New World screwworm

Recommendations for Healthcare Providers

New World screwworm (NWS) infestation is a type of myiasis that occurs when NWS fly larvae (maggots) feed on the living flesh of warm-blooded animals, especially livestock, but also including pets, wildlife, and humans. The screwworm flies are attracted to the odor of open wounds and mucous membranes, where they lay their eggs. As the larvae feed, they cause painful wounds that rapidly grow larger and deeper. Secondary bacterial infections can also occur because of NWS infestations.

Risk Factors

People at higher risk include those who live in or travel to areas with NWS flies, and

- Have open sores or wounds, even small ones, or recent surgical sites.
- Have medical conditions that can cause bleeding or open sores (like skin or sinus cancer).
- Spend a lot of time or sleep outdoors, especially during the daytime.
- Are physically or mentally incapacitated and unable to keep flies away.

NWS larva

New World screwworm maggot next to a nickel, for size comparison. *Image courtesy of Mark Fox, CDC.*

(Top image) NWS infestation in a patient's leg. *Image courtesy of Dr Isaac Bogoch, Toronto General Hospital.*

Transmission

New World screwworm infestations begin when a female fly lays eggs on a wound or orifice of a live, warm-blooded animal, including pets, wildlife, birds, and people. Even wounds as small as a tick bite or a superficial scratch may attract a female fly. Eggs hatch into larvae that burrow into the wound to feed. After about 7 days, larvae drop to the ground to pupate. The adult fly emerges 7 - 54 days later, continuing the lifecycle.

Clinical Features

Consider NWS in patients who

- Report recent travel to regions where NWS is present.
- Have visible larvae or egg masses in a wound, ears, eyes, nose, mouth, or other body orifice.
- Have rapidly progressing and painful wounds with foul odor, bloody discharge, and swelling in otherwise healthy tissue.
- Report sensation of movement in wounds or body orifices.

Unlike other species, whose larvae may appear only around the outer surface of a wound, NWS larvae may burrow deeper into wounds or openings as they develop into later larval stages (i.e., instars).

For questions call the NMDOH Helpline at 1-833-SWNURSE (1-833-796-8773) or text questions to 66364 (NMDOH).

New World screwworm

Prevention

In areas where NWS is present, advise patients to

- Clean and cover all wounds, no matter how small or the location on the body.
- Protect their skin and prevent insect bites by
  - » Using an EPA-registered insect repellent.
  - » Treating clothing and gear with products containing 0.5% permethrin.
  - » Wearing loose-fitting, long-sleeved shirts and pants, hats and socks to limit access to your body by NWS flies and biting insects.
- Avoid sleeping outdoors where possible, especially during the daytime. If sleeping outdoors is unavoidable, use a bed net or sleep inside a screened tent.

Case Reporting

Report all suspected human cases immediately to the local or state public health department (Epi on Call).

- Submission of intact larvae is critical for species identification.
- Larval species identification for suspected human cases is available through CDC's Diagnostic Parasitