IN THE SUPREME COURT OF TEXAS

NO. 09-0073

MERCK & CO., INC., PETITIONER,

v.

FELICIA GARZA, ET AL., RESPONDENTS

ON PETITION FOR REVIEW FROM THE
COURT OF APPEALS FOR THE FOURTH DISTRICT OF TEXAS

Argued January 20, 2010

JUSTICE HECHT delivered the opinion of the Court.

JUSTICE WILLETT and JUSTICE GUZMAN did not participate in the decision.

Respondents contend that Vioxx, a prescription drug, caused their decedent's death. In *Merrell Dow Pharmaceuticals, Inc. v. Havner*,[1] we set requirements for determining whether epidemiological evidence is scientifically reliable to prove causation. The parties here dispute what those requirements are, whether they apply in this case, and whether they were satisfied. We hold that *Havner*'s requirements apply and were not met, and that the evidence was therefore legally

[1] 953 S.W.2d 706 (Tex. 1997).

insufficient to prove causation. Accordingly, we reverse the judgment of the court of appeals[2] and render judgment that respondents take nothing.

I

A

Leonel Garza had a long history of heart disease. Twenty years before his death at age 71, he suffered a heart attack and four years later underwent quadruple bypass surgery to alleviate blockages in four of his coronary arteries. In the years that followed, he had one cardiac catheterization procedure that revealed additional blockages in three arteries, followed by a second such procedure that revealed severe recurrent coronary artery disease. He had a stent placed in his left main artery to increase the blood flow into his heart, but two years later was diagnosed with atherosclerotic obstructive disease and chronic venous insufficiency in his legs. He was also diagnosed with an abdominal aortic aneurysm.

Twenty-five days before his death, Garza complained to his cardiologist, Dr. Michael Evans, of intermittent numbness, pain, and weakness in his left arm. After determining that Garza was not having a heart attack, Evans ordered an ultrasound of Garza's neck to check the circulation to his brain and a stress test to check the circulation to his heart. Evans also gave him a week's supply of 25 mg Vioxx for pain relief and scheduled a follow-up visit eight days later.

When Garza returned for his appointment, Evans was out of town, and one of his partners, Dr. Juan Posada, reviewed Garza's test results with him and his wife. The stress test revealed that

[2] 277 S.W.3d 430 (Tex. App.–San Antonio 2008).

Garza had a stable cardiac status, and Posada noted in Garza's record that he thought Garza was on optimal medical management. However, the test did reveal some small areas of apical ischemia, meaning that a part of the tip of Garza's heart was not getting enough blood when stressed. Posada offered the possibility of a cardiac catherization to more fully investigate the cause of the apical ischemia, but Garza declined, opting to discuss the results with Evans a month later. According to Mrs. Garza, Posada gave her husband thirty additional 25 mg Vioxx pills. Seventeen days later, on April 21, 2001, Garza died while alone at his ranch near Rio Grande City, Texas. The autopsy found that the immediate cause of death was a "probable myocardial infarction" initiated at least in part by the underlying cause of "severe coronary artery disease".

Garza's statutory beneficiaries ("the Garzas") sued Merck & Co., Inc., the manufacturer of Vioxx, for products liability, alleging that the drug was defective as designed and as marketed with inadequate warnings. Merck repeatedly challenged the scientific reliability of the Garzas' evidence offered to prove that Vioxx caused Garza's death. The trial court overruled Merck's objections. The jury returned a verdict for the Garzas, awarding $7 million actual damages, plus $25 million in punitive damages, which the trial court reduced to the applicable statutory maximum of $750,000.[3] Merck appealed.

The court of appeals held that the Garzas could not recover on their design-defect claim because they did not present sufficient evidence of a safer alternative design, but that they could recover on their inadequate-warning claim.[4] The court rejected Merck's argument that the Garzas

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[3] *See* TEX. CIV. PRAC. & REM. CODE § 41.008(b)(1) (as noneconomic damages not exceeding $750,000).

[4] 277 S.W.3d at 440 .

had failed to meet *Havner*'s requirements for proving causation because they had not produced two statistically significant epidemiological studies showing that Vioxx at the dose and for the duration taken by Garza more than doubles the risk of heart attack.[5] The court believed that *Havner* did not "establish[] such a bright-line test for causation" but mandated that the sufficiency of the evidence be determined from its totality.[6] An expert witness called by the Garzas testified that clinical trials had "indicated a more than two-fold risk of serious cardiovascular 'adverse experiences' suffered by the people who participated in the studies . . . within twelve weeks or less of taking Vioxx."[7] The expert had opined that there was "a pretty strong case that the risk of Vioxx for heart attacks can occur at any time after the initiation of the medicine."[8] The court concluded that this was sufficient evidence to support general causation.[9] However, the court reversed the Garzas's judgment for juror misconduct and remanded the case for a new trial.[10]

We granted Merck's petition for review complaining that judgment should be rendered against the Garzas.[11]

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[5] *Id*. at 434-435.

[6] *Id.* at 435.

[7] *Id*.

[8] *Id*.

[9] *Id*. at 435-436

[10] *Id.* at 441-442.

[11] 53 Tex. Sup. Ct. J. 15 (Oct. 23, 2009).

Vioxx, or rofecoxib, is a non-steroidal anti-inflammatory drug (NSAID). NSAIDs block

> the production of prostaglandins, which are hormone-like chemicals that are released in the body in response to injury. The prostaglandins cause inflammation, redness, swelling, pain, and fever. Reducing the amount of protaglandins reduces inflammation and its symptoms. In order to inhibit production of prostaglandins, the NSAIDs act by blocking the enzyme cyclooxygenase (COX). After further study scientists discovered that the COX enzyme has two isoforms, one associated with inflammation (COX-II) and another thought to protect the lining of the stomach (COX-1).[12]

Early NSAIDS were non-selective, meaning that they restricted both forms of the COX enzyme, but Vioxx and the other selective NSAIDs only restrict COX-2.[13] Scientists theorized that, by restricting only COX-2, a selective NSAID could provide the pain relief afforded by non-selective NSAIDs while avoiding their gastrointestinal complications, such as perforations, ulcers, and bleeding.[14]

After following Food and Drug Administration procedure for seeking approval of a new drug, Merck submitted its application in late 1998. A few months later, the FDA approved Vioxx as "safe and effective" for the treatment of osteoarthritis, acute pain, and menstrual pain. Merck then applied to the FDA for approval to use Vioxx to treat rheumatoid arthritis. As part of its application, Merck commissioned the VIGOR clinical trial, which was "designed to compare the occurrence of [gastrointestinal] toxicity with twenty-five and fifty milligrams per day of Vioxx or one thousand milligrams per day of Naproxen," a non-selective NSAID.[15] In addition to finding a gastrointestinal

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[12] *See* Jason M. Weigand, *Vioxx: How Strong is the Case Against Merck?*, 11 MICH. ST. U. J. MED. & L. 145, 149 (2007).

[13] *Id.*

[14] *See* Richard Epstein, *Regulatory Paternalism in the Market for Drugs: Lessons from Vioxx and Celebrex*, 5 YALE J. HEALTH POL'Y L. & ETHICS 741, 741-742 (2005).

[15] Weigan, *supra* note 12, at 155.

benefit, VIGOR also revealed a secondary finding that patients taking Vioxx had five times the relative risk of adverse cardiovascular events as patients who took Naproxen.[16] But despite the fact that Merck employees had expressed concern since at least 1997 that Vioxx could present cardiovascular risks, Merck argued that the VIGOR results could be explained by a combination of chance and the cardio-protective effects of Naproxen.

Eventually, the FDA approved the use of Vioxx to treat rheumatoid arthritis, and after some negotiation, Merck placed the cardiovascular data from the VIGOR trial on the label for Vioxx, though not in the warnings section. In 2000, Merck again sought approval from the FDA for treatment of yet another condition, colon polyps. To test the efficacy of Vioxx in treating colon polyps Merck commissioned the APPROVe trial. But after APPROVe found that patients taking Vioxx had a statistically significant increased relative risk of adverse cardiovascular events compared to placebo after eighteen months of exposure, Merck announced that it would voluntarily remove Vioxx from the market on September 30, 2004. In 2005, the FDA commissioned an advisory panel to examine the cardiovascular concerns relating to Vioxx and other selective NSAIDs. The panel eventually concluded that the drugs did present cardiovascular risks after prolonged exposure, but it did not find that they presented a risk after only short-term use.

