of chance victims who somehow "beat the odds" and recover, the existence of a loss of chance "injury" will be, in reality, wholly dependent upon whether the potential consequences of the victim's illness or injury, such as death, actually come to pass.

In short, the true harm to Ms. Kramer remains her death. Accordingly, her statutory beneficiaries are relegated to seeking recovery under the Wrongful Death Act and Survivorship Statute. Consistent with this analysis, we have never recognized a common law cause of action for loss of consortium in cases involving death separate from that which would fall under the Wrongful Death Act.

Compare Reagan v. Vaughan, 804 S.W.2d 463, 464-65 (Tex.1990) (child could recover for loss of consortium caused by parent's non-fatal injury); and Whittlesey v. Miller, 572 S.W.2d 665, 666 (Tex.1978) (wife could recover for loss of consortium caused by husband's non-fatal injury) with Cavnar v. Quality Control Parking, Inc., 696 S.W.2d 549, 551 (Tex.1985) (child could recover

under Wrongful Death Act for loss of companionship and society caused by death of parent) and *Sanchez v. Schindler*, 651 S.W.2d 249, 254 (Tex.

1983) (loss of companionship and society resulting from death of child recoverable under Wrongful Death Act). [6] The dissent criticizes us for "extrapolating what results might be under different circumstances" than those presented in the incident case. 858 S.W.2d at 410 n. 5 (Hightower, J., dissenting). When considering whether to adopt or reject a legal doctrine, we would be remiss in our duties if we did not take into account the probable consequences of our decision.

If we were to adopt the loss of chance doctrine in the medical malpractice context, one such consequence would be its likely expansion into other areas of the law. [7] In *Bell*, a farmer shipped several hogs via the defendant firm to Fort Worth for a livestock show. When the shipment was delayed for several days, the hogs lost weight, hurting the farmer's chances of winning the \$300 first prize.

His hogs ultimately finished second, garnering \$75. The farmer recovered \$225 damages on the theory that he was deprived of first prize by the delay. While reversing the trial court on other grounds, the court explained that the plaintiff could state a cause of action for damages for loss of the chance of winning the show. See *Bell*, 197 S.W. at 323.

The jury would assign value to that chance. The court explained: It is true that it is difficult to determine the value of this chance, but ordinarily difficulty in ascertaining the amount of damages resulting from the violation of a right is not an insuperable obstacle to recovery.

The chance might be worth little or nothing, or it might be worth, under some circumstances, the full amount of the premium offered for the best of the class in which plaintiff was to be a competitor.... [E]vidence as to all such matters as would tend to show the probability that the plaintiff would be successful in the competition would be admissible, and... it would be left to the good sense of the jury trying the case to determine the value of the plaintiff's chances in the competition.

Id. *Bell*, however, has never been cited for this proposition by any other Texas court. Moreover, all but a few jurisdictions have denied recovery in similar cases involving contests, for the reason that the plaintiff's chances of ever receiving the anticipated benefits are insufficiently certain. See, e.g., *Youst v. Longo*, 43 Cal. 3d 64, 233 Cal. Rptr. 294, 300-01, 729 P.2d 728, 735 (1987); W. PAGE KEETON.

ET AL., PROSSER AND KEETON ON THE LAW OF TORTS, § 130, at 1006 (1985). To the extent that a no writ case from 1917 might be argued as placing Texas among the handful of jurisdictions that appear to recognize chances to win contests as legally compensable interests, we expressly disavow it.

[1] The history of the loss of chance doctrine shows the trend towards its general acceptance. While the doctrine was first recognized in the context of maritime "man overboard" cases, see, e.g., *Gardner v. Nat'l Bulk Carriers, Inc.*, 310 F.2d 284, 287 (4th Cir.1962), the first sign that the doctrine might be applied in the medical malpractice context came in *Hicks v. United States*, 368 F.2d 626 (4th Cir.1966) ("If there was any substantial possibility of survival and the defendant has destroyed it, he is answerable"); see also *Whitfield v. Whittaker Memorial Hosp.*, 169 S.E.2d 563, 569 (Va.1969).

State courts, however, were slow to abandon the "all or nothing" approach until the landmark case of *Herskovits v. Group Health Coop.*, 99 Wash.2d 609, 664 P.2d 474 (1983), in which the Washington Supreme Court became the first state supreme court expressly to embrace the lost chance concept in a case involving the loss of less than a 50 percent chance of survival.

In that case the defendants' negligence resulted in a six-month delay in the correct diagnosis of decedent's lung cancer; over the course of that six months the decedent's chance of five-year survival dropped from 39 percent to 25 percent. 664 P.2d at 475.

The court held that this loss of an additional 14 percent chance of survival was sufficient to warrant submission of the proximate cause issue to the jury. 664 P.2d at 479. The following courts have adopted some form of recovery for loss of chance: *Thompson v. Sun City Community Hosp.*, 141 Ariz. 597, 608, 688 P.2d 605, 616 (1984); *Blackmon v. Langley*, 293 Ark.

286, 737 S.W.2d 455, 457 (1987); *DeBurkarte v. Louvar*, 393 N.W.2d 131, 137-38 (Iowa 1986); *Roberson v. Counselman*, 235 Kan. 1006, 686 P.2d 149, 159-60 (1984); *Hastings v. Baton Rouge Gen. Hosp.*, 498 So. 2d 713, 720 (La.1986); *Falcon v. Memorial Hosp.*, 436 Mich. 443, 462 N.W.2d 44, 52-57 (1990); *Wollen v. DePaul Health Ctr.*, 828 S.W.2d 681, 684-86 (Mo. 1992) (en banc); *Aasheim v. Humberger*, 695 P.2d 824, 828 (Mont.1985); *Perez v. Las Vegas Medical Ctr.*, 107 Nev. 1, 805 P.2d 589, 592 (1991); *Scafidi v. Seiler*, 119 N.J.

93, 574 A.2d 398, 405-08 (1990); *Kallenberg v. Beth Israel Hosp.*, 45 A.D.2d 177, 357 N.Y.S.2d 508, 510-11 (1974), *aff'd mem.*, 37 N.Y.2d 719, 374 N.Y.S.2d 615, 337 N.E.2d 128 (1975); *McKellips v. Saint Francis Hosp.*, 741 P.2d 467, 474-77 (Okla.1987); *Hamil v. Bashline*, 481 Pa. 256, 392 A.2d 1280, 1288-89 (1978); *Brown v. Koulizakis*, 229 Va. 524, 331 S.E.2d 440, 446 (1985); *Herskovits v. Group Health Coop. of Puget Sound*, 99 Wash.2d 609, 664 P.2d 474, 477-49 (1983); *Thornton v. CAMC, Etc.*, 172 W.Va.

