

**STATE OF VERMONT  
DEPARTMENT OF LABOR**

Cheryl Goodwin-Abare

Opinion No. 41-11WC

v.

By: Phyllis Phillips, Esq.  
Hearing Officer

State of Vermont Agency  
of Human Services

For: Anne M. Noonan  
Commissioner

State File No. CC-54110

**OPINION AND ORDER**

Hearing held in Montpelier on October 14, 2011

Record closed on November 14, 2011

**APPEARANCES:**

Patricia Turley, Esq., for Claimant  
William Blake, Esq., for Defendant

**ISSUE PRESENTED:**

Are Claimant's bilateral carpal tunnel syndrome and left cubital tunnel syndrome  
causally related to her work for Defendant?

**EXHIBITS:**

Joint Exhibit I: Medical records

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|------------------------|--|
| Claimant's Exhibit 1:  | <i>Curriculum vitae</i> , Sikhar Banerjee, MD  |
| Claimant's Exhibit 2:  | Workplace Safety Ergonomic Evaluation, 10/29/2010  |
| Claimant's Exhibit 3:  | Job Fit Analysis, December 17, 2010  |
| Claimant's Exhibit 4:  | Rossignol M, <i>et al.</i> , <i>Carpal Tunnel Syndrome, What is Attributable to Work? The Montreal Study</i> , Occupational and Environmental Medicine, 1997, 54: 519-523 <sup>1</sup> |
| Defendant's Exhibit A: | <i>Curriculum vitae</i> , Verne Backus, MD, MPH  |
| Defendant's Exhibit B: | Deposition of Richard Levy, MD, October 12, 2011   |
| Defendant's Exhibit C: | <i>Curriculum vitae</i> , Richard Levy, MD   |
| Defendant's Exhibit D: | Deposition of Craig Uejo, MD, September 28, 2011   |

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<sup>1</sup> At the hearing officer's request, and over Defendant's objection on due process grounds, this exhibit was admitted into evidence after the record had closed.

Defendant's Exhibit E: Melhorn JM and Ackerman WE, *Guides to the Evaluation of Disease and Injury Causation* (AMA 2008), Chapter 9, pp. 169-180 and 191-202

**CLAIM:**

All workers' compensation benefits to which Claimant proves her entitlement as causally related to her bilateral carpal tunnel syndrome and left cubital tunnel syndrome

Costs and attorney fees pursuant to 21 V.S.A. §678

**FINDINGS OF FACT:**

1. At all times relevant to these proceedings, Claimant was an employee and Defendant was her employer as those terms are defined in Vermont's Workers' Compensation Act.
2. Judicial notice is taken of all relevant forms contained in the Department's file relating to this claim.
3. Claimant has been employed in various secretarial positions for the State of Vermont for almost 25 years. Since 2006 she has worked as a medical secretary at the Vermont State Hospital. Her duties involve taking and transcribing meeting minutes, maintaining patient charts, answering the telephone and generally providing administrative support to the psychiatrists, psychologists and social workers assigned there.
4. Functionally, Claimant spends up to 80% of her day on her computer, either typing or working with a mouse. In addition, she handles patient charts up to ten times per day. These are contained in three-ring binders, which Claimant frequently opens and closes in order to insert or remove chart notes. For filing new notes, she uses a three-hole punch.
5. Claimant first experienced symptoms indicative of carpal tunnel syndrome in 2008, when she began to suffer from nocturnal tingling and numbness in the third and fourth fingers of her right hand. Over a period of months she noticed that she was dropping things easily. Thereafter her symptoms progressed to include pain, first inside her right elbow and then later radiating as well from her wrist up her forearm. This presentation – from nocturnal numbness and tingling in her fingers to weakness in her hand to pain in her wrist – is classic for carpal tunnel syndrome.
6. Carpal tunnel syndrome consists of a constellation of symptoms and signs resulting from compression of the median nerve at the wrist. It is the most commonly diagnosed peripheral nerve entrapment disorder. The gold standard for diagnosing carpal tunnel syndrome is a nerve conduction study, which measures the speed at which an electrical signal travels as it moves through the nerve from a stimulus point above the wrist to a point at the base of the thumb. The more compressed the nerve is within the carpal tunnel, the slower the signal will be.
7. In Claimant's case, nerve conduction studies confirmed bilateral carpal tunnel syndrome – mild to moderate on the right, mild on the left – in November 2010. By that time, she

