

## Hand-arm vibration syndrome (HAVS)

Chainsaws, jackhammers, and white fingers

**H**and-arm vibration syndrome (HAVS) is caused by occupational exposure to vibrating hand tools. HAVS has three main components:

1. Peripheral neuropathy of the hands that produces numbness, tingling, or both in a glove distribution. Loss of dexterity may occur.
2. Secondary Raynaud's phenomenon of the hands, sometimes referred to as vibration white finger (VWF). This is the most dramatic manifestation, characteristically producing intermittent well-demarcated blanching of the fingers starting at the distal tip of one or more digits, and as the disease progresses, the pallor extends more proximally to involve the length of the fingers, sometimes extending into the palm. The thumbs are typically the least affected. During these episodes, concurrent paresthesia of the involved digits is typical.
3. Musculoskeletal problems. These are the least specific manifestations and may include complaints of weakness, discomfort, and pain of the hands, wrists, forearms, and elbows.

Peripheral neuropathy and Raynaud's phenomenon may occur independently but usually occur together. Symptoms tend to be bilateral and it is unusual for more advanced symptoms to affect a single digit only. In such cases, other diagnoses such as thenar or hypothenar hammer syndrome, as well as more localized vascular injury of the palmar arches or digital arteries, should be considered.

Conditions such as carpal tunnel syndrome, bone cysts, tendinopathies, and osteoarthritic changes of the hand, wrist, and elbows have been attributed to exposure to hand-arm vibration. However, it is difficult to separate

the contribution of vibration to these conditions from the ergonomic risk factors commonly encountered with hand-held power tool usage, such as prolonged awkward postures, forceful static postures, repetitive movements, as well as impact or percussive trauma.

**Fallers, buckers, auto mechanics, miners, and glaziers are the occupational groups most commonly diagnosed with HAVS.**

In BC, fallers, buckers, auto mechanics, miners, and glaziers are the occupational groups most commonly diagnosed with HAVS. The primary risk factor for HAVS is a cumulative exposure of thousands of hours to intense vibration from tools such as chainsaws, impact tools, grinders, and jackhammers. Contributing risk factors include age, smoking, and pre-existing medical conditions that cause neurovascular pathology.

Physicians should consider the diagnosis of HAVS for any of their patients who complain of new onset peripheral neuropathy or Raynaud's phenomenon of the hands and who use power tools on a regular basis at work. The clinical assessment should rule out other conditions such as arthropathies, vasculopathies, tendinopathies, impingement neuropathies, or systemic illnesses that produce similar presentations. If you suspect that your patient has occupational HAVS, submit a medical report to WorkSafeBC and encourage your patient to file a claim.

All HAVS claims are assessed by

an occupational medicine specialist. Once the diagnosis is confirmed, workers are typically evaluated for a permanent functional impairment based on the severity of signs and symptoms of their disease. Those with more advanced disease are always advised to stop work with handheld power tools. Those with undue risk of impairment may be eligible for vocational rehabilitation.

Workers with mild disease and those who choose to continue working with handheld power tools should reduce exposure to hand-arm vibration as much as possible. This may include using low-vibration tools, wearing vibration-reducing gloves, and modifying work schedules to reduce the exposure duration. These workers should be monitored regularly for progression of their disease.

In the early stages of the disease, removal from exposure may result in a reduction of Raynaud's phenomenon symptoms. Neurologic symptoms are less likely to reverse. Medical treatment involves the use of anti-hypertensive medications such as calcium channel blockers. Although this treatment is not always effective in a significant proportion of cases, a reasonable trial of therapy should be attempted before concluding a treatment failure. Other risk factors such as smoking or working in cold environments should also be mitigated.

Physicians with any queries can contact Dr Sami Youakim at 250 881-3490. If you or your patients require information on exposure issues, please contact WorkSafeBC Prevention Services at 888 621-7233.

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