Thousands of lawsuits were filed across the country, alleging that Vioxx caused heart attacks or other adverse cardiovascular events. After a few cases were tried with mixed results, Merck

[16] *Id.*

agreed to pay $4.85 billion into a settlement fund for qualifying claims. The Garzas' claim did not qualify.

II

To prevail on their inadequate-warnings claim, the Garzas were required to prove that Garza's ingestion of Vioxx 25 mg pills over a period of 25 days was the producing cause of his heart attack. As we explained in *Merrell Dow Pharmaceuticals, Inc. v. Havner*,[17] causation, in this context, has two components: general and specific. "General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether a substance caused a particular individual's injury."[18] The Garzas relied on testimony from two cardiologists who based their opinions on data compiled in Merck-sponsored clinical trials of Vioxx, meta-analyses of those trials, and other observational, epidemiological studies regarding the possible cardiovascular risks presented by Vioxx. Merck contends that the Garzas' evidence did not meet *Havner*'s requirements for scientific reliability. Specifically, Merck argues that *Havner* requires a plaintiff who claims injury from taking a drug to produce two independent epidemiological studies showing a statistically significant doubling of the relative risk of the injury for patients taking the drug under conditions substantially similar to the plaintiff's (dose and duration, for example) as compared to patients taking a placebo. The Garzas argue that *Havner*'s requirements for epidemiological evidence apply only to uncontrolled, observational studies, not to studies from clinical trials, like the ones on which they rely. Or if the requirements do apply to

[17] 953 S.W.2d 706 (Tex. 1997).

[18] *Id*. at 714.

clinical trials, then the Garzas argue that *Havner* does not establish bright-line requirements as argued by Merck, but charges courts with surveying the totality of the evidence regarding causation. In any event, the Garzas contend that evidence failing *Havner*'s requirements may nevertheless be sufficient if accompanied by other reliable evidence of causation.

A

In *Havner*, the plaintiff claimed that taking Bendectin for morning sickness during her pregnancy caused birth defects in her baby.[19] In analyzing whether there was evidence of causation, we started with the general proposition that "a determination of scientific reliability is appropriate in reviewing the legal sufficiency of evidence."[20] We reiterated that courts must look beyond the bare opinions of qualified experts and independently evaluate the foundational data underlying an expert's opinion in order to determine whether the expert's opinion is reliable.[21]

> If the foundational data underlying opinion testimony are unreliable, an expert will not be permitted to base an opinion on that data because any opinion drawn from that data is likewise unreliable. Further, an expert's testimony is unreliable even when the underlying data are sound if the expert draws conclusions from that data based on flawed methodology. A flaw in the expert's reasoning from the data may render reliance on a study unreasonable and render the inferences drawn therefrom dubious.

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[19] *Id*. at 708.

[20] *Id*. at 713.

[21] *Id*. at 711-712. *See also E.I. du Pont de Nemours & Co. v. Robinson*, 923 S.W.2d 549, 557 (Tex. 1995) (providing that, in a determination of the admissibility of expert testimony, the court should look to: (1) the extent to which the theory has been or can be tested; (2) the extent to which the technique relies upon the subjective interpretation of the expert; (3) whether the theory has been subjected to peer review and publication; (4) the technique's potential rate of error; (5) whether the underlying theory or technique has been generally accepted as valid by the relevant scientific community; and (6) the non-judicial uses that have been made of the theory or technique).

> Under that circumstance, the expert's scientific testimony is unreliable and, legally, no evidence.[22]

Causation can sometimes be proved directly.

> In some cases, controlled scientific experiments can be carried out to determine if a substance is capable of causing a particular injury or condition, and there will be objective criteria by which it can be determined with reasonable certainty that a particular individual's injury was caused by exposure to a given substance.[23]

Often, however, it can be proved only indirectly, with epidemiological studies.

> In the absence of direct, scientifically reliable proof of causation, claimants may attempt to demonstrate that exposure to the substance at issue increases the risk of their particular injury. The finder of fact is asked to infer that because the risk is demonstrably greater in the general population due to exposure to the substance, the claimant's injury was more likely than not caused by that substance.[24]

Allowing such proof

> concedes that science cannot tell us what caused a particular plaintiff's injury. It is based on a policy determination that when the incidence of a disease or injury is sufficiently elevated due to exposure to a substance, someone who was exposed to that substance and exhibits the disease or injury can raise a fact question on causation.[25]

The epidemiological evidence on which the experts in *Havner* relied consisted largely of unpublished, retroactive, observational studies. The Garzas argue that their evidence of clinical trials involving Vioxx is more reliable. The difference between the two types of epidemiological evidence is this:

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[22] *Havner*, 953 S.W.2d at 714.

