Protecting Outdoor Workers from West Nile Virus

MISSION: ZERO

WorkSafe™ SASKATCHEWAN

Work to live.

www.worksafesask.ca

Protecting Outdoor Workers from West Nile Virus

West Nile virus (WNV) has been present in Saskatchewan since 2002. As of 2018, there have been 158 neuroinvasive cases and 17 deaths.

Employers must take steps to reduce the risk to outdoor workers. People usually get the disease after being bitten by an infected mosquito. Therefore, all outdoor workers need to take precautions to reduce their chances of being bitten by mosquitoes.

Please note that the information in this guideline is subject to updates as new information becomes available.

What is the hazard?

WNV is primarily a bird virus that is spread from bird to bird and from birds to humans and other animals mainly by Culex species of mosquitoes. Culex tarsalis, a common summer mosquito in southern Saskatchewan, is the species that most often infects people.

Although WNV can cause severe illness in people of any age and any health status, most people infected with WNV have mild symptoms, or no symptoms at all. People with weaker immune systems, including people over the age of 50, people who have had organ transplants, and people with chronic diseases, are at greater risk for more serious symptoms and health effects. (Less than one percent of those people who had infections in Saskatchewan died. All were over the age of 60.)

For updated information on identified human cases of WNV in Canada, visit http://www.phac-aspc.gc.ca/wnv-vwn/. For information on Saskatchewan's management strategy, visit https://www.saskatchewan.ca/residents/health/diseases-and-conditions/west-nile-virus

What is the risk to outdoor workers?

It is estimated that in certain years approximately one per cent of Culex mosquitoes in any given area are infected with WNV. This means the risk of being bitten by an infected mosquito is low. However, all employees that are required to work outdoors during the summer are at some risk of exposure. A survey of infected persons was completed in 2003 and the results suggested that farmers were one of the occupations most affected.

Outdoor workers, such as the following, may be more susceptible to mosquito bites:

- farmers
- poultry workers
- foresters
- landscapers and groundskeepers
- construction workers
- waste collectors and handlers
- painters and roofers

- Other occupations with field duties such as conservation officers, highway workers, workers at feed lots, telephone and electrical line workers, oil workers, pest control officers, emergency response personnel, public safety personnel, and wildlife and veterinary workers.

Work-related cases reported in the U.S. have included laboratory workers who handled infected specimens and were likely infected via a needle puncture or cut, and workers in turkey breeding operations. The latter cases were suspected as being work-related, but the exact mode of transmission could not be confirmed.

How can outdoor workers be exposed to the virus?

About two weeks after a mosquito is infected, it can pass the virus to people and animals through a bite. Some evidence suggests that some mosquitoes that emerge in the spring may already be infected and able to transfer WNV to birds or people. Researchers are still looking into this.

When dealing with infected animals or people, workers can get sharp injuries from objects contaminated with blood or body fluids. These should be considered as possible sources of infection. There are cases that suggest the virus may be spread from a pregnant worker to her baby before birth, or after birth through her breast milk.

When is the risk to outdoor workers greatest?

The risk occurs during the mosquito season that starts as early as mid-April and lasts until the first hard frost in late September or October. The risk is greatest when the mosquito species that are the primary WNV-carriers are most prevalent, active and biting. This is generally between mid-July to mid-September. Most infections in people occur in late July and early August.

What are the symptoms of WNV infection?

Many infected people have no symptoms and do not get sick. Others may have only mild symptoms. When infection does cause illness, symptoms will usually appear within two to 15 days. The extent and severity of symptoms vary widely from person to person.

In mild cases, there may be flu-like symptoms, including fever, headache, nausea, vomiting and body aches. Some people may also develop a mild rash on the chest, stomach and back, or swollen lymph glands.

Some individuals have weaker immune systems, and thus are at greater risk of developing more severe health effects, such as inflammations of portions of the brain or spinal cord and some paralysis. These conditions can be fatal in rare cases. Most patients who die are elderly.

In the more severe cases, symptoms could include the rapid onset of severe headache, high fever, stiff neck, nausea, difficulty swallowing, vomiting, drowsiness, confusion, loss of consciousness, lack of coordination, muscle weakness and paralysis. Some people with more severe cases have experienced persistent, chronic effects to their muscles or nervous system.

Workers should seek immediate medical attention if they suspect they have the symptoms of WNV or if their skin is penetrated or punctured while handling birds or tissues that may be infected with WNV. There are tests to indicate if a person has been infected. There is no specific treatment, medication or cure for WNV. Serious cases are treated with supportive therapies to ease symptoms and prevent secondary infections. These cases may require hospital or nursing care. A potential vaccine has shown promise and is being tested further. It is not yet licensed for use.