was describing excruciating pain in her right arm, from her hand to her elbow, with similar though less severe symptoms in her left arm. The studies also documented mild left-sided cubital tunnel syndrome, an entrapment of the ulnar nerve at the elbow.

8. As treatment for her right carpal tunnel syndrome, Claimant underwent endoscopic release surgery on December 30, 2010. She returned to modified duty work on January 10, 2011 and resumed her regular full-time duties on February 1<sup>st</sup>.
9. Both pre- and post-surgery, Claimant's symptoms have manifested themselves primarily with work activities. She feels pain in her hands while typing and using her computer mouse, and has difficulty grasping, opening and closing patient chart binders. Following ergonomic evaluations in October and December 2010 various changes were made to her work station, including a different keyboard and mouse, easier-to-grip pens, smaller binders and a lateral file storage cabinet. These modifications have been somewhat helpful, but have not completely alleviated the symptoms she experiences while working.
10. Though manageable at the beginning of her work week, Claimant's symptoms typically worsen as the week progresses. By Friday they are severe. Over the weekend, with less use of her hands they abate, but then the cycle begins anew with her return to work activities each Monday. Recently, when her Waterbury work site was flooded on account of Hurricane Irene, Claimant was off work for approximately six weeks. During that time, she testified, her right wrist felt "wonderful." Even with her first day back at work, however, her symptoms immediately began to worsen.

Expert Medical Opinions as to Causation

(a) Claimant's Treating Providers

11. Both Claimant's primary care provider, Dr. Carr, and her orthopedic surgeon, Dr. Meriam, have stated that her carpal tunnel syndrome is causally related to her work activities, specifically typing, filing, hole punching and other repetitive tasks, all conducted in what Dr. Carr described as an ergonomically deficient work environment. Neither doctor provided any detailed analysis to support this theory, however. For that reason, I find their causation opinions unpersuasive.

(b) Dr. Backus

12. At Defendant's request, in January 2011 Claimant underwent an independent medical examination with Dr. Backus. Dr. Backus is board certified in occupational and environmental medicine, and also has a master's degree in public health. These credentials include specialized training in both epidemiology and the science of causation.
13. Dr. Backus concurred with Claimant's treating providers' diagnosis of bilateral carpal tunnel syndrome and left cubital tunnel syndrome. He disagreed, however, that these conditions were either caused or aggravated by her work activities.

14. Dr. Backus' causation opinion is based on a review of the medical literature regarding the known risk factors, both occupational and non-occupational, for developing carpal tunnel syndrome. His primary source is a meta-analysis<sup>2</sup> reported in the *AMA Guides to the Evaluation of Disease and Injury Causation*.<sup>3</sup> Among the salient points of that analysis:

- Carpal tunnel syndrome is a multi-factorial disease, which may be work-related, but also occurs in the general population. Occupational exposures are not necessarily risk factors in every case of carpal tunnel syndrome, though adverse working conditions can cause, aggravate or accelerate the disease.
- There is insufficient evidence to establish keyboarding activities alone as a risk factor for carpal tunnel syndrome. There is, however, strong evidence of an association between carpal tunnel syndrome and work activities that combine forceful gripping with either repetition or awkward posture. There is insufficient evidence to establish duration of employment as a risk factor.
- The highest rates of carpal tunnel syndrome occur in occupations with high physical demands that include intensive manual exertion, for example, meatpacking, poultry processing and automobile assembly work.
- There is very strong evidence of an association between carpal tunnel syndrome and both age (over 40) and body mass index (greater than 30). As these indicators increase, so does the risk of carpal tunnel syndrome.
- There is strong evidence of an association between carpal tunnel syndrome and female gender.
- There is strong evidence of an association between carpal tunnel syndrome and diabetes.
- In a review<sup>4</sup> that used a quantitative scale to rate causation criteria in 117 published studies on carpal tunnel syndrome, the quality and strength of evidence supporting biological risk factors (e.g., genetics, race and age) was described as moderate, while the quality and strength of evidence supporting occupational risk factors (e.g., job type, repetitive hand use and vibration) was described as poor.

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<sup>2</sup> In a meta-analysis, researchers weigh the quality of other published studies, taking into account such factors as sample size and bias, and use the cumulative results to derive more generalized conclusions.

<sup>3</sup> Melhorn JM and Ackerman WE, *Guides to the Evaluation of Disease and Injury Causation* (AMA 2008), Chapter 9, pp. 169-180 and 191-202.

<sup>4</sup> Ring D, *Carpal Tunnel Syndrome Causation*, cited in *Guides to the Evaluation of Disease and Injury Causation*, *supra* at p. 178 and n.179.

15. The *AMA Guides*' meta-analysis acknowledged the need for further study in order to better understand the biomechanics of carpal tunnel syndrome. For example, research is ongoing both as to how various wrist postures affect the shape of the carpal tunnel and as to the interior changes that occur in the connective tissues over time. For now, however, the study authors quoted the following perspective as instructive:

Even if a patient experiences symptoms only at work, an honest clinician is still unable to describe the extent to which the patient's [carpal tunnel syndrome] is related to the job. It is unfortunate that workers' compensation determinations must be made in individual cases, where it is impossible to quantify the contribution of the job to the clinical problem.<sup>5</sup>

16. Applying the research findings summarized in the *AMA Guides*' meta-analysis, Dr. Backus observed that the repetitive action required by Claimant's keyboarding and mouse work, which by her own account comprises 80 to 85% of her activities, primarily involves motion of the finger joints, not the wrist. Neither those tasks nor her other work activities involve a combination of forceful gripping with either repetition or awkward posture. Claimant is not exposed to any occupational risk factors for developing the condition, therefore. In contrast, by virtue of her age (47 at the time of Dr. Backus' evaluation), body mass index (34.98 as of March 2011) and gender, she presents with very strong non-occupational risk factors. There being no scientific basis for establishing work-related causation, therefore, to a reasonable degree of medical certainty Dr. Backus concluded that Claimant's right carpal tunnel syndrome was most likely non-occupationally caused.
17. Dr. Backus acknowledged the difference between a risk factor for a disease and the disease's specific cause. He agreed, for example, that while obesity has been shown to be a risk factor for carpal tunnel syndrome, obesity itself does not cause the condition. Unfortunately, as the *AMA Guides*' meta-analysis noted, the specific mechanism by which carpal tunnel syndrome develops is not yet understood. What the known risk factors establish, however, is that Claimant was equally likely to develop the condition at this stage of her life whether she was working at her current job or not.
18. Dr. Backus described the symptoms Claimant experienced while performing work-related activities as "an expression" of her carpal tunnel disease, not a cause of it. Over time, people who suffer from carpal tunnel syndrome tend to find it more and more difficult to use their hands. A person like Claimant, who uses her hands more intensively at work than at home, is likely to experience more symptoms with work-related tasks. That does not mean that work has either caused or aggravated the underlying condition, however.

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<sup>5</sup> Szabo, RM, Madison M, *Carpal Tunnel Syndrome as a Work-Related Disorder*, quoted in *Guides to the Evaluation of Disease and Injury Causation*, *supra* at p. 170 and n.102.

19. As for Claimant's left-sided carpal tunnel and cubital tunnel syndromes, Dr. Backus theorized that these could have resulted either from the same non-occupational causes that led to her right carpal tunnel syndrome and/or from compensating for her right-sided symptoms. In either case, Dr. Backus concluded that the conditions were not work-related in any way.

(c) Dr. Banerjee

20. At her attorney's referral, in April 2011 Claimant underwent an independent medical examination with Dr. Banerjee, a board certified specialist in physical medicine and rehabilitation. By Claimant's account, which I find credible, Dr. Banerjee spent significantly more time discussing the hand and arm movements necessitated by her specific work activities than Dr. Backus had.
21. From the history Claimant described, particularly the fact that almost all of her symptoms occurred during the work week and dissipated over the weekend, Dr. Banerjee hypothesized that her carpal tunnel syndrome was work-related. To test this hypothesis, he suggested that Claimant undergo serial nerve conduction studies – one on a Monday, and then a second one on a Friday. If the studies showed that the electrical impulses traveling through the carpal tunnel were slower at the end of the week than at the beginning of the week, in Dr. Banerjee's view this would provide objective evidence of a work-related contribution to her condition.
22. Claimant underwent the nerve conduction studies Dr. Banerjee suggested, the first on April 18, 2011 (a Monday), the second on April 29<sup>th</sup> (a Friday). As by this time her right-sided carpal tunnel syndrome already had been surgically addressed, not surprisingly the results showed a normally functioning median nerve. Of greater interest to Dr. Banerjee, the study also indicated a very mild worsening in the nerve's ability to conduct electrical signals, a difference in velocity of 0.1 to 0.2 milliseconds between the Monday test and the Friday test.
23. Among the factors influencing the variability of nerve conduction test results are hand temperature and placement of the stimulus probe. Cold hands produce slower nerve conduction velocities, and therefore this factor must be controlled if the results of multiple tests are to be compared. Similarly, if the stimulus probe is not placed in exactly the same spot for all tests, this also can affect the validity of any comparison between tests. To account for such minor variations, the accepted margin of error for nerve conduction testing is plus or minus 0.2 to 0.3 milliseconds. A differential that falls within the margin of error is considered to be statistically insignificant.
24. In Claimant's case, because the differential noted between the Monday and Friday studies was within the margin of error, it is statistically insignificant. Nevertheless, in Dr. Banerjee's opinion even a small differential confirmed that by the end of Claimant's work week there is more compression of her median nerve than was present at the beginning of the week. Dr. Banerjee cited this information as one of the two bases for his conclusion that Claimant's carpal tunnel syndrome was in fact work-related.

25. As the second basis for his causation opinion, Dr. Banerjee cited to a 1997 study (the “Rossignol” study)<sup>6</sup> in which seven work categories were identified as being high risk for the development of carpal tunnel syndrome. “Data processing operator” was the second highest risk job category identified, and the only one among all clerical occupations with an increased incidence of carpal tunnel syndrome. From this study, Dr. Banerjee found scientific support for his conclusion that Claimant’s carpal tunnel syndrome was occupationally caused.
26. The Rossignol study cites to the 1980 Canadian standard occupational classifications as the basis for the job categories it studied, but otherwise does not describe the specific job duties encompassed by any category. Presumably Dr. Banerjee placed Claimant in the “data processing operator” category as opposed to the “clerical worker” category, though he did not explain on what basis he did so. From Claimant’s own testimony as to her various job duties, I doubt whether such a categorization would be appropriate. For that reason, I find that the Rossignol study offers limited if any support for Dr. Banerjee’s causation opinion.
27. Dr. Banerjee identified Claimant’s typing and hole punching activities as the ones most likely to have caused and/or aggravated her carpal tunnel syndrome. Hole punching in particular requires a certain amount of squeezing pressure and forceful hand movement. Although Claimant was thus exposed to a certain amount of forceful gripping, I cannot find from the evidence presented that this occurred in combination with either repetition or awkward posture sufficient to qualify it as an occupational risk factor.
28. Dr. Banerjee discounted the *AMA Guides*’ meta-analysis as a valid basis for denying occupational causation in Claimant’s case. The studies considered in that analysis were retrospective, which Dr. Banerjee described as among the weakest designed of scientific studies. He acknowledged, however, that the 1997 study upon which he relied to support his causation opinion also was retrospective. In any event, Dr. Banerjee explained that as a clinician he looks to the patient him- or herself to determine the specific cause of a condition in a particular case, not to studies.