[23] *Id*. at 714-715.

[24] *Id*.

[25] *Id*. (internal citation omitted).

> Epidemiological studies may be characterized as **experimental** or **observational**. The major difference between the two is that in an experimental setting, the epidemiologist *controls the conditions* under which the study is to be conducted; in an observational setting, the epidemiologist is *not able* to control these conditions. In experiments, the epidemiologist controls the method of assigning subjects to either the treatment or the comparison groups. A commonly used means of assignment is to randomly allocate similar persons to the treatment or the comparison group; such an experiment is called a randomized clinical trial . . . .[26]

But while the controlled, experimental, and prospective nature of clinical trials undoubtedly make them more reliable than retroactive, observational studies, both must show a statistically significant doubling of the risk in order to be some evidence that a drug more likely than not caused a particular injury. The superior way in which a study is conducted does not justify taking its conclusion to be anything other than what it is. The purpose of the structure of epidemiological studies and the statistical evaluation of their results is to provide "objective criteria by which it can be determined with reasonable certainty that a particular individual's injury was caused by exposure to a given substance."[27] *Havner*'s requirements necessarily apply to all epidemiological evidence, including the causation evidence the Garzas presented at trial.

B

In *Havner*, we surveyed the opinions of other courts and scholarly commentary and concluded:

> Although we recognize that there is not a precise fit between science and legal burdens of proof, we are persuaded that properly designed and executed epidemiological studies may be part of the evidence supporting causation in a toxic

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[26] DAVID E. LILIENFELD & PAUL D, STOLLEY, FOUNDATIONS OF EPIDEMIOLOGY 151 (3rd ed. 1994) (internal citation omitted).

[27] *Havner*, 953 S.W.2d at 715.

> tort case and that there is a rational basis for relating the requirement that there be more than a "doubling of the risk" to our no evidence standard of review and to the more likely than not burden of proof.[28]

To demonstrate the thinking behind the doubling of the risk requirement we then used the following admittedly oversimplified example:

> Assume that a condition naturally occurs in six out of 1,000 people even when they are not exposed to a certain drug. If studies of people who did take the drug show that nine out of 1,000 contracted the disease, it is still more likely than not that causes other than the drug were responsible for any given occurrence of the disease since it occurs in six out of 1,000 individuals anyway. Six of the nine incidences would be statistically attributable to causes other than the drug, and therefore, it is not more probable that the drug caused any one incidence of disease. This would only amount to evidence that the drug could have caused the disease. However, if more than twelve out of 1,000 who take the drug contract the disease, then it may be statistically more likely than not that a given individual's disease was caused by the drug.[29]

In essence, we acknowledged that "frequency data, such as the incidence of adverse effects in the general population when exposed, cannot indicate the actual cause of a given individual's disease or condition."[30] However, we found that "[t]he use of scientifically reliable epidemiological studies and the requirement of more than a doubling of the risk strikes a balance between the needs of our legal system and the limits of science."[31]

The Garzas argue that *Havner* did not ultimately hold that a study had to show a doubling of the risk in order to be found reliable evidence of causation. They point out that *Havner* states:

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[28] *Id*. at 717.

[29] *Id*. (emphasis omitted).

[30] *Id*. at 718.

[31] *Id*.

> We do not hold, however, that a relative risk of more than 2.0 is a litmus test or that a single epidemiological test is legally sufficient evidence of causation. Other factors must be considered. As already noted, epidemiological studies only show an association. There may in fact be no causal relationship even if the relative risk is high. . . . Likewise, even if a particular study reports a low relative risk, there may in fact be a causal relationship. The strong consensus among epidemiologists is that conclusions about causation should not be drawn, if at all, until a number of criteria have been considered.[32]

The opinion further noted that epidemiological studies "are subject to many biases and therefore present formidable problems in design and execution and even greater problems in interpretation."[33] Accordingly, we stated that

> there are a number of reasons why reliance on a relative risk of 2.0 as a bright-line boundary would not be in accordance with sound scientific methodology in some cases. Careful exploration and explication of what is reliable scientific methodology in a given context is necessary.[34]

But these statements must be read in context. Our concern was that statistically reliable studies showing a doubling of the risk might nevertheless be insufficient to prove causation, not that they would ever be unnecessary. We noted that "[a] few courts that have embraced the more-than-double-the-risk standard have indicated in dicta that in some instances, epidemiological studies with relative risks of less than 2.0 might suffice if there were other evidence of causation."[35] We declined to join those courts, leaving undecided "whether epidemiological evidence with a

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[32] *Id*.