360, 305 S.E.2d 316, 324-25 (1983); *Ehlinger by Ehlinger v. Sipes*, 155 Wis. 2d 1, 454 N.W.2d 754, 759 (1990); see also *Daniels v. Hadley Memorial Hosp.*, 566 F.2d 749, 757 (D.C.Cir.1977) (District of Columbia law); *Richmond County Hosp. Auth. v. Dickerson*, 182 Ga.App. 601, 356 S.E.2d 548, 550 (1987); *McBride v. United States*, 462 F.2d 72, 75 (9th Cir.1972) (Hawaii law); *Shumaker v. United States*, 714 F. Supp. 154, 164 (M.D.N.C.1988) (North Carolina law); *Morales*

v. United States, 642 F. Supp. 269, 272 & n. 3 (D.P.R.1986) (Puerto Rico law); Voegeli v. Lewis, 568 F.2d 89, 94 (8th Cir.1977) (South Dakota law).

But see Grody v. Tulin, 170 Conn. 443, 365 A.2d 1076, 1080 (Conn.1976); Gooding v. University Hosp. Bldg., Inc., 445 So. 2d 1015, 1019-20 (Fla.1984); Manning v. Twin Falls Clinic & Hosp., Inc., 122 Idaho 47, 51-52, 830 P.2d 1185, 1189-90 (1992); Fennell v. Southern Maryland Hosp. Ctr., 320 Md. 776, 580 A.2d 206, 215 (1990); Ladner v. Campbell, 515 So. 2d 882, 888-89 (Miss.1987); Clayton v. Thompson, 475 So.

2d 439, 445 (Miss. 1985); Pillsbury-Flood v. Portsmouth Hosp., 128 N.H. 299, 512 A.2d 1126 (1986); Cooper v. Sisters of Charity, Inc., 27 Ohio St. 2d 242, 272 N.E.2d 97, 103 (1971); Sherer v. James, 290 S.C. 404, 351 S.E.2d 148, 150-51 (1986); see also Alfonso v. Lund, 783 F.2d 958 (10th Cir.1986) (New Mexico law); Bromme v. Pavitt, 5 Cal. App. 4th 1487, 7 Cal. Rptr.

2d 608, 613-18 (1992); Dumas v. Cooney, 235 Cal. App. 3d 1593, 1 Cal. Rptr. 2d 584 (1991); Morgenroth v. Pacific Medical Ctr., 54 Cal. App. 3d 521, 126 Cal. Rptr. 681, 688-89 (1976); La Bienic v. Baker, 11 Conn.App. 199, 526 A.2d 1341 (1987); Watson v. Medical Emergency Serv. Corp., 532 N.E.2d 1191, 1196 n. 2 (Ind.App.1989); Cornfeldt v. Tongen, 295 N.W.2d 638, 640 (Minn.1980); Joudrey v. Nashoba Community Hosp., Inc., 32 Mass.App.Ct.

974, 592 N.E.2d 769, 772 (1992). In at least four other states, the law is unclear. See Kaiser Found. Health Plan v. Sharp, 741 P.2d 714, 718 (Colo.1987); compare Northern Trust Co. v. Louis A. Weiss Memorial Hosp., 143 Ill.App.3d 479, 97 Ill. Dec. 524, 493 N.E.2d 6, 11, 493 N.E.2d 6, 12 (1986) (suggesting loss of chance approach) with Russell v. Subbiah, 149 Ill.App.3d 268, 102 Ill. Dec.

516, 519, 500 N.E.2d 138, 141 (1986) (adhering to traditional principles of causation); compare Wiley v. Montgomery, 861 F.2d 145, 146-47 (6th Cir.1988) (Kentucky law) and Richard v. Adair Hosp. Found. Corp., 566 S.W.2d 791, 794 (Ky.App.1978) (suggesting loss of chance approach) with Walden v. Jones, 439 S.W.2d 571, 576 (Ky.App.1968) (adhering to traditional principles of causation); compare Truan v. Smith, 578 S.W.2d 73, 76 (Tenn.1979) with Boburka v. Adcock, 979 F.2d 424, 430-31 (6th Cir.1992) (holding that Tennessee law adheres to the traditional approach to causation) and Alessio v. Crook, 633 S.W.2d 770, 776 (Tenn.App.1982) (distinguishing Truan).

[2] Properly viewing the harm caused as the loss of chance rather than the patient's death, it is unnecessary to analyze the applicability of the Texas Wrongful Death Act. Texas common law recognizes loss of consortium actions for negligent injury to the husband-wife or parent-child relationship. See Whittlesey v. Miller, 572 S.W.2d 665 (Tex.1978); Reagan v. Vaughn, 804 S.W.2d 463 (Tex.1990).

I agree with the Court's contention that there is no common law cause of action for loss of consortium in cases involving death separate from that which would fall under the Texas

Wrongful Death Act. 858 S.W.2d at 410 n. 5.

However, the Court mischaracterizes the injury to be redressed in this case. The injury causing the loss of consortium is not the victim's death but the victim's loss of chance of survival. Therefore, a victim's spouse and children could recover for loss of consortium damages flowing from the victim's loss of chance.

[3] There are two methods of calculating the value of a lost chance, the "proportional damage" approach and the "jury valuation" approach. See Keith, 44 BAYLOR L.REV. at 797-99. Under the proportional damage approach, the fact-finder determines the plaintiff's original chance of improved health and the plaintiff's chance after the defendant's negligence, as well as the total sum of damages which are ordinarily recoverable.

The percentage reduction caused by the defendant is then multiplied by the total damages to determine the actual damages. I agree with critics of the proportional damage approach that it reduces the damage assessment to a "computer-like" calculation for the court to perform. See Perdue, 28 So. TEX.L.REV. at 62-63.

The proportional damage approach places an inherent disincentive on plaintiffs who have lost only very slight chances of recovery, or who have suffered only very small reductions in their chances of improved health. Use of the percentage chance lost as a multiplier against the total damages suffered will lead to much smaller recoveries where the chance lost is small.

[4] In *Kansas City, M. & O. Ry. v. Bell*, 197 S.W. 322, 323 (Tex.Civ.App.-Amarillo 1917, no writ) the court left it "to the good sense of the jury trying the case to determine the value of the plaintiff's chance in the competition." 197 S.W. at 323.

[5] The Court should address the controversies before it instead of extrapolating what results might be under different circumstances. I believe that there should be a cause of action for loss of chance for medical malpractice actions. When the Court is presented with the question of whether there should be a loss of chance cause of action for legal malpractice actions, I will be ready to answer it.

PHILLIPS, J.

OPINION PHILLIPS, Chief Justice. The principal issue presented in this case is whether Texas permits recovery for lost chance of survival or cure in medical malpractice cases; that is, whether there is liability for negligent treatment that decreases a patient's chance of avoiding death or other medical conditions in cases where the adverse result probably would have occurred anyway.