(d) Dr. Uego

29. At Defendant’s request, in September 2011 Dr. Uego reviewed Claimant’s medical records and deposition testimony. Dr. Uego is board certified in occupational medicine. He is a physician reviewer of the *AMA Guides to the Evaluation of Permanent Impairment* (6<sup>th</sup> ed.) and also an editorial board member of *The Guides Newsletter*, another AMA publication. Of particular relevance to the current litigation, in 2009 he authored a newsletter article dealing specifically with the question whether carpal tunnel syndrome is occupationally related.<sup>7</sup> In the course of his research for that article, Dr. Uego reviewed some of the most recent medical literature on carpal tunnel syndrome causation.

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<sup>6</sup> Rossignol M, et al., *Carpal Tunnel Syndrome, What is Attributable to Work? The Montreal Study*, Occupational and Environmental Medicine, 1997, 54: 519-523.

<sup>7</sup> Uego, C, *Carpal Tunnel Syndrome – Occupationally Related or Not?*, AMA Guides Newsletter, May/June 2009.

30. Dr. Uego concluded that there was no causal link, to the required degree of medical certainty, between Claimant's work and her carpal tunnel syndrome. In reaching this conclusion, he cited to much the same research evidence upon which Dr. Backus had relied – that carpal tunnel syndrome is likely multi-factorial in origin, that the most significant risk factors are non-occupational and that repetitive activities alone do not increase the risk of carpal tunnel syndrome unless combined with some other factor such as force or awkward posture.
31. Applying this research to Claimant's case, Dr. Uego identified the same non-occupational risk factors that Dr. Backus had found relevant, namely, her age, her body mass index and her gender.<sup>8</sup> Consistent with Dr. Backus' analysis, he could not identify any occupational risk factors. Dr. Uego agreed that Claimant's keyboarding and hole punching activities involve a certain amount of repetition, but not of a frequency typically associated with increased occupational risk. Nor could he conclude from the available evidence that these activities likely occurred in the context of sufficient force, vibration or awkward posture to establish them as occupationally causative.
32. Dr. Uego cautioned against finding causation solely in the temporal relationship between symptoms and activity. For example, when a person shakes hands with an individual who suffers from osteoarthritis in his or her thumb, it hurts. Hand shaking neither causes nor aggravates the osteoarthritis, but it does cause pain every time it occurs. Similarly here, the fact that Claimant experiences carpal tunnel syndrome symptoms primarily at work establishes only a temporal relationship, not a causative one.
33. Given that Claimant presented with several non-occupational risk factors but no occupational risk factors, to a reasonable degree of medical certainty Dr. Uego concluded that her carpal tunnel syndrome was entirely non-occupational in origin and had been neither caused nor aggravated by her work.

## CONCLUSIONS OF LAW:

1. In workers' compensation cases, the claimant has the burden of establishing all facts essential to the rights asserted. *King v. Snide*, 144 Vt. 395, 399 (1984). He or she must establish by sufficient credible evidence the character and extent of the injury as well as the causal connection between the injury and the employment. *Egbert v. The Book Press*, 144 Vt. 367 (1984). There must be created in the mind of the trier of fact something more than a possibility, suspicion or surmise that the incidents complained of were the cause of the injury and the resulting disability, and the inference from the facts proved must be the more probable hypothesis. *Burton v. Holden Lumber Co.*, 112 Vt. 17 (1941); *Morse v. John E. Russell Corp.*, Opinion No. 40-92WC (May 7, 1993).

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<sup>8</sup> Dr. Uego also identified diabetes as a non-occupational risk factor in Claimant's case. In fact, Claimant has been diagnosed as pre-diabetic, a diagnosis that is medically distinguishable from diabetes and therefore is of no relevance here.