[33] *Id.* at 719 (quoting Marcia Angell, *The Interpretation of Epidemiologic Studies*, 323 NEW ENG. L. REV. 823, 824 (1996)).

[34] *Id*.

[35] *Id*.

relative risk less than 2.0, coupled with other credible and reliable evidence, may be legally sufficient to support causation."[36]

We concluded that the studies in *Havner* were unreliable when they did not show a doubling of the risk that was statistically significant at the 95% confidence level. After analyzing and adopting the "methodology that is at present generally accepted among epidemiologists"[37] — namely, that studies finding a doubling of the risk are statistically significant at the 95% confidence level — we considered each of the studies that served as the foundation for the opinions of the Havners' experts. We concluded that any study that did not find a doubling of the risk that was statistically significant at the 95% confidence level was unreliable.[38] Also, we indicated that an expert's opinion that relied on a combined analysis of several studies was unreliable because the studies did not show a doubling of the risk.[39]

Havner holds, and we reiterate, that when parties attempt to prove general causation using epidemiological evidence, a threshold requirement of reliability is that the evidence demonstrate a statistically significant doubling of the risk. In addition, *Havner* requires that a plaintiff show "that he or she is similar to [the subjects] in the studies" and that "other plausible causes of the injury or

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[36] *Id*.

[37] *Id*. at 712.

[38] Id. at 724-726.

[39] *Id*. at 725 ("[The expert] also said that these studies were consistent with a relative risk that was between 0.7 and 1.8. That is not a doubling of the risk. It may support her opinion that it is more probable than not that there is an *association* between Bendectin and limb reduction defects, but the *magnitude* of the association she gleaned from these studies is not more than 2.0, based on her own testimony.").

condition that could be negated [are excluded] with reasonable certainty."[40] *Havner* also requires that even if studies meet the threshold requirements of reliability, sound methodology still necessitates that courts examine the design and execution of epidemiological studies using factors like the Bradford Hill criteria[41] to reveal any biases that might have skewed the results of a study,[42] and to ensure that the standards of reliability are met in at least two properly designed studies.[43] Thus, a plaintiff must first pass the primary reliability inquiry by meeting *Havner*'s threshold requirements of general causation. Then, courts must conduct the secondary reliability inquiry that examines the soundness of a study's findings using the totality of the evidence test. As we concluded in *Havner*:

> In sum, we emphasize that courts must make a determination of reliability from all the evidence. Courts should allow a party, plaintiff or defendant, to present the best available evidence, assuming it passes muster under *Robinson*, and only then should a court determine from a totality of the evidence, considering all factors affecting the reliability of particular studies, whether there is legally sufficient evidence to support a judgment.[44]

C

The Garzas contend that they presented more than two studies showing a statistically significant doubling of the risk of heart attack from taking Vioxx, thereby satisfying *Havner*'s

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[40] *Id*. at 720.

[41] *Havner*, 953 S.W.2d 706, 718 n.2. Those criteria, published by Sir Austin Bradford Hill in 1965 and widely used by epidemiologists, are more fully described in *Havner*. The criteria are grouped in nine categories: strength of association, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, and analogy.

[42] *Id*. at 718-719.

[43] *Id*. at 727.

[44] *Id*. at 720.

requirements. First, they point to the VIGOR study. Although the results of VIGOR indicate statistically significant results showing five times as many heart attacks for the patients on Vioxx compared to the patients on Naproxyn, that study involved a dosage of 50 mg and a median duration of 9 months—double the dosage Mr. Garza took (25 mg) and a much longer duration than Mr. Garza's 25 days. The Garzas argue, and we agree, that this finding of an increased risk does not necessarily mean that there is no increased risk at a lower dose and smaller duration. But the point is not that the VIGOR study suggests that a lesser exposure to Vioxx is less risky, but that the study suggests nothing at all about significantly lesser exposure. The usage involved in a study need not match the claimant's usage exactly, but the conditions of the the study should be substantially similar to the claimant's circumstances. The Garzas simply cannot argue that the VIGOR study showed a statistically significant doubling of the relative risk for a person like Garza, who took a much smaller dosage of Vioxx for much less time.[45]