We hold that such recovery is not authorized by the Texas Wrongful Death Act, Tex.Civ.PRAC. & Rem. Code §§ 71.002 & 71.004, and should not be permitted under the Texas Survivorship Statute, Tex.Civ.Prac. & Rem.Code § 71.021, or under a separate common law cause of action.

Accordingly, we affirm the judgment of the court of appeals. 831 S.W.2d 46. I. Jennie Kramer was the wife of Stephen Kramer and the mother of Geoffrey and Lyndsey Kramer. In August 1985, Ms. Kramer visited Dr. Bruce Eich, her gynecologist, because she was experiencing unusual discharges and intermittent bleeding a few days before and after her menstrual period.

Dr. Eich, observing that her cervix was inflamed, diagnosed her condition as a yeast infection. He also performed a pap smear and sent a microscope slide made from the smear to Lewisville Memorial Hospital (the "Hospital") for screening. Cytotechnologist Prances Nightingale, the Hospital's laboratory director, screened the slide and detected no abnormal cells that might indicate cancer.

Dr. Richard Burgess, a pathologist employed by the Hospital who was Ms. Nightingale's supervisor, then reviewed the slide as part of the Hospital's quality control program. He also found the slide negative for cancer. Still suffering from irregular bleeding, Ms. Kramer consulted another doctor, Dr. Michael Burgess, in November 1985. Dr. Burgess was not associated with the Hospital and is apparently unrelated to Dr. Richard Burgess.

After conducting various other tests, not including a pap smear, he also diagnosed her condition as normal. Ms. Kramer's bleeding became more severe, however, and in December 1985 she detected a hardening in her cervix. She returned to Dr. Michael Burgess who, in spite of these new developments, concluded that nothing further needed to be done.

The following February, after continued episodes of irregular bleeding, Ms. Kramer detected a hard spot in her vagina. She again returned to Dr. Michael Burgess, who performed a cervical biopsy and diagnosed her cancer. Ms. Kramer was then admitted to the Hospital, where she underwent exploratory surgery in March 1986. She returned to the Hospital on one other occasion, in April, for emergency room treatment of hemorrhaging.

She then took radiation treatments and chemotherapy at another hospital under the care of other doctors, who were not sued in this case. The cancer spread to her lungs, however, and she died on October 31, 1986. Stephen Kramer, individually, as representative of Jennie Kramer's estate, and as next friend of their children, brought suit under the Texas Wrongful Death Act and the Texas Survivorship Statute against Dr. Bruce Eich, Drs.

Richard and Michael Burgess, Ms. Frances Nightingale, the Hospital, and other professional medical groups and centers of which the physicians were members. Pursuant to the Medical Liability and Insurance Improvement Act, Tex. Rev.Civ.Stat. art. 4590i (Vernon Supp. 1993), the Kramers served notice to all defendants of their intention to bring health care liability claims against each of them.

All the defendants except the Hospital settled with the Kramers before trial. Prior to trial, the Kramers amended their petition to allege, under the same facts, a cause of action for the

“significant and substantial reduction in the chance of saving” Ms. Kramer’s life.

As they later explained in oral argument before this Court, the Kramers viewed this cause of action as based solely upon the common law, wholly independent of either the Wrongful Death Act or the Survivorship statute. At trial, Ms. Nightingale testified that she screened most pap smear slides at home instead of at the Hospital’s laboratory, although she did not know whether this was true of Ms. Kramer’s slide.

Based on her re-examination of the slide, she admitted that her failure to detect abnormal cells in the smear was a mistake in judgment. The Kramers introduced expert opinion testimony that the Hospital was negligent in allowing Ms. Nightingale to screen slides at home rather than at the laboratory.

The Kramers also offered undisputed evidence regarding the International Federation of Gynecology and Obstetrics’ five-stage classification system for cervical cancer. Cancer diagnosed as “Stage 0” is limited to the surface of the cervix, and, if detected and treated, has a 100% five-year survival rate. “Stage I” cancer has spread into the tissues of the cervix, and has a 95% survival rate. “Stage II” cancer has spread beyond the cervix, and has a 70% to 80% survival rate. “Stage III” cancer has reached the pelvic wall, and has slightly less than a 50% survival rate.

Finally, “Stage IV” cancer has spread to other organs, and has only a 0% to 5% survival rate. The experts for the Kramers and the Hospital disagreed over the stage of Ms. Kramer’s cervical cancer in August 1985, when Ms. Nightingale and Dr. Richard Burgess screened the pap smear.

The Kramers’ experts testified that while Ms. Kramer was either Stage 0 or Stage I at the time, she was at least Stage III by the time her cancer was diagnosed in February 1986. Two experts for the Hospital conceded that while there was no objective evidence that Ms. Kramer was anything but Stage I in August 1985, retrospective analysis suggested that her cancer could have been as advanced as Stage IV.

Thus, the evidence most favorable to the Kramers showed that the Hospital’s conduct was a proximate cause of Ms. Kramer’s death, while the evidence most favorable to the defendants showed that any negligence by the Hospital had only a 0 to 5 percent chance of affecting her chances of survival. At the close of evidence, the Kramers requested jury instructions and questions that would have allowed the jury, if it failed to find that the Hospital was the proximate cause of Ms. Kramer’s death, to impose liability for depriving her of the chance of survival she had at the time of the August 1985 pap smear.

The trial court refused all of these requested jury issues. The jury failed to find that Ms. Nightingale was negligent and, while it did find that Dr. Burgess and the Hospital were negligent, it failed to find that such negligence proximately cause Ms. Kramer’s death.

On this verdict, the trial court rendered a take-nothing judgment in favor of the Hospital, and the court of appeals affirmed. II. A. Under the traditional standard of sufficiency of evidence for submitting a *400 medical malpractice case to the jury, plaintiffs are required to adduce evidence of a “reasonable medical probability” or “reasonable probability” that their injuries were caused by the negligence of one or more defendants, see, e.g., *Duff v. Yelin*, 751 S.W.2d 175, 176 (Tex.1988); *Lenger v. Physicians’ Gen.*

Hosp., Inc., 455 S.W.2d 703, 706-07 (Tex.1970); Darrell L. Keith, *Loss of Chance: A Modern Proportional Approach to Damages in Texas*, 44 Bay-LOR L.Rev. 759, 761-62 (1992), meaning simply that it is “more likely than not” that the ultimate harm or condition resulted from such negligence. See *Lenger*, 455 S.W.2d at 707; Keith, 44 BayloR L.Rev. at 761.

