



# ADVOCATE'S GATEWAY

## Occupational Health Clinics for Ontario Workers Inc. (OHCOW), Sudbury, Ontario

### INSIDE THIS ISSUE:

*Non Work-Related  
Risk Factors of  
Carpal Tunnel  
Syndrome* 1

*New Managing  
Director for  
OHCOW* 3

*Why do this news-  
letter?* 3

*OHCOW—Who  
We Are? How &  
Who Can We  
Help?* 4

*OHCOW Sudbury  
Website* 4

*What Do you  
Think?* 4

## Non Work-Related Risk Factors of Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS) is the most common disorder which occurs in the upper limbs of the body. CTS is defined as a disorder of the hand characterised by tingling and pain in the hand and fingers due to damage to the median nerve. This disorder is caused by the swelling of the tendons passing through the carpal tunnel. As the tendons swell, they rub against each other causing irritation to the tendons. In order to stop the irritation, the tendons secrete a lubricating fluid called synovium. The secretion of synovium causes limited space within the carpal tunnel. As the carpal tunnel is filled with synovium, the median nerve no longer has the space to function properly. The pinched nerve results in the tingling and pain that a person experiences.



Figure 1: Image showing innervations of the median nerve. (Medical Encyclopedia, 2006)

these genes are unclear, genetics can still help in the diagnosis of CTS for a patient, especially if it is common in their family tree (Hakim et al., 2002, Werner, 2006).

Many studies suggest that age may play an important role in the manifestation of CTS. Older adults with CTS usually suffer a more severe entrapment of the nerve than younger persons. The muscles in older adults are generally weaker, have more muscle atrophy, and electrophysiological (test that measures nerve transmission rates) abnormalities on nerve conduction are more severe (Blumenthal, 2006). It is logical to associate aging with CTS as it is a repetitive strain disorder.

Some cases of CTS are work-related caused by exposure to ergonomic risk factors such as forceful actions, repetition, and awkward postures. Many people are not aware that CTS is sometimes considered a non-work-related disorder. It can also be associated with factors such as age, obesity, rheumatoid arthritis, diabetes, hypothyroidism, menopause, pregnancy, estrogen therapy, alcohol and smoking.

Genetics play a role in CTS but it is not clear what genetic components cause CTS. Although the mechanical acts of

Obesity has been linked in many studies to be a possible risk factor for CTS. Obese workers are two to four times more likely to have carpal tunnel syndrome compared to a non-obese worker (Werner, 2006). Obesity is associated with your body mass index (BMI). The higher a worker's BMI, the more at-risk the worker will be for CTS. One is considered slender if a BMI is less than 20; normal is 20-27.79; overweight is 27.8-32.29; and obese is a BMI of 32.3 or higher. Many studies declare that "workers with a BMI higher than 29 are four times more likely to present with median entrapment than those with a BMI less than 25" (McMillan, 1999, Hou et al, 2007).

## Non Work-Related Risk Factors of Carpal Tunnel Syndrome Continued

Hypothyroidism is an under active thyroid. This disorder may be related to CTS, but if an individual had both conditions (CTS and hypothyroidism) it does not mean that hypothyroidism caused CTS. Studies show that a person who has been diagnosed with hypothyroidism may develop symptoms similar to those of CTS. Individuals should consult a physician to undergo a thyroid function test. If that person does have hypothyroidism, once treated, the symptoms for CTS may disappear (Harvard Health Publications, 2006). It must also be taken into account that if the duration of CTS symptoms is lengthy, it may have exceedingly irritated the median nerve resulting in the development of CTS.

Pregnancy often results in an accumulation of fluids and swelling in the joints. This usually occurs at the beginning of the third trimester when the mother begins to increase in mass due to the weight of the baby. Pregnant women will often have symptoms of CTS as the water retention in the joints causes pressure on the median nerve. Usually after delivery, the symptoms for CTS disappear. However, Baumann et al (2007) reported that 40% of pregnancy related CTS cases had residual signs of median nerve damage after delivery.

