

Mosquito-Borne diseases? What About **Safe Mosquito Protection?**

Influenza kills many more Americans than West Nile Virus : 279 total WNV deaths in the US compared with +/- 32,000 influenza deaths every year.

West Nile Virus is coming; it's been found in birds in Washington State, and we are one of the last states without reported infections. (*Map Here; see below*)

No mosquito-borne encephalitis have been reported in Oregon since the late '70s. This may be because the diseases aren't here in Oregon. It is more likely that reported case numbers dropped because state vector control stopped looking for these infections. As we look for West Nile virus, we may find unsuspected Western Equine encephalitis and St. Louis encephalitis instead. WEE was found in a sentinel chicken flock this year.

Only 2% of mosquitos in any area are likely to be infected ¹, even when WNV is present in birds.

Our patients will be asking how best to protect themselves and their families.

What do we know for sure about how to avoid mosquito bites?

*keep mosquitoes away from your home: eliminate standing water (even from rain gutters plant saucers and backyard ponds and fountains!) see attached flyer:

* stay away from mosquitoes: stay indoors, especially in the evening and early mornings, fix the screens,

* keep the mosquitoes away from the skin: long sleeves and long pants, which can be impregnated with mosquito-repellants, shoes and socks, netting,

*keep the mosquitoes from biting the skin: **use repellants.**

Consumers face a bewildering array of "repellent" formulations that contain diverse active ingredients and some are sold in packages that bear extraordinary claims. What works? What is safe? How do "natural" products compare with "synthetic" preparations? How can our patients make informed decisions about which repellent to purchase?

A New England Journal study published last summer tested several manufactured and "natural" repellants.² Wristbands did not work. The skin cream product, SkinSoSoft™, which is widely claimed by consumers to be an effective repellent, isn't. Most botanical preparations (citronella, peppermint oil, etc.) protected for less than 20 minutes. A repellent containing IR3535 (ethyl butylacetylaminopropionate--similar to the amino acid alanine and a newcomer to the repellent scene) protected for only a little more than 20 minutes. A 2% soybean-oil repellent was about as good as kid's OFF! Skintastic™, which contains low-dose DEET..

Of the "natural" alternatives, only a Eucalyptus-oil-based repellent worked as well as lower concentration DEET. Eucalyptus is toxic if ingested and can cause skin irritation.

DEET (N,N-diethyl-3-methylbenzamide) is far less toxic than many people believe. Adverse effects, though they can happen, are extremely infrequent and are associated with gross overuse of the product or repeated application to non-intact skin.

DEET is not carcinogenic or teratogenic in animal models. The direct toxic doses of DEET are much greater than those that would result from using repellent according to directions.³

Of course, no repellents should be used on childrens' hands, nor on babies less than 2 unless exposure to known disease-carrying mosquitoes cannot be prevented. (such as overseas travel.) DEET does irritate mucous membranes, and concentrated formulations dissolve plastic, as does eucalyptus oil.

DEET preparations with higher concentrations of DEET tend to work for longer, although more than 30% may not improve performance much.³

The risk of DEET-related adverse effects pales in comparison with the risk of acquiring vector-borne infections in places where such diseases are endemic. Users should avoid the temptation to apply the most concentrated formulation available and, when using a more dilute product, should reapply it as protection wanes. Alternative "natural" products generally fail to live up to their reputations for greater safety and effectiveness and offer their users a false sense of security.⁴

Pesticide poisonings are far more likely to be toxic than repellent use. They may be worse than West Nile virus! For your patients concerned about WNV, a word of caution about bug-killers is worth adding to advice about avoidance, environmental cleanup of breeding sites, and repellent use.