As is true in other types of negligence cases, the ultimate standard of proof on the causation issue is whether, by a preponderance of the evidence, the negligent act or omission is shown to be a substantial factor in bringing about the harm and without which the harm would not have occurred. See, e.g., *Havner v. EZ Mart*, 825 S.W.2d 456, 459 (Tex.1992); *McClure v. Allied Stores of Texas, Inc.*, 608 S.W.2d 901, 903 (Tex.1981).

The effect of these standards is to bar recovery where the defendant’s negligence deprived the tort victim of only a 50% or less chance of avoiding the ultimate harm. See Jim M. Perdue, *Recovery for a Lost Chance of Survival: When the Doctor Gambles, Who Puts Up the Stakes?* 28 So.Tex. L.Rev. 37, 43-44 (1987). Hence, where preexisting illnesses or injuries have made a patient’s chance of avoiding the ultimate harm improbable even before the allegedly negligent conduct occurs — i.e., the patient would die or suffer impairment anyway— the application of these traditional causation principles will totally bar recovery, even if such negligence has deprived the patient of a chance of avoiding the harm.

Over the last twenty years, a number of states have sought to ameliorate this result by adopting some version of the so-called “loss of chance” doctrine. See *Thompson v. Sun City Community Hosp.*, 141 Ariz. 597, 608, 688 P.2d 605, 616 (1984); *Blackmon v. Langley*, 293 Ark. 286, 737 S.W.2d 455, 457 (1987); *DeBurkarte v. Louvar*, 393 N.W.2d 131, 137-38 (Iowa 1986); *Roberson v. Counselman*, 235 Kan.

1006, 686 P.2d 149, 159-60 (1984); *Hastings v. Baton Rouge Gen. Hosp.*, 498 So.2d 713, 720 (La.1986); *Falcon v. Memorial Hosp.*, 436 Mich. 443, 462 N.W.2d 44, 52-57 (1990); *Wollen v. DePaul Health Ctr.*, 828 S.W.2d 681, 684-86 (Mo.1992) (en banc); *Aasheim v. Humberger*, 215 Mont. 127, 695 P.2d 824, 828 (1985); *Perez v. Las Vegas Medical Ctr.*, 107 Nev. 1, 805 P.2d 589, 592 (1991); *Scafidi v. Seiler*, 119 N.J.

93, 574 A.2d 398, 405-08 (1990); *Kallenberg v. Beth Israel Hosp.*, 45 A.D.2d 177, 357 N.Y.S.2d 508, 510-11 (1974), *aff’d mem.*, 37 N.Y.2d 719, 374 N.Y.S.2d 615, 337 N.E.2d 128 (1975);

McKellips v. Saint Francis Hosp., 741 P.2d 467, 474-77 (Okla.1987); Hamil v. Bashline, 481 Pa. 256, 392 A.2d 1280, 1288-89 (1978); Brown v. Koulikakis, 229 Va. 524, 331 S.E.2d 440, 446 (1985); Herskovits v. Group Health Cooperative of Puget Sound, 99 Wash.2d 609, 664 P.2d 474, 477-49 (1983); Thornton v. CAMC, Etc., 172 W.Va.

360, 305 S.E.2d 316, 324-25 (1983); Ehlinger by Ehlinger v. Sipes, 155 Wis.2d 1, 454 N.W.2d 754, 759 (1990); see also Daniels v. Hadley Memorial Hosp., 566 F.2d 749, 757 (D.C.Cir.1977) (District of Columbia law); Richmond County Hosp. Auth. v. Dickerson, 182 Ga.App. 601, 356 S.E.2d 548, 550 (1987); McBride v. United States, 462 F.2d 72, 75 (9th Cir.1972) (Hawaii law); Shumaker v. United States, 714 F.Supp. 154, 164 (M.D.N.C.1988) (North Carolina law); Morales v. United States, 642 F.Supp. 269, 272 & n. 3 (D.P.R.1986) (Puerto Rico law); Voegeli v. Lewis, 568 F.2d 89, 94 (8th Cir.1977) (South Dakota law).

On the other hand, eight states have clearly rejected the doctrine. See Grody v. Tulin, 170 Conn. 443, 365 A.2d 1076, 1080 (1976); Gooding v. University Hosp. Bldg., Inc., 445 So.2d 1015, 1019-20 (Fla.1984); Manning v. Twin Falls Clinic & Hosp., Inc., 122 Idaho 47, 51-52, 830 P.2d 1185, 1189-90 (1992); Fennell v. Southern Maryland Hosp. Ctr., 320 Md. 776, 580 A.2d 206, 215 (1990); Ladner v. Campbell, 515 So.2d 882, 888-89 (Miss.1987); Clayton v. Thompson, 475 So.2d 439, 445 (Miss.1985); Pillsbury-Flood v. Portsmouth Hosp., 128 *401N.H.

299, 512 A.2d 1126 (1986); Cooper v. Sisters of Charity, Inc., 27 Ohio St.2d 242, 272 N.E.2d 97, 103 (1971); Sherer v. James, 290 S.C. 404, 351 S.E.2d 148, 150-51 (1986); see also Alfonso v. Lund, 783 F.2d 958 (10th Cir.1986) (New Mexico law); Bromme v. Pavitt, 5 Cal.App.4th 1487, 7 Cal.Rptr.2d 608, 613-18 (1992); Dumas v. Cooney, 235 Cal.App.3d 1593, 1 Cal.Rptr.2d 584 (1991); Morgenroth v. Pacific Medical Ctr., 54 Cal.App.3d 521, 126 Cal.Rptr.

681, 688-89 (1976); La Bienic v. Baker, 11 Conn.App. 199, 526 A.2d 1341 (1987); Watson v. Medical Emergency Serv. Corp., 532 N.E.2d 1191, 1196 n. 2 (Ind.App.1989); Cornfeldt v. Tongen, 295 N.W.2d 638, 640 (Minn.1980) (adhering to “reasonable medical certainty” standard but not expressly considering case where the lost chance was 50 percent or less); Joudrey v. Nashoba Community Hosp., Inc., 32 Mass.App.Ct.

974, 592 N.E.2d 769, 772 (1992) (same). In at least four other states, the law is unclear.¹ There are several variations of the loss of chance doctrine. One version, commonly termed the “relaxed causation” approach, simply loosens the traditional standard of evidentiary sufficiency, permitting the causation issue to be resolved by the fact finder even though there is no evidence of a reasonable probability that the defendant’s negligence caused the patient’s death or other ultimate harm.

Some jurisdictions following this approach permit the case to go to the jury based on evidence that the defendant negligently deprived the patient of a “substantial” or “appreciable” possibility of

survival or recovery. See, e.g., Roberson, 686 P.2d at 159-60; Brown, 331 S.E.2d at 445-46. Other states, typically relying on the Second Restatement of Torts § 323(a),² allow the case to be submitted based on evidence that the defendant's negligence increased the risk of the ultimate harm.