Hormonal imbalance can have many different effects on the body. Women in menopause or who have had a hysterectomy have an altered hormonal balances causing connective tissue changes to an inflammatory response. The swelling in the hands may play a role in the development of CTS. Women in menopause who are on estrogen therapy have a better chance of not developing CTS as it regulates the hormonal imbalances in their bodies.

Diabetes is a well known risk factor for CTS. An individual with diabetes is 2.5 to 3.5 times more likely to develop CTS (Werner, 2006). It is known that diabetes decreases blood flow. This is a problem because the tendons that are active have the tendency to swell and irritate the median nerve. Diabetes also causes periph-

eral nerve damage which increases the risk for CTS.

Rheumatoid arthritis (RA) is also a risk factor for CTS. RA is a disorder that produces calcium deposits in the joints and decreases the size of wrists as well as the carpal tunnel, causing smaller joints. RA increases the chances of being diagnosed with CTS by 2.5 to 3.5 times more than an individual with no RA.

Population based studies have demonstrated that women are more likely to develop CTS than men, although gender risk is much different when evaluating it in the workplace. The risk of women contracting CTS in the workplace is only about 10-20% higher than men (Werner, 2006). It is believed that women are more susceptible to developing CTS because they have smaller wrists, however, Moghtaderi et al (2005), states that wrist circumference is not significantly associated with the presence of CTS.

Alcohol consumption and smoking are shown to be risk factors in the manifestation of carpal tunnel syndrome. Cigarette smoking is known to slow blood flow, causing more intense symptoms and a slower recovery time than the non-smoking population (Simon, 2007). Drinking alcoholic beverages is associated with slower reactions in the median nerve, more specifically hand and wrist symptoms, and more CTS cases are confirmed by testing.

Compression of the median nerve in the carpal tunnel is the most common nerve entrapment syndrome. One can not only consider the work related risks that are associated with CTS. Non work related risk factors for CTS are also very critical in a diagnosis of CTS. The most accurate way to diagnose CTS is a combination of symptoms of median nerve impairment, confirmed with electrophysiological studies. It is important that workers, advocates, and physicians be aware of both work and non work related risk factors that can contribute to the development of CTS.

## Non Work-Related Risk Factors of Carpal Tunnel Syndrome

Steps can be taken to minimize the increase of CTS to eliminate or reduce the severity through ergonomic measures and proper medical screening prior to diagnosis and the establishment of a WSIB claim.

### References

Baumann, F., Karlikyaya, G., Yuksel, G., Citci, B., Kose, G., Tireli, H., (2007). The subclinical incidence of CTS in pregnancy: Assessment of median nerve impairment in asymptomatic pregnant women. *Neurology, Neurophysiology and Neuroscience* 2007.

<http://www.neurojournal.com/article/view/1164/917>

Hakim, A.J., Cherkas, L., El Zayat, S., MacGregor, A.J., Spector, T.D., (2002). The Genetic Contribution to Carpal Tunnel Syndrome in Women: A Twin Study., *Arthritis & Rheumatism*, Vol. 47, No. 3, June 15, 2002, pp 275-279.

Harvard Health Publications., (2006). Carpal tunnel syndrome and hypothyroidism.

<http://www.healthcentral.com/chronic-pain/question-answer-27169-63.html>

Hou, W.H., Hsu, J.H., Lin, C.H., Liang, H.W., (2007). Carpal tunnel syndrome in male visual display terminal (VDT) worker. *American Journal of Industrial Medicine*. pp 1-7.

Medical Encyclopedia., Carpal Tunnel Syndrome., (2006)

[www.nlm.nih.gov/.../ency/imagepages/1081.htm](http://www.nlm.nih.gov/.../ency/imagepages/1081.htm)

Roquer, J., Cano, J.F., (1993)., Carpal tunnel syndrome and hyperthyroidism. A prospective study., *Acta Neural Scand*, 1993, pp 149-152.