What can employers do to reduce the risk of outdoor workers being exposed to WNV?

The employer should regularly monitor the incidence of WNV cases in the area. Mosquito and limited bird surveys are being done throughout the province this year. An up-to-date map showing these survey results can be viewed on the Government of Saskatchewan website at https://www.saskatchewan.ca/residents/health/diseases-and-conditions/west-nile-virus/west-nile-virus-risk-level-and-surveillance-results You can also refer to the Health Canada map found at https://www.canada.ca/en/public-health/services/diseases/west-nile-virus/surveillance-west-nile-virus.html for all human cases identified or confirmed in Canada. The local health region can also be contacted for information on WNV activity in the area. Employers can reduce the risk of WNV by implementing measures to prevent workers getting mosquito bites, even in the absence of WNV in the area. Occupational Health and Safety recommends that employers develop a written plan, in consultation with the occupational health committee, worker health and safety representative, or workers, where no committee or representative is required. The plan should address the elements listed in the 2005 amendment to section 85 of the Occupational Health and Safety Regulations, 1996. This regulation requires a written plan for infectious microorganisms where workers are likely to be exposed to them. Once a plan is developed, the employer needs to take steps to ensure it is implemented and that workers are trained on the contents of the plan.

The plan should:

- Identify outdoor workers at increased risk of mosquito bites because of the nature or location of their duties.

- Inform workers of:
  - How they could be exposed to WNV.
  - The transmission and infection characteristics of WNV.
  - The signs and symptoms of WNV infection.
  - What to do if they feel they have the symptoms of WNV.
  - When and where mosquitoes are most active. In some cases, but not all, it may be possible to limit outdoor work:
    - When mosquitoes are more active, i.e., at dawn and at dusk and in still, warm, cloudy and humid weather conditions.
    - Where mosquito numbers are typically higher, i.e., near stagnant ponds, watering troughs, manure lagoons and other stagnant bodies of water. They are often more abundant in shaded, woody and bushy areas.
- Ensure that any outside door and window screens fit tightly and have no holes (on buildings associated with outdoor sites).
- Include steps to reduce mosquito numbers around the outdoor workplace or site. For example, include steps to:
  - Regularly reduce standing water, e.g., eliminate by turning over or regularly (at least twice per week) emptying receptacles such as tarps, buckets, wheelbarrows, or tires that can accumulate water. If this is not possible, it may be feasible to aerate standing water, cover it with screens or fill in ruts, ditches, low spots, etc. that accumulate water.
  - Regularly clean eaves troughs of buildings associated with outdoor workplaces and sites.
- Provide engineering controls and equipment, including personal protective equipment (PPE), if necessary, to prevent sharps injuries and other direct contact with blood and body fluids of potentially infected animals.

Note: Workers, in most cases, are advised not to pick up birds, as the virus can be present in bird feathers and excretions.

There are some dead wild bird surveys underway in the province. If you are expected to collect a dead bird, do not proceed until you have contacted Canadian Cooperative Wildlife Health Centre at 1.800.567.2033 or refer to the web page http://www.cwhc-rcsf.ca/report_submit.php for further instructions. When you do collect a dead wild bird, do not touch the bird with bare hands and ensure you and your clothing do not contact the bird or its blood, secretions or feces. Birds may be handled with heavy duty leak-proof rubber gloves (as used in house cleaning) or picked up with a shovel.

Alternatively, two or more leak-proof plastic bags may be used as a glove.

Grasp the bird with your hand protected by several layers of leak-proof plastic bags and then turn the bags inside-out over the bird so it ends up inside the bags, with your hand on the outside. Handle the bird so that beak or claws do not puncture bag or gloves.

There is little risk of catching WNV directly from wild birds. However, do not handle any sick or dead animal with your bare hands. Wash your gloved hands and/or shovel and then your bare hands afterward. The plastic bag containing the bird should be closed tightly and placed inside one additional, clean plastic bag that is then tightly closed.

Dead birds which are not submitted for examination should be buried several feet deep in a place that will not be disturbed, or they should be double bagged and placed in a sanitary land fill (dump). Do not dispose of them in a manner such that they will be handled by other people.

Special precautions for poultry farm workers

It is not clear how poultry workers in the U.S. acquired WNV. It is possible that the disease was not transmitted via a mosquito.