See, e.g., Thompson, 688 P.2d at 616; Hamil, 392 A.2d at 1286. Under either permutation, the court generally may impose liability whenever the finder of fact determines that the increased risk of harm or loss of substantial chance to avoid harm is a "substantial factor" in bringing about the ultimate harm. See, e.g., Roberson, 686 P.2d at 159-60; Jones v. Montefiore Hosp., 494 Pa. 410, 431 A.2d 920, 923-24 (1981); Thornton, 305 S.E.2d at 324-25; Ehlinger, 454 N.W.2d at 759.

In effect, the increased risk of harm/substantial lost chance is treated as a concurring cause of the ultimate result.³ Under the relaxed causation approach, the patient's ultimate death or injury, and not the lost chance itself, continues to be treated as the relevant harm when determining proximate cause. Hence, even while the lost chance may be less than *402even, full damages are awarded in the same manner as if the plaintiff had established causation under traditional principles.

See, e.g., Kallenberg, 357 N.Y.S.2d at 509-511. A second general approach to loss of chance conceptualizes the lost chance of survival or improved health as a distinct, compensable injury, creating a separate cause of action for its recovery. See, e.g., Falcon, 462 N.W.2d at 52-57; Wollen, 828 S.W.2d at 684; Perez, 805 P.2d at 592; Herskovits, 664 P.2d at 486-87 (Pearson, J., concurring).

As one commentator explained: To illustrate, consider a patient who suffers a heart attack and dies as a result. Assume that the defendant-physician negligently misdiagnosed the patient's condition, but that the patient would have had only a 40% chance of survival even with a timely diagnosis and proper care. Regardless of whether it could be said that the defendant caused the decedent's death, he caused the loss of a chance, and that chance interest [would] be completely redressed in its own right.

Joseph H. King, Jr., Causation, Valuation, and Chance in Personal Injury Torts Involving Preexisting Conditions and Future Consequences, 90 Yale L.J. 1353, 1382 (1981). As in "relaxed causation" jurisdictions, many "separate injury" jurisdictions permit recovery only for "substantial" or "appreciable" lost chances. See, e.g., Falcon, 462 N.W.2d at 56.

Under this approach, damages are limited solely to the value of the lost chance. See, e.g., Herskovits, 664 P.2d at 487 (Pearson, J., concurring). For the same reasons, this "separate injury" approach, at least in theory, avoids disturbing the traditional standards of proving causation because "[i]n cases where the plaintiff prevails, it can be said that the medical malpractice more likely than not decreased a... chance of survival." Perez, 805 P.2d at 592 (emphasis in original).

Still other jurisdictions appear to utilize a hybrid, applying the relaxed causation approach while limiting damages to the value of the lost chance. See Scafidi, 574 A.2d at 405-08; McKellips, 741 P.2d at 474-77. These jurisdictions, along with those that follow the separate injury approach, differ in the manner in which they value the lost chance. Some require the finder of fact to determine total damages from the ultimate injury or death and the percentage chance that was lost through the negligent conduct, with the former being multiplied by the latter to ascertain the appropriate judgment.

See, e.g., Falcon, 462 N.W.2d at 57; McKellips, 741 P.2d at 476-77, see also King, *supra*, at 1382 (advocating “proportional damages” approach). Other states allow the jury to value the chance directly through a more open-ended analysis. See DeBurkarte, 393 N.W.2d at 138; see also Perdue, 28 So.Tex.L.Rev. at 62 (advocating “jury valuation” approach). B. This case presents a question of first impression for this Court.⁴ The Kramers *403urge us to adopt any of three versions of the loss of chance doctrine: (1) the separate injury approach; (2) a “hybrid” relaxed causation approach under Section 323(a) of the Restatement (Second) of Torts, with damages limited to the value of the lost chance; or (3) a “hybrid” relaxed causation approach under the “substantial or appreciable chance” analysis.

The Hospital urges that we reject any effort to change the traditional proof requirements in medical malpractice cases. At the outset, we must determine whether this doctrine is permissible in Texas in personal injury actions where, as in this case, the victim has died. At common law, a cause of action for personal injury did not survive to deceased tort victims’ heirs.

See, e.g., *Moreno v. Sterling Drug, Inc.*, 787 S.W.2d 348, 356 & n. 7 (Tex.1990). Moreover, no separate cause of action lies in the victim’s heirs for their own losses at the victim’s death. See *id.* These types of actions are now permitted solely by virtue of the Wrongful Death Act and Survivorship Statute.

The Kramers’ loss of chance theory, then, can be viable only if such actions are permitted under one or both of these statutory schemes.⁵ The Kramers’ Requested Special Issues 3 and 6 asked whether the negligence of Ms. Nightingale or the Hospital “proximately caused any reduction in any chance of survival which Jennie Kramer might have had.” Requested Special Issues 10,12, and 14 asked the jury to determine the monetary sum that would fairly compensate Stephen, Geoffrey, and Lyndsey Kramer for their pecuniary losses, losses of companionship and society, and mental anguish attributable to “Jennie Kramer’s lost chance of survival.” These elements of damages are only recoverable under the Wrongful Death Act.

Tex.Civ.Prac. & Rem.Code §§ 71.002 & 71.004. Requested Special Issue 8 asked the jury to determine the monetary sum, based on Ms. Kramer’s conscious pain, mental anguish, and medical expenses, that would fairly compensate her “for any reduction of any chance of survival she may

have had.” This element of damage is recoverable by the Kramers solely under the Survivorship Statute.

Tex.Civ.Prac. & Rem.Code § 71.021. *404 Under the Wrongful Death Act, liability may be predicated only on “an injury that causes an individual’s death.” Tex. Civ.Prac. & Rem.Code § 71.002(b). Two features of this language have important implications for the loss of chance theories that the Kramers espouse.

First, the Act authorizes recovery solely for injuries that cause death, not injuries that cause the loss of a less-than-even chance of avoiding death. Hence, the Act on its terms does not authorize recovery under the separate injury approach to loss of chance. Cf. *Weimer v. Hetrick*, 309 Md. 536, 525 A.2d 643, 652 (1987) (cause of action for loss of chance not authorized by wrongful death statute that authorized cause of action for torts “caus[ing] the death of another”); *Wollen*, 828 S.W.2d at 685-86 (cause of action for lost chance of survival could not be brought under Missouri wrongful death statute); see also *Perez*, 805 P.2d at 598 (Steffen, J., dissenting) (“[t]here is no latitude in the statute for shifting the basis for damages from conduct causing death to conduct lessening the prospects for survival”).

Second, the Act authorizes claims only for actions that actually cause death. In construing a statute, if the Legislature does not define a term, we will apply its ordinary meaning. *Hopkins v. Spring Indep. School Dist.*, 736 S.W.2d 617, 619 (Tex.1987).