Palumbo, C.F., Szabo, R.M., Olmsted, S.L., The Effects of Hypothyroidism and Thyroid Replacement on the Development of Carpal Tunnel Syndrome., *The Journal of Hand Surgery*, pp 734-739.

McMillan, C.R. (1999). Carpal Tunnel Syndrome: The Rise of An Occupational Illness.

Cambridge Scientific Abstracts. <http://www.csa.com/hottopics/carpal/oview.html>

Moghtaderi, A., Izadi, S., Sharafadinzadeh, N., An evaluation of gender, body mass index, wrist circumference and wrist ratio as independent risk factors for carpal tunnel syndrome. *Acta Neurol Scand* 2005: 112: 375-379., © Blackwell Munksgaard 2005.

Werner, R.A., (2006). Evaluation of Work-Related Carpal Tunnel Syndrome. *J Occupational Rehabilitation* (2006), Vol 16, pp 207-222.

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## New Managing Director for OHCOW

Alec Farquhar is the new Managing Director of OHCOW. He comes to us from the Ministry of Labour where he was the Director of the Occupational Health and Safety Branch. He led the branch through organizational review and restructuring to better equip it for an agenda of multiple initiatives.

Alec has extensive experience in both workplace safety & insurance and occupational health and safety. From 1992 to 2005 he was the Director of the OWA, leading them through several strategic reviews, improving

service delivery and focusing resources on the clients most requiring service.

Alec has a long history of working with vulnerable worker communities including immigrant workers women and young workers. He has extensive experience in community organizing and supporting injured workers in taking collective action.

Alec also has extensive experience with strategic and operational planning and with financial and performance management.

## Why do this newsletter....?

In our catchment area, we are hearing from many advocates that they are feeling isolated. In providing this newsletter, OHCOW is striving to reduce this isolation, and enhance communication networks amongst advocates

and OHCOW. It is hoped that OHCOW can provide more support to each advocate by providing up-to-date information on current health and safety topics.

## OHCOW — Who We Are? How & Who Can We Help?

**We're on the web!**  
<http://www.ohcow.on.ca/clinics/sudbury/>

OHCOW is a valuable occupational health related resource that is available to your members at no cost. The Occupational Health Clinics for Ontario Workers (OHCOW) were established in 1989 and are funded by the Workplace Safety and Insurance Board (WSIB). There are clinics in Hamilton, Toronto, Sarnia, Windsor and Sudbury. Staffed by a multi-disciplinary team of specially trained occupa-

tional health doctors, occupational health nurses, occupational hygienists, ergonomists, researchers, and administrators, each OHCOW clinic provides comprehensive occupational health services and information. Our mandate is the prevention of occupational illnesses and injuries. We do this through the identification of the causes which have led to illnesses and injuries. This also provides us with a window into the workplace.

lic health officials; universities; the Ministry of Labour; the Ministry of Health; the Workplace Safety and Insurance Board (WSIB); and organizations such as cancer coalitions. OHCOW works with medical and nursing schools to, provide occupational education to medical and nursing students. We also work with unions holding clinics for workers about illnesses which they think might be work related. In short, we have the experience, the knowledge and the credibility to assist you.

In order to carry out our work we partner with, among others, pub-

## OHCOW Sudbury Website

Did you know that OHCOW Sudbury updates its website on a monthly basis? Each month features a new article written by an OHCOW staff member on current issues within occupational health and safety.

The website also contains information regarding past case studies, research projects, staff biographies, games & tests, past articles on health and safety issues, and information on education seminars that OHCOW offers.

Check it out!!!  
<http://www.ohcow.on.ca/clinics/sudbury>

## What Do You Think?

We welcome your feedback for generating topics that may be of interest to advocates. Please forward any question or suggested topics to be covered in future issues either by e-mail, phone or fax. We look forward to hearing from you.

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Occupational Health Clinics for Ontario Workers Inc. Centres de santé des travailleurs (ses) de l'Ontario Inc.

