COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF INDUSTRIAL ACCIDENTS **BOARD NO. 013058-93**

Robert Mazzarino	Employee
Tocci Building Corp.	Employer
Wausau Insurance Co.	Insurer

REVIEWING BOARD DECISION
(Judges Wilson, McCarthy and Levine)

APPEARANCES
Neal A. Winston, Esq., for the employee
Daniel P. Napolitano, Esq., for the insurer

WILSON, J. The insurer appeals from a decision in which an administrative judge found that the employee's on-the-job stroke was work related, and awarded ongoing total incapacity benefits. The insurer contends that the medical evidence adopted by the judge was incompetent, because it was not based on the evidence and was without an adequate foundation in scientific theory. The insurer also argues that the judge improperly applied the prima facie provisions of § 7A, which address the conduct of the hearing where the employee suffers from a work-related testimonial incapacity. Finding no reversible error, we affirm the decision.

Robert Mazzarino worked as a project manager and construction liaison for various construction companies from 1970 until his stroke on April 9, 1993. In 1992, he commenced his employment with the employer, as a field superintendent and project manager. (Dec. 5.) In early 1993, the employee became project superintendent for the construction of a group of retail stores in Saugus. (Dec. 5-6.) He coordinated delivery of materials and scheduling of the various subcontractors. The project was on a compressed time schedule, as the prospective tenants needed to take possession in time for seasonal sales opportunities. From the outset, the project was beset by serious problems in maintaining the tight schedule. Unusually rainy weather left more standing water on the

site than had been anticipated. Moreover, the soil was found to be unstable and the employee ordered that landfill be brought in from a construction site in Waltham. For two to three weeks, several hundreds of truckloads were delivered. In late March 1993, it was discovered that this fill was contaminated, and needed to be removed. The entire project was delayed for several more weeks as a result. The property owner was upset, and it was apparent that the project deadlines were not going to be met. The employee was frustrated and under pressure to correct these problems, in order to get the project back on schedule. (Dec. 6-7.)

On April 9, 1993, the employee's direct supervisor and vice president of operations, Allen Asadoorian, arrived unannounced at the worksite and met with the employee, who was walking back from buying office supplies at a near-by Staples. Asadoorian asked the employee to report on the status of the project. The employee discussed the project with Asadoorian and a field engineer, including the removal of the contaminated soil. (Dec. 7.) The employee became non-responsive as the two walked back to the trailer housing the office. As the employee was in obvious distress, he was taken to Atlanticare Hospital in Lynn, where he was diagnosed as having suffered a stroke. (Dec. 8.)

The employee was forty-eight years old at the time of his stroke. He was diagnosed with high blood pressure around 1980, and took medication to control it. In March 1991, the employee suffered a transient ischemic attack while at home. He was told to take aspirin, but had no other active treatment. The employee remained an in-patient at Atlanticare until he was transferred to New England Rehabilitation Hospital and, later, he treated at the Veterans Administration Hospital and Boston University for speech therapy. He is extremely limited in his daily life activities and has worked only occasionally since the stroke. (Dec. 8-9.)

The insurer rejected the employee's claim for workers' compensation benefits, but the judge awarded the employee ongoing § 34 benefits from the date of the § 10A conference. Both parties appealed to a full evidentiary hearing. As a result of the employee's stroke, he suffered from aphasia and was unable to speak well enough to

testify at the hearing. Therefore, the employee invoked the provisions of § 7A.[1] The judge ruled that, based on the employee's aphasia, which he causally related to his stroke, § 7A would apply. (Dec. 2.)