Under this construction, negligent conduct is a cause of harm to another if, in a natural and continuous sequence, it produces an event, and without the negligent conduct such event would not have occurred. *Lear Siegler, Inc. v. Perez*, 819 S.W.2d 470, 471 (Tex.1991). Either the separate injury or relaxed causation approaches allow a plaintiff to recover for the wrongful death of another without establishing this statutorily-required link between injury and death.

The Kramers would thus have us interpret the term “cause” to fasten liability for injuries that probably did not cause Ms. Kramer’s death. We do not believe that the plain language of the statute permits such a reading. Cf. *Bromme*, 7 Cal.Rptr.2d at 613-18.

We therefore hold the Kramers are not entitled to recover under the Texas Wrongful Death Act for their claims of pecuniary losses, losses of companionship and society, and mental anguish sustained as a result of the Hospital’s negligent deprivation of Ms. Kramer’s less-than-even chance of survival.

Accordingly, the court of appeals did not err in affirming the trial court’s refusal to submit the Kramers’ requested special issues 10, 12, and 14. Unlike the Wrongful Death Act, however, the Survival Statute does not create a new cause of action. ■ Rather, it simply provides that “[a] cause of action for personal injury to the health, reputation, or person of an injured person” survives the

death of the injured party “to and in favor of the heirs, legal representatives, and estate of the injured person.” Tex.Civ.PRAC. & Rem.Code § 71.021.

Assuming we were to adopt the loss of chance doctrine as part of the common law, Ms. Kramer’s cause of action for damages from her lost chance, if any existed, would survive under this statute. Therefore, to determine whether the court of appeals erred in refusing to reverse the trial court’s denial of the Kram-ers’ proposed special issue 8, we must consider whether Texas should adopt the loss of chance doctrine as a part of its common law.

C. The dissent suggests at least five arguments in support of the loss of chance doctrine. First, given the nature of the doctor-patient relationship, physicians are retained by patients not merely to cure disease or injury when such cure is possible, but to maximize whatever chances of recovery a patient has. See, e.g., *Falcon*, 462 N.W.2d at 52.

To refuse to impose liability when physicians negligently fail to effectuate this duty would “declare[] open season on critically ill or injured personsf,] as care providers would be free of liability for even the grossest malpractice if the patient had only a fifty-fifty chance of surviving the disease or injury even with proper treatment.” *Roberson*, 686 P.2d at 160.

Second, the traditional rule undermines the *405loss allocation and deterrence functions of the tort scheme by failing to assign the cost of these losses to their tortious causes, see, e.g., *King*, 90 Yale L.J. at 1377, and by giving the tortfeasor the benefit of uncertainty created by his or her own negligence.

Third, the defendant’s negligence prevents the fact finder from ever knowing whether the victim would have recovered in the absence of that negligence. Thus, fundamental fairness dictates that the cost of that uncertainty should be imposed on the tortfeasor rather than on its victim. See *id.* at 1378. Fourth, the application of traditional causation principles leads to the unfairly arbitrary results of permitting full recovery for plaintiffs who can prove any greater-than-even lost chance, while absolutely barring recovery for plaintiffs who can show only a 49.9% or 50% lost chance.

See *id.* at 1377. Finally, traditional principles of causation ignore the reality that chances, particularly those of survival, have value. See *id.* at 1378. We are not persuaded by any of these arguments. We acknowledge that in searching for truth, the law does not, and should not, require proof of an absolute certainty of causation or any other factual issue.

It always settles for some lower threshold of certainty, whether beyond a reasonable doubt in criminal law, clear and convincing evidence in certain civil matters involving constitutional rights, or the more typical civil burden of reasonable probability. See, e.g., John William StRong, et al., *McCoRmick on Evidence* §§ 339-341, at 437-49 (4th ed. 1992). Below reasonable probability, however, we do not believe that a sufficient number of alternative explanations and hypotheses for the cause of the harm are eliminated to permit a judicial determination of responsibility.

As explained by then Chief Justice Riley of the Michigan Supreme Court: Imperfect as it may be, our legal system attempts to ascertain facts to arrive at the truth. To protect the integrity of that goal, there must be some degree of certainty regarding causation before a jury may determine as fact that a... defendant did cause the plaintiffs injury and should therefore compensate the plaintiff in damages.

To dispense with this requirement is to abandon the truth-seeking function of the law. *Falcon*, 462 N.W.2d at 66 (Riley, C.J., dissenting). The more likely than not standard is thus not some arbitrary, irrational benchmark for cutting off malpractice recoveries, but rather a fundamental prerequisite of an ordered system of justice.

To be sure, the Kramers profess to seek recovery only for Jennie Kramer's lost chance of survival, either by viewing the lost chance as a discrete compensable injury or simply by limiting damages to an amount approximating its value. With respect to its implications for the truth-seeking function of the law, however, it should matter not that the Kramers' theory of recovery limits damages in some metaphysical sense to the value of the lost chance.

The true harm remains Ms. Kramer's ultimate death. Unless courts are going to compensate patients who "beat the odds" and make full recovery, the lost chance cannot be proven unless and until the ultimate harm occurs. See *Perez*, 805 P.2d at 592. Hence, legal responsibility under the loss of chance doctrine is in reality assigned based on the mere 'possibility that a tortfeasor's negligence was a cause of the ultimate harm.

See *Fennell*, 580 A.2d at 213. That damages for loss of chance may be reduced to some degree is ultimately beside the point. Nor do we agree with the Kramers that Restatement Section 323 compels our adoption of the loss of chance doctrine. While this section is the law in Texas, see *Colonial Savings Ass'n v. Taylor*, 544 S.W.2d 116, 119-20 (Tex.1976), it does not determine or suggest the appropriate standard of causation.

See *Sherer*, 351 S.E.2d at 150; *Curry v. Summer*, 136 Ill.App.3d 468, 91 Ill.Dec. 365, 371, 483 N.E.2d at 717 (1985); see also *Taylor*, 544 S.W.2d at 119-20 (discussing Section 323 only as it bore upon duty). The only exception we have recognized to our longstanding causation principles is where the inextricable combination of joint tortfeasors combines to cause harm in a manner where individual responsibility cannot be fixed.

See *Landers v. East Texas Salt Water Disposal *406Co.*, 248 S.W.2d 731, 734 (Tex.1952). In these situations, liability is fastened only after a judicial determination that the claimant's injuries were caused by someone, but proof of that responsibility is impossible. Such cases are clearly distinguishable from those where the preponderance of the evidence suggests that no known person was at fault.