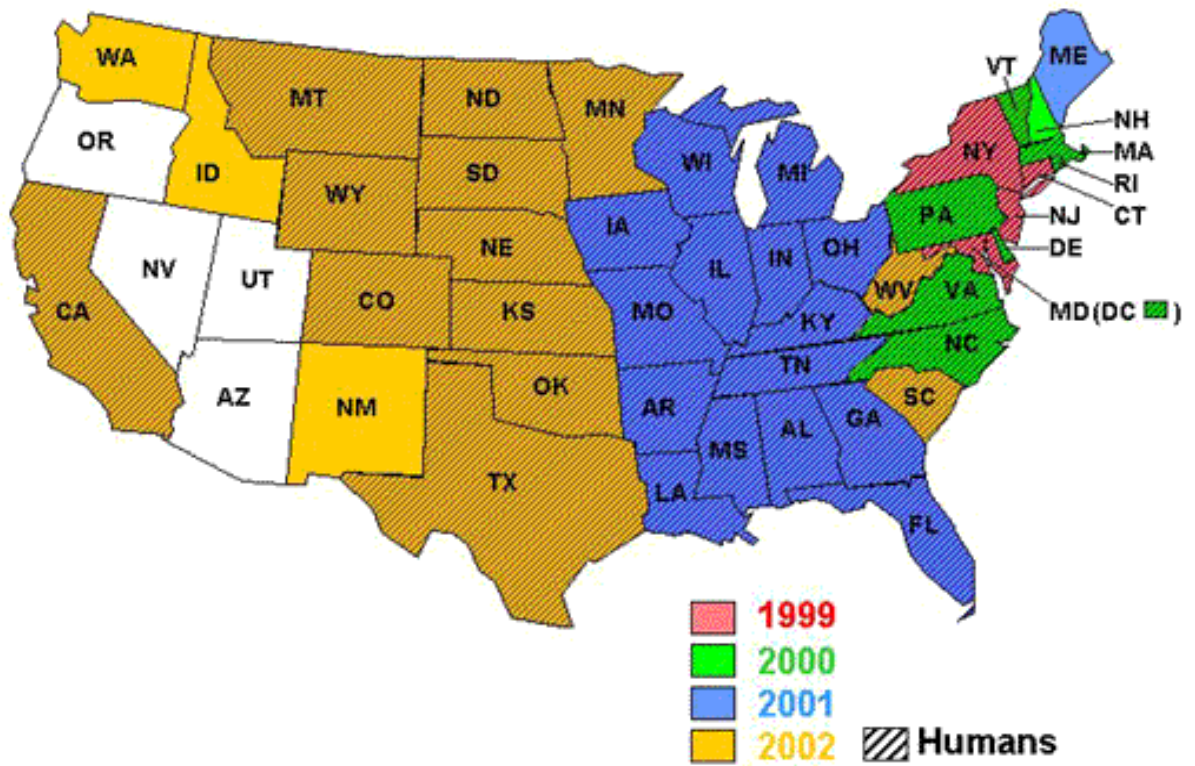
¹Guidelines for surveillance, prevention, and control of West Nile virus infection -- United States. MMWR Morb Mortal Wkly Rep 2000;49:25-28.

²Fradin M. Day J. Comparative Efficacy of Insect Repellents against Mosquito Bites NEJM 2002;Volume 347:13-18

³Fradin MS. Mosquitoes and mosquito repellents: a clinician's guide. Ann Intern Med 1998;128:931-940

⁴Pollack R. Kiszewski D. Spielman A. Perspective: Repelling Mosquitoes. New England Journal of Medicine 2002;Volume 347:2-3

West Nile Virus in the United States, 1999 - 2002



Tips for keeping the mosquito population down:

Mosquitoes like to lay eggs around standing, stagnant water sources. They also like shade, and can hide in tall grass

1) *Places where water accumulates:*

Pay attention to areas where water accumulates or stands for more than two days: Some examples include: tires (eliminate tires not being used, or make sure they are dry and store them inside), buckets, unused plastic pools, flower pot bases, unused pet dishes, or other containers that can collect water, boats and cargo trailers, tree holes and stumps (you can fill these with mortar), large puddles, ditches and swampy areas (fill or drain, making sure first to follow appropriate land use laws, as some could be wetlands and require a permit).

Fill or drain large puddles, ditches and swampy areas

Change the water in birdbaths, fountains and wading pools at least once per week and keep swimming pools, saunas and hot tubs clean and chlorinated. While not using, empty and cover them.

Keep a tight cover on rain barrels. A thin layer of oil will also kill mosquitoes that are already there.

2) *Lawn and garden measures*

Keep hedges and bushes trimmed. This reduces shade

Mow the lawn at least once per week. Mosquitoes can hide in the shade of tall grass.

Stock ornamental pools with minnows or goldfish (they eat mosquito larvae on the water surface) or treat the pools with biological larvicides (chemicals or natural bacteria that can be used to kill mosquito larvae).

3) *Building check-up*

Clean debris from rain gutters and remove standing water under or around structures.

Check flat roofs for standing water several days after it rains

Repairs leaks or puddles from around faucets and window air conditioning units

Make sure windows, doors and porches are tightly screened and free of holes.