Another study presented, the Shapiro meta-analysis, also falls short. The Shapiro meta-analysis, performed in 2000 by Merck employee Deborah Shapiro, combined and analyzed much of the cardiovascular data that the company had gathered up to that point. In one arm of the analysis, Shapiro compared the relative risks of heart attack of people who had taken Vioxx to the risks of people who had taken other NSAIDs. This analysis found that patients who had taken Vioxx had a relative risk of 2.02 compared to the users of other NSAIDs. The results were significant at the 95% confidence level with a confidence interval from 1.14 to 3.55. However, as meta-analysis, it

[45] The Graham study is similarly unreliable because the statistically significant finding applied only to 50 mg dosages.

combines the results of a number of different studies, with differing dosages, durations, and comparison drugs. This is especially problematic given the influence of the VIGOR results on the analysis. VIGOR, as we have said, used double Garza's dose of Vioxx with patients for a median period of nine months. When the VIGOR results were removed from the meta-analysis, Shapiro found the relative risk of heart attack of Vioxx patients to other NSAID recipients dropped to 1.19 at the 95% level with an interval from 0.60 to 2.35. And even those remaining results are skewed by differences in dose and duration compared to Garza's exposure.

The Garzas also rely on the APPROVe study. That study found an overall relative risk greater than 2 for APTC (Antiplatelet Trialists' Collaboration criteria) events, a category of events which includes "the combined incidence of death from cardiovascular, hemorrhagic, and unknown causes; of nonfatal myocardial infarction; and of nonfatal ischemic and hemorrhagic stroke." However, the other category studied, Cardiovascular Thrombotic Events, a narrower category still containing Mr. Garza's injury, found an overall risk of 1.92. Moreover, the study took place over a three-year period and did not show statistically significant differences until after eighteen months, a much longer duration than Mr. Garza's use.

Finally,[46] the Garzas presented the VICTOR study, a clinical trial designed to measure the efficacy of Vioxx in treating patients with colorectal cancer. At trial, the only evidence of VICTOR was an e-mail containing two charts of preliminary results and cursory testimony regarding

[46] The Garzas presented a total of six other studies throughout the course of litigation. Two of the studies (ADVANTAGE and Protocol 090) contain a relative risk factor greater than 2.0, but neither of these studies contain sufficient data to achieve statistical significance. The Garzas do not contend that any one of the remaining four studies (the Juni paper, the Solomon study, the Ingenix study, and the Protocol 010 study) sufficiently indicate a statistically significant doubling of the risk of heart attack.

VICTOR's protocol and findings. However, although the VICTOR study was discontinued after two years, it does appear that these preliminary findings achieve statistically significant results for confirmed "thrombotic events" with a relative risk of over 3.0. But even if VICTOR qualifies under *Havner*'s test, it cannot do so alone. Another study is still necessary, but lacking here.

Thus, the two cited by the Garzas do not meet *Havner*'s standards of reliability.

D

While we have held that epidemiological evidence used to prove general causation must meet *Havner*'s requirements for scientific reliability, we return briefly to the Garzas' argument that the totality of the evidence in this case shows general causation. They point to evidence that Merck largely excluded patients with a history of cardiovascular disease from its studies. They argue that the trials suffer from selection bias in that they excluded a subset of people who were at an elevated risk of suffering a Vioxx-induced heart attack. But several of the studies did include patients who had some history of cardiovascular disease, and in any event, the absence of evidence cannot substitute for evidence. The Garzas argue that the risk doubling for Garza required by *Havner* can be extrapolated from studies finding a doubling of the risk at much higher doses and longer durations. But the Garzas cannot point to any scientific basis for such an extrapolation.

The totality of the evidence cannot prove general causation if it does not meet the standards for scientific reliability established by *Havner*. A plaintiff cannot prove causation by presenting different types of unreliable evidence. Thus, we are constrained to hold that the Garzas did not present reliable evidence of general causation and are therefore not entitled to recover against Merck.

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Accordingly, the judgment of the court of appeals is reversed and judgment rendered that the Garzas take nothing.

Nathan L. Hecht
Justice

Opinion delivered: August 26, 2011