Furthermore, assuming we adopt the loss of chance doctrine in the context of this medical malpractice action, it is doubtful that there is any principled way we could prevent its application to similar actions involving other professions.⁶ If, for example, a disgruntled or unsuccessful litigant loses a case that he or she had a less than 50 percent chance of winning, but is able to adduce expert testimony that his or her lawyer negligently reduced this chance by some degree, the litigant would be able to pursue a cause of action for malpractice under the loss of chance doctrine.

See *Perez*, 805 P.2d at 599 n. 3 (Steffen, J., dissenting); *Dumas*, 1 Cal.Rptr.2d at 593; but see *Daugert v. Pappas*, 104 Wash.2d 254, 704 P.2d 600, 605 (1985) (en banc). Likewise, the logic of the loss of chance doctrine would upend our long settled rules requiring some degree of certainty in establishing lost profits for a new business. See *Holt Atherton Indus., Inc. v. Heine*, 835 S.W.2d 80, 84 (Tex.1992); *Southwest Battery Corp. v. Owen*, 115 S.W.2d 1097, 1098-99 (1938).

Only a business with no chance of success would be foreclosed from some recovery. The indistinguishability is shown by the fact that one of the cases upon which the Kramers rely involved not medical malpractice, but purely economic losses. See *Kansas City M. & O. Ry. Co. v. Bell*, 197 S.W. 322 (Tex.Civ.App.—Amarillo 1917, no writ).⁷ We see nothing unique about the healing arts which should make its practitioners more responsible for possible but not probable consequences than any other negligent actor.

See, e.g., *Gooding*, 445 So.2d at 1019-20. Finally, we reject the notion that the enhanced deterrence of the loss of chance approach might be so valuable as to justify scrapping our traditional concepts of causation. If deterrence were the sole value to be served by tort law, we could dispense with the notion of causation altogether and award damages on the basis of negligence alone.

Cf. Stephen Shavell, *Economic Analysis of Accident Law* § 5.1.5, at 108 (1987). *407For all of these reasons, we do not adopt the loss of chance doctrine as part of the common law of Texas. Therefore, the court of appeals did not err in affirming the trial court's overruling of the Kramers' proposed special issues 3, 6, and 8. III.

We proceed to consider appellant's other assignments of error. The Kramers argue that the trial court should have excluded the testimony of three defense witnesses, Drs. J. Sloan Leonard, John H. Burrows, and John C. Bagwell, because the Hospital did not properly verify the supplemental answers to interrogatories in which those witnesses were first identified.

The supplemental answers were verified based on mere "knowledge and belief," while Texas Rule of Civil Procedure 168(5) requires original answers to interrogatories to be verified under oath. See Tex.R.Civ.P. 168(5).

We have held similar requirements not to be satisfied by verification upon “information and belief.” See, e.g., *Burke v. Satterfield*, 525 S.W.2d 950, 954-55 (Tex.1975). However, Rule 166b(6), which imposes the duty to supplement discovery responses, contains no specific verification requirement. See Tex.R.Civ.P. 166b(6).

Thus, at least two courts of appeals have held that where the initial interrogatory responses were properly verified, Rule 166b(6) does not require additional verification, see *Circle Y of Yoakum v. Blevins*, 826 S.W.2d 753, 756 (Tex.App.—Texarkana 1992, writ denied); *Jones v. Kinder*, 807 S.W.2d 868, 872 (Tex.App.—Amarillo 1991, no writ), while two others, including the court below, have held that a trial court did not abuse its discretion in refusing to exclude witnesses as a sanction for failure to verify a supplemental discovery response.

See *Kramer*, 831 S.W.2d at 48; *State v. Munday Enterprises*, 824 S.W.2d 643, 651-52 (Tex.App.—Austin 1992, writ pending). Even if Rule 166b(6) does in fact require additional verification, the Kramers waived whatever complaint they might have had concerning the manner in which the supplemental answers were verified.

The Hospital served its supplemental answers on the Kramers two months before trial, yet the Kramers waited until trial to raise their objections. More significantly, the Kramers actually called Drs. Leonard and Burrows during their case in chief by introducing portions of their depositions into evidence. Only when the Hospital re called these witnesses to testify during its case in chief did the Kramers finally object.

See *Ebeling v. Gawlik*, 487 S.W.2d 187, 189 (Tex.Civ.App.—Houston [1st Dist.] 1972, no writ) (trial court abused its discretion in striking plaintiff’s pleadings for failure to verify supplemental interrogatory answers where defendant did not raise defect earlier in proceedings); William V. DoRSANEO III, *Texas Litigation Guide* § 91.06[3], at 91-16 to 91-17 (1992).

Finally, the Kramers challenge the admissibility of certain testimony by Dr. Leonard that an informal “experiment” with three cytotechnologists demonstrated that Frances Nightingale’s failure to detect abnormal cells when screening Ms. Kramer’s pap smear slide was not negligent. While the jury ultimately agreed with Dr. Leonard in failing to find Ms. Nightingale negligent, her acts were only one of three possible bases of the Hospital’s vicarious liability; as we have seen, the jury found that the Hospital was negligent in permitting Ms. Nightingale to screen slides at home and Dr. Burgess was negligent in failing to diagnose cancer when he screened Ms. Kramer’s slide.

Hence, even assuming that the trial court did in fact err in admitting this particular testimony, it would not be such a denial of the Kramers’ rights as was calculated to cause the rendition of an improper judgment. Tex. R.App.P. 81(b)(1).

The judgment of the court of appeals is affirmed. Dissenting Opinion by HIGHTOWER, J., joined by DOGETT and GAMMAGE, JJ.. See *Kaiser Found. Health Plan v. Sharp*, 741 P.2d 714, 718 (Colo.1987) (en banc); compare *Northern Trust Co. v. Louis A. Weiss Memorial Hosp.*, 143 Ill.App.3d 479, 97 Ill.Dec. 524, 530, 493 N.E.2d 6, 12 (1986) (suggesting loss of chance approach) with *Russell v. Subbiah*, 149 Ill.App.3d 268, 102 Ill.Dec.

516, 519, 500 N.E.2d 138, 141 (1986) (adhering to traditional principles of causation); compare *Wiley v. Montgomery*, 861 F.2d 145, 146-47 (6th Cir.1988) (Kentucky law) and *Richard v. Adair Hosp. Found. Corp.*, 566 S.W.2d 791, 794 (Ky.App.1978) (suggesting loss of chance approach) with *Walden v. Jones*, 439 S.W.2d 571, 576 (Ky.App.1968) (adhering to traditional principles of causation); compare *Truan v. Smith*, 578 S.W.2d 73, 76 (Tenn.1979) with *Boburka v. Adcock*, 979 F.2d 424, 430-31 (6th Cir.1992) (holding that Tennessee law adheres to the traditional approach to causation) and *Alessio v. Crook*, 633 S.W.2d 770, 776 (Tenn.App.1982) (distinguishing *Truan*)..