2. At issue here is whether Claimant's bilateral carpal tunnel syndrome and left cubital tunnel syndrome were caused and/or aggravated by her work. Conflicting expert medical testimony was presented on this issue. In such situations, the commissioner traditionally uses a five-part test to determine which expert's opinion is the most persuasive: (1) the nature of treatment and the length of time there has been a patient-provider relationship; (2) whether the expert examined all pertinent records; (3) the clarity, thoroughness and objective support underlying the opinion; (4) the comprehensiveness of the evaluation; and (5) the qualifications of the experts, including training and experience. *Geiger v. Hawk Mountain Inn*, Opinion No. 37-03WC (September 17, 2003).
3. With particular reliance on the third factor, I conclude that the opinions of Defendant's experts are more credible than that of Claimant's expert. Their analysis of the current state of the research regarding carpal tunnel syndrome causation was clear, compelling and thorough. Applying that research to the current claim, they identified strong non-occupational risk factors, including Claimant's age, her body mass index and her gender. Although these risk factors do not in themselves cause carpal tunnel syndrome, their presence renders less speculative the conclusion that Claimant likely developed the disease regardless of her work activities, not because of them.
4. I acknowledge that the question whether a condition is work-related or not is rarely answered solely with reference to risk factors. The fact that a claimant is equally likely to suffer from a disease regardless of his or her work activities does not necessarily preclude a finding that work has either caused or aggravated the condition in a particular case. *Marsigli's Estate v. Granite City Auto Sales*, 124 Vt. 95 (1964); *Brace v. Jeffrey Wallace, DDS*, Opinion No. 28-09WC (July 22, 2009). Where occupational risk factors are lacking at the same time that non-occupational risk factors abound, however, occupational causation becomes more speculative. *Daignault v. State of Vermont Economic Services Division*, Opinion No. 35-09WC (September 2, 2009). It is the claimant's burden of proof in such cases to produce sufficient additional evidence so as to cross the threshold from speculation to probability.
5. Upon close examination, I conclude that the evidence upon which Dr. Banerjee relied in support of his opinion is insufficient to establish probable rather than merely speculative occupational causation. The serial nerve conduction studies failed to produce any statistically significant differences in velocity from the beginning of a work week to the end of a work week, and thus I cannot attribute any meaningful importance to them. And although the evidence established that at times Claimant's job tasks involved elements of repetition, forceful gripping and/or awkward postures, these factors were never quantified to the extent necessary for me to conclude that they were likely causative.
6. The evidence also was insufficient to establish that Claimant's job duties in fact placed her in the high risk category of "data processing operators" so as to make the Rossignol study's findings relevant to this claim. For that reason, I find Dr. Banerjee's reliance on that study to be unconvincing as well.

7. Considering all of the available evidence, I conclude that at best a temporal relationship existed between Claimant's work activities and her symptoms. That alone is insufficient to establish work-related causation. *Norse v. Melsur Corp.*, 143 Vt. 241, 244 (1983); *Daignault, supra*. Nor is it enough that Claimant's job aggravated her symptoms. To be compensable, there must be proof that her work either caused or accelerated the underlying condition itself. *Stannard v. Stannard Co., Inc.*, 175 Vt. 549, 552 (2003). That proof was lacking here.
8. I conclude that Claimant has failed to sustain her burden of proving that her bilateral carpal tunnel syndrome and left cubital tunnel syndrome were either caused or aggravated by her work for Defendant.
9. As Claimant has not prevailed, she is not entitled to an award of costs or attorney fees.

**ORDER:**

Claimant's claim for workers' compensation benefits causally related to her bilateral carpal tunnel syndrome and left cubital tunnel syndrome is hereby **DENIED**.

**DATED** at Montpelier, Vermont this 14<sup>th</sup> day of December 2011.

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Anne M. Noonan  
Commissioner

**Appeal:**

Within 30 days after copies of this opinion have been mailed, either party may appeal questions of fact or mixed questions of law and fact to a superior court or questions of law to the Vermont Supreme Court. 21 V.S.A. §§670, 672.