Prior to the hearing, an impartial medical physician, certified in internal medicine and cardiology, examined the employee and issued a report dated February 10, 1998. The employee filed a motion for additional medical evidence, which the judge allowed due to the complexity of the medical issue in the case. (Dec. 2.) The impartial physician, Dr. B.D. Gupta, found the employee totally and permanently disabled, due to a thrombotic occlusion of the left middle cerebral artery. (Dec. 9.) Dr. Gupta opined that the employee's stroke was not work related, as the emotional stress necessary to cause the development of the stroke, through the elevation of blood pressure, must be acute for a sustained period of time. The doctor saw this as highly unlikely under the circumstances of this case. (Dec. 9-10.) The judge did not adopt Dr. Gupta's opinions. (Dec. 16-17.)

The insurer presented medical evidence of its expert physicians, Dr. Gerald F. Winkler and Dr. Elliot L. Sagall, each of whom also found no causal relationship between the employee's work and his stroke. (Dec. 10-12.) The judge did not adopt the opinions of these doctors as well. (Dec. 16-17.) Instead, the judge adopted the opinions of the employee's expert physician, Dr. Steven G. Miller, who is board certified in internal and emergency medicine. (Dec. 17.) The judge's findings on Dr. Miller's testimony are as follows:

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[1] General Laws c. 152, § 7A, as amended by St. 1991, c. 398, § 21, provides:

> In any claim for compensation where the employee has been killed or found dead at his place of employment or, in the absence of death, is physically or mentally unable to testify, and such testimonial incapacity is causally related to the injury, it shall be prima facie evidence that the employee was performing his regular duties on the day of injury or death and that the claim comes within the provisions of this chapter, that sufficient notice of the injury has been given and that the injury or death was not occasioned by the willful intention of the employee to injure or kill himself or another.

> Dr. Miller agreed with the other doctors that the employee had suffered an embolic stroke as a result of a clot or loose plaque blocking the employee's middle cerebral artery. In the opinion of Dr. Miller, as a result of the employee's April 9, 1993 stroke, he was left with no work capacity, a condition which he expected to be permanent. (Deposition of Dr. Miller, pages 33-35).
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> In the opinion of Dr. Miller, there was a causal connection between the stress the employee experienced at work and the stroke he had on April 9, 1993. Dr. Miller conceded that the direct connection between acute emotional stress and strokes had not been prove[d] scientifically, but he believed that logically and medically, it was very likely there was some connection. He explained that emotional stress causes the body to produce catecholamines (i.e., adrenaline) which cause the heart to pump faster and harder. The increased heart rate creates an increased chance of plaque or clots cracking or breaking off from the carotid artery. The natural flow of the blood stream takes the plaque or clot into the cerebral artery, blocking the artery and causing a stroke. (Deposition of Dr. Miller, pages 59-60).
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> Dr. Miller supported his opinion by pointing to studies showing that emotional stress contributes to the causing of heart attacks. According to Dr. Miller, there was good circumstantial evidence that what we knew about the heart would also apply to the carotid arteries in cases of strokes. (Deposition of Dr. Miller, pages 63, 84-86).
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> Assuming that the employee was experiencing acute emotional stress for several minutes or hours prior to the occurrence of his stroke in the afternoon on April 9, 1993, Dr. Miller was of the opinion that this stress, combined with the physical activity of walking around the job site that day, caused the employee to suffer the stroke which has disabled him. Employing the analogy of the wind blowing a leaf from a tree, Dr. Miller concluded that, but for the work stressors, the employee probably would not have had a stroke at that particular time or with the same severity. (Deposition of Dr. Miller, page 88).

(Dec. 13-15.)

The judge adopted the opinion of Dr. Miller, and made the general finding that, "although . . . the conclusion I reach requires a step beyond today's fully accepted scientific theories, the logic supporting the opinion of Dr. Miller considered in light of the facts in this case persuades me to adopt his opinion and find a causal relationship between the employee's work activities and his April 9, 1993 stroke." (Dec. 16.) The judge therefore ordered that the insurer pay the employee his full statutory entitlement to

benefits for temporary, total incapacity, as well as continuing benefits under § 34A for permanent and total incapacity. (Dec. 17-18.)