One who undertakes... to render services for another which he should recognize as necessary for the protection of the other's person or things, is subject to liability to the other for physical harm resulting from his failure to exercise reasonable care to perform his undertaking, if (a) his failure to exercise such care increases the risk of such harm.... Restatement (Second) of Torts § 323(a) (1965)..

Each Texas court that has explicitly considered adopting loss of chance has, like the court below, refused to adopt or apply it. See *Kramer*, 831 S.W.2d at 50; *Karl v. Oaks Minor Emergency Clinic*, 826 S.W.2d 791 (Tex.App.—Houston [14th Dist.] 1992, writ denied) (motion for rehearing pending); *Crawford v. Deets*, 828 S.W.2d 795, 797 (Tex.App.—Fort Worth 1992, writ denied) (refusing to recognize the loss of chance doctrine because instituting a new cause of action "is better left to the legislature or the supreme court").

On the other hand, language in two cases, which the *Kramers* rely upon extensively, appears sympathetic to the doctrine. See *Valdez v. Lyman-Roberts Hosp., Inc.*, 638 S.W.2d 111, 116 (Tex.Civ.App.—Corpus Christ: 1982, writ refd n.r.e.) ("Even if it be assumed that [the patient's] chances for recovery were remote, the hospital would still be liable for depriving her of any chance she might have had"); *Bellaire Gen.*

Hosp., Inc. v. Campbell, 510 S.W.2d 94, 98 (Tex. Civ.App.—Houston [1st Dist.] 1974, writ refd n.r.e.) ("Even if it be assumed that [plaintiffs] chances for recovery... were remote, the Hospital would still be liable for depriving her of any chance she might have had"); see also *Per-due*, 28 So.Tex.L.Rev. at 57 ("Texas law clearly permits loss of a chance recovery."); *John D. Hodson*, Annotation, Medical Malpractice: "Loss of Chance" Causality, 54 A.L.R.4th 10, 46-48 (1987) (describing the state of Texas law as uncertain).

Upon closer examination, however, it is clear that these are not loss of chance cases. The issue of whether the loss of chance doctrine should be adopted or applied was not actually *403raised in either case. Furthermore, what are alleged to be references to the loss of chance doctrine appear only in dicta; both cases purport to apply traditional standards of causation and find them to be satisfied by the evidence.

See Valdez, 638 S.W.2d at 114-16; Bellaire, 510 S.W.2d at 97-98. Subsequent to oral argument, the Corpus Christi Court of Appeals vindicated this view with respect to its Valdez decision, confirming that any loss of chance allusions in that case were merely dictum, and reaffirming that medical malpractice plaintiffs are required to prove causation by a reasonable probability.

See Niemann v. Refugio County Memorial Hosp., 855 S.W.2d 94, 97 (Tex.App.-Corpus Christi 1993).. The dissent contends that we need not consider the applicability of the Wrongful Death Act because the injury for which the Kramers seek redress is not the death of Ms. Kramer, but her lost chance of survival. From this premise, it argues that a deceased tort victim's spouse or children might bring a common law cause of action to recover loss of consortium damages, which, under its premise, could be viewed as arising from the lost chance.

See 858 S.W.2d at 409 n. 2 (Hightower, J., dissenting); cf. Herskovits, 664 P.2d at 487 n. 1 (Pearson, J. concurring); see also Perez, 805 P.2d at 592-93. As we suggest *infra*, unless courts are prepared to compensate even those loss of chance victims who somehow "beat the odds" and recover, the existence of a loss of chance "injury" will be, in reality, wholly dependent upon whether the potential consequences of the victim's illness or injury, such as death, actually come to pass.

In short, the true harm to Ms. Kramer remains her death. Accordingly, her statutory beneficiaries are relegated to seeking recovery under the Wrongful Death Act and Survivorship Statute. Consistent with this analysis, we have never recognized a common law cause of action for loss of consortium in cases involving death separate from that which would fall under the Wrongful Death Act.

Compare Reagan v. Vaughan, 804 S.W.2d 463, 464-65 (Tex.1990) (child could recover for loss of consortium caused by parent's non-fatal injury); and Whittlesey v. Miller, 572 S.W.2d 665, 666 (Tex.1978) (wife could recover for loss of consortium caused by husband's non-fatal injury) with Cavnar v. Quality Control Parking, Inc., 696 S.W.2d 549, 551 (Tex.1985) (child could recover under Wrongful Death Act for loss of companionship and society caused by death of parent) and Sanchez v. Schindler, 651 S.W.2d 249, 254 (Tex.1983) (loss of companionship and society resulting from death of child recoverable under Wrongful Death Act)..

The dissent criticizes us for "extrapolating what results might be under different circumstances" than those presented in the incident case. 858 S.W.2d at 410 n. 5 (Hightower, J., dissenting). When

considering whether to adopt or reject a legal doctrine, we would be remiss in our duties if we did not take into account the probable consequences of our decision.

If we were to adopt the loss of chance doctrine in the medical malpractice context, one such consequence would be its likely expansion into other areas of the law.. In *Bell*, a farmer shipped several hogs via the defendant firm to Fort Worth for a livestock show. When the shipment was delayed for several days, the hogs lost weight, hurting the farmer's chances of winning the \$300 first prize.

His hogs ultimately finished second, garnering \$75. The farmer recovered \$225 damages on the theory that he was deprived of first prize by the delay. While reversing the trial court on other grounds, the court explained that the plaintiff could state a cause of action for damages for loss of the chance of winning the show. See *Bell*, 197 S.W. at 323.

The jury would assign value to that chance. The court explained: It is true that it is difficult to determine the value of this chance, but ordinarily difficulty in ascertaining the amount of damages resulting from the violation of a right is not an insuperable obstacle to recovery.

The chance might be worth little or nothing, or it might be worth, under some circumstances, the full amount of the premium offered for the best of the class in which plaintiff was to be a competitor_ [E]vidence as to all such matters as would tend to show the probability that the plaintiff would be successful in the competition would be admissible, and,.. it would be left to the good sense of the jury trying the case to determine the value of the plaintiffs chances in the competition.

Id. *Bell*, however, has never been cited for this proposition by any other Texas court. Moreover, all but a few jurisdictions have denied recovery in similar cases involving contests, for the reason that the plaintiffs chances of ever receiving the anticipated benefits are insufficiently certain. See, e.g., *Youst v. Longo*, 43 Cal.3d 64, 233 Cal.Rptr. 294, 300-01, 729 P.2d 728, 735 (1987); W. Page Keeton, et al., *Prosser and Keeton on the Law of Torts*, § 130, at 1006 (1985).

To the extent that a no writ case from 1917 might be argued as placing Texas among the handful of jurisdictions that appear to recognize chances to win contests as legally compensable interests, we expressly disavow it.