Because other routes of transmission (hand to mouth, respiratory) could not be ruled out, protective measures for workers in intensive poultry operations should also include the following during the risk period of mid-July to Mid-September:

- NIOSH-approved N 95 respirators
- eye protection
- protective clothing
- gloves and frequent hand washing

Poultry producers that suspect bird infections should contact the Canadian Food Inspection Agency 1.800.442.2342 (phone), 1.613.228.6675 (fax) or the online contact form located at https://www.inspection.gc.ca/about-the-cfia/contact-the-cfia/contact-cfia-online/eng/1299860523723/1299860643049

- Allow and arrange for workers to seek prompt medical attention if they feel they may be developing symptoms of WNV.
- Advise workers to:
  - Wear light-coloured cotton long-sleeved shirts, long pants and a hat when outdoors in areas where mosquitoes are present. A mosquito net can be worn over a hat to protect the face and neck. Consider two layers of clothes if thermal conditions permit. In hot conditions where there is a potential for heat stress, special suits of mesh material with elasticized cuffs and attached hoods would be useful. Wear high boots and tape or seal the ends of trousers.
  - Use insect repellents that contain registered ingredients and follow the directions on the label. See the Health Canada information on insect repellants found at https://www.canada.ca/en/health-canada/services/about-pesticides/insect-repellents.html
  - Be knowledgeable on the use of insecticides, if they are to be used. Many municipalities will be using insecticides on lands under their jurisdiction. Insecticides

that kill larvae will be used in most cases. In some higher risk situations, insecticides for adult mosquito control may be used. No person can apply any of the prescribed insecticides at a workplace unless they have the appropriate training and pesticide applicator license from the Ministry of Agriculture. Saskatchewan Polytechnic provides the training that is required for licensing. For more information, contact them at 1.866.467.4278.

  - Ensuring that every worker required to apply insecticide is appropriately licensed.
  - Providing appropriate PPE to licensed staff or contracted workers expected to apply insecticides.
  - Protecting any workers in the vicinity of treated areas by advising them of insecticide hazards and precautions before the insecticide is applied and observe label restrictions (e.g. evacuations of specified areas and restrictions of re-entry intervals) and providing them with access to the safety data sheet (SDS) in advance of treatment. Note that personal and other insecticides carry their own risks. For more information on how to safely use personal and other insecticides and ways to reduce mosquito populations, visit the Pest Management Regulatory Agency website at http://www.hc-sc.gc.ca/pmra-arla/english/index-e.html https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management.html

- Address training of workers on the contents of the exposure control plan.

Resources

For more information on:

- The health effects of WNV, see Health Canada's West Nile Virus information page: https://www.canada.ca/en/public-health/services/diseases/west-nile-virus.html
- Details on the distribution of confirmed human cases of WNV in Canada, see the Public Health Agency of Canada Surveillance Information: https://www.canada.ca/en/public-health/services/diseases/west-nile-virus/surveillance-west-nile-virus/west-nile-virus-weekly-surveillance-monitoring.html
- Details on the health effects and distribution of confirmed human cases of WNV in Saskatchewan, see the Government of Saskatchewan: https://www.saskatchewan.ca/residents/health/diseases-and-conditions/west-nile-virus/west-nile-virus-risk-level-and-surveillance-results
- The management strategy for WNV in Saskatchewan, see the Government of Saskatchewan website: https://www.saskatchewan.ca/residents/health/diseases-and-conditions/west-nile-virus
- Currently approved insect repellants and ways to reduce mosquito populations, visit the Pest Management Regulatory Agency website: https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management.html, or call 1-800-267-6315 (toll-free in Canada) or pmra.infoserv@hc-sc.gc.ca
- Dead bird pick-up procedures and for maps of WNV activity, call the Canadian Cooperative Wildlife Health Centre at 1.866.544.4744 (toll-free in Canada) or visit their website: http://www.cwhc-rcsf.ca/report_submit.php

- Pesticide licensing, contact Saskatchewan Agriculture Food and Rural Revitalization: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/pesticide-licensing-program
- The Pesticide Applicator Certification Training Program, contact the Business and Agricultural Division of the SIAST Wascana Campus, 306.798.4714 or 1.800.798.9577

WorkSafe Saskatchewan
Head Office
200 - 1881 Scarth Street
Regina SK S4P 4L1

Saskatoon Office
115 24th Street East
Saskatoon SK S7K 1L5

Phone 306.787.4370
Toll free 1.800.667.7590
Fax 306.787.4311
Toll-free fax 1.888.844.7773

Online www.worksafesask.ca

06/20 WEB