The insurer argues that the judge erred by adopting Dr. Miller's inherently speculative opinion, because it was based on the "assumption" that the employee was undergoing psychological stress at the time of his stroke. (Insurer brief, 25-26.) See Patterson v. Liberty Mutual Insurance Co., 48 Mass. App. Ct. 586, 597 (2000)(court ruled inadmissible medical testimony of § 11A physician based on "assumed facts not established by the admissible evidence"). We disagree. The evidence in the record, comprised of the testimony of the employee's bosses, a field engineer and a subcontractor working on the project, plainly established that the employee was overseeing a project that was going very badly when he was stricken by the stroke. See testimony of John Tocci, Richard Cincotta, Alan Asadoorian and James McPhail, 5/20/98 and 6/26/98 transcripts. The judge's findings are to that effect: "[T]he evidence supports a finding that, at the time of his stroke, the employee was experiencing extraordinary and unusual stress as a result of events arising from and in the course of his employment." (Dec. 16.) The judge made clear subsidiary findings of fact as to the significant delays that threatened the project's very viability, and the precipitating April 9, 1993 visit by the vice president to assess its status. (Dec. 6-8.) The employee had been diagnosed with high blood pressure many years earlier, and suffered a transient ischemic attack in 1991. (Dec. 8.) Of course, there was no evidence of the employee's exact blood pressure at the time of the stroke. Nevertheless, the record supports the judge's inference that the employee suffered from stress-induced hypertension at the time of his stroke. That inference was entirely consistent with – and supported by – Dr. Miller's opinion that, based on the employee's medical history and facts of the events leading up to the stroke, it was more likely than not that he was suffering from high blood pressure and an increased heart rate at that time. (Dr. Miller Dep. 142-143.) "The permissible drawing of an inference . . . is a process of reasoning whereby from facts admitted or established by the evidence, including expert testimony, or from common knowledge and experience, a reasonable conclusion may be drawn that a further fact is established." Semerjian v.

Stetson, 284 Mass. 510, 514 (1933). The inference of an acute episode of hypertension, triggering the mechanical forces that triggered, in turn, the embolic stroke was certainly "within the bounds of reason." Miranda v. Atlantic Paper Box, 12 Mass. Workers' Comp. Rep. 510, 511(1998). Thus, the factual foundation of Dr. Miller's opinion was not speculation. This case is distinguishable from Patterson v. Liberty Mutual, supra. In that case, the court ruled that the employee failed to shoulder her burden of proof due to the lack of a competent factual foundation of an industrial exposure for the impartial physician's opinion that the exposure caused the employee's asthma. Id. at 596-598. No evidence allowed for the drawing of a rational inference in Patterson.

The insurer further argues that the judge erred by adopting the opinion of Dr. Miller, because the theory of a causal connection between emotional stress, hypertension and strokes was not supported with statistical scientific proof and, instead, was based on cardiovascular studies showing a causal relationship between stress-induced hypertension and heart attacks. (Dr. Miller Dep. 84-86.) The insurer also asserts that the medical opinion was incompetent because it was not based on scientific theory generally accepted by the relevant community of physicians. (Insurer Brief, 27.) In our view, the insurer's argument misses the mark on both points.

Taking the latter part of the argument first, the insurer does not recognize that the employee need not always prove that scientific theory posited as the foundation of an expert's opinion is generally accepted by the relevant community of scientists. That test, known as the Frye test, is but one of the ways that an expert's opinion may be shown as reliable and, therefore, admissible as competent evidence.

> The test has a practical usefulness because, if there is general acceptance in the relevant scientific community, the prospects are high, but not certain, that the theory or process is reliable. The ultimate test, however, is the reliability of the theory or process underlying the expert's testimony. See Commonwealth v. Kater, 388 Mass. 519, 527, 447 N.E. 2d 1190 (1983). Thus we have recognized the risk that reliable evidence might be kept from the factfinder by strict adherence to the Frye test. [Citations omitted.] Perhaps the relevant scientific community has not yet digested and approved the foundation of the theory or process, but the theory or process is so logically reliable that evidence should be admitted even without its general acceptance by involved scientists. In some circumstances, perhaps

> without adequately articulated reasons, we simply have decided that Frye principles do not apply in deciding on the admissibility of expert testimony apparently based on a scientific theory or process.
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> We accept the idea . . . that a proponent of scientific opinion evidence may demonstrate the reliability or validity of the underlying scientific theory or process by some other means, that is, without establishing general acceptance.

Commonwealth v. Lanigan, 419 Mass. 15, 24, 26 (1994). The Supreme Judicial Court has concluded that the issue of reliability is essentially a factual matter, within the sound discretion of the administrative judge to determine. Canavan's Case, 432 Mass. 304, 312 (2000). We may deem the judge's determination to be error of law only where the judge has abused his or her discretion in making the Lanigan ruling. See Canavan, supra ("applying an abuse of discretion standard on appellate review will allow trial judges the needed discretion to conduct the inherently fact-intensive and flexible Lanigan analysis"). This means that "[o]n appeal, we accord great deference to the judge's ruling." Rotman v. National R.R. Passenger Corp., 41 Mass. App. Ct. 317, 319 (1996). We are not persuaded that the apparent lack of general acceptance in the scientific community regarding the incidence of strokes related to stress-induced hypertensive episodes is controlling here because of the analysis that follows.

The judge's adoption of the expert opinion of Dr. Miller was within the bounds of his discretionary authority, as the doctor's underlying theory and methodology of reasoning to his conclusion was sufficiently reliable under Lanigan, supra. The logic supporting the doctor's opinion – adopted by the judge – was as follows: The established theory of cardiovascular medicine positing a causal relationship between stress-induced hypertension and heart attacks, based on mechanical forces, could reliably be applied to the relationship between stress, hypertension and strokes. Addressing the medical literature on the heart, the doctor testified:

> I could read just two sentences that would sum it up. 'It is hypothesized that occlusive coronary thrombosis occurs when an artherosclerotic plaque becomes vulnerable to rupture, and mental or physical stress causes the plaque to rupture.'
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> . . . .

> So, let me comment right there, it's an acknowledgment of the literature, and this is literature published in the Journal of Hypertension, 1996. They then talk about vasoconstriction triggered by daily activities may also contribute to cause complete occlusion, et cetera, so, again, this is not stuff I'm dreaming up as hypothetical theory, these are leading theories, and we have prove[d] it for art (sic), *and I see almost no reason to believe that it won't eventually be prove[d] for stroke, although the type of scientific proof hasn't been completed.*
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> I'd like to also add that one of the reasons hypertension is a risk factor, and this is very important, and I probably should have said it earlier, is that it causes mechanical damage. When your blood pressure is high, the vessels are expanding and contracting more forcefully to a larger extent and more and more often, and that damage has a cumulative effect in causing chronic atherosclerosis, and also, the potential for causing or triggering an acute event.
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> You have to look at the big picture. There's a general trend, we don't have absolute proof, but there is good circumstantial evidence that what we know about the heart will, will also apply to the carotid arteries in the stroke.

(Dr. Miller Dep. 83-86, emphasis added.) See also Dr. Miller Dep. 90-93. The doctor also answered the opinion of the insurer's expert, that there is no basis for the causal connection posited between stress, hypertension and strokes.

> Q: [Are] your opinions, as they relate to the role of mechanical forces . . . a hypothesis that has not been prove[d]?
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> No. I disagree with it. . . . Nothing in this world that is solid cracks open for any other reason than mechanical forces. . . .
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> We haven't got the understanding that we would like specifically for the carotid artery, but we do have it for coronary arteries, which is very similar. . . .
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> There may not be absolute, scientific proof here, but there's very, very good circumstantial evidence to make it more likely than not that mechanical forces played a significant role in this process, both the acute and the chronic.
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> [T]his is a man who had weeks of unusual psychological stress, which almost certainly meant he was having episodes of hypertension, and we know that from his past history, who then had physical activity with superimposed acute psychological stress, specifically, the, the fact that one of his bosses showed up.

> That to me is it's more likely than not that the stroke occurred at that time and place due to these factors, and finally, the psychological response, the adrenal response. There's a direct link between the psychological and the physical state between the cardiovascular. In other words, there's a link between the mind and body.

(Dr. Miller Dep. 74-77.)

Thus, based on the scientifically proved theory that stress and hypertension are contributing causes to heart attacks, the doctor was entirely comfortable drawing the logical analogy that the same type of mechanical forces at play could and did cause an embolic stroke. That is, the clot in the carotid artery, broken from the artery wall as a result of acute psychological stress and a resulting hypertensive state, travels to the brain in the form of an embolism, just as the clot in the coronary artery is affected by the same forces and travels into the heart.[2] (Dr. Miller Dep. 42-55.) The judge was persuaded by the analysis, and concluded that the evidence was admissible to satisfy the employee's burden of proving causal relationship. We cannot say, as a matter of law, that he abused his discretion in so concluding. See General Electric Co. v. Joiner, 118 S.Ct. 512, 519 (1997)("Trained experts commonly extrapolate from existing data.") Unlike Joiner, supra, where the trial judge had excluded the proffered scientific evidence, Dr. Miller's extrapolation was from an entirely related area of cardiovascular research with hypertensive patients, not "seemingly far-removed animal studies." Id. at 518. The testimony would appear to fit well within the Lanigan approach to the proof of underlying logical reliability of a theory, without the general acceptance of such a theory by the scientific community. Canavan, supra, is distinguishable. In that case, there was nothing in the underlying foundation for the diagnosis and causal relationship opinions on multiple chemical sensitivity, propounded by the employee's expert physician, which bespoke reliability, other than the *ipse dixit* of the doctor. That, of course, is not enough under the Lanigan analysis. Canavan, supra at 314-315.

[2] Although the administrative judge did not adopt Dr. Gupta's opinion that the employee's stroke was not work related, it is significant that the impartial examiner also accepted that a stroke can be caused by elevated blood pressure over a sustained period.

The insurer finally argues that the judge erroneously applied the provisions of § 7A, establishing the prima facie existence of an industrial accident due to the employee's incapacity to testify at hearing, because he had no medical opinion of causal relationship between such incapacity and the employment at the time he ruled on the section's application. See n.1, supra. The insurer is correct that the critical nexus between live testimonial incapacity and the workplace must be established by a medical causation opinion for the prima facie effect of § 7A to attach, Costa v. Colonial Gas Co., 12 Mass. Workers' Comp. Rep. 483, 486 (1998), and that the impartial physician's opinion did not fulfill that function in this case. The judge's implicit ruling that it did was error. (Dec. 2.)

Nonetheless, the error is harmless. As the judge concluded, the lay testimony adduced at hearing, along with Dr. Miller's causation opinion, sustained the employee's burden of proving that his stroke was work-related. Compare Herbert v. Harvard University, 12 Mass. Workers' Comp. Rep. 382 (1998)(undisputed evidence indicated non-work-related nature of employee's telephone conversation at the time of his heart attack at work). Hence, the invocation of § 7A and its artificial force was unnecessary for the judge to reach his conclusion.

In summary, we affirm the decision, because it is supported by clear subsidiary findings of fact grounded in the record evidence and reasonable inferences drawn therefrom.

So ordered.

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Sara Holmes Wilson
Administrative Law Judge

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William A. McCarthy
Administrative Law Judge

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Frederick E. Levine
Administrative Law Judge

Filed: January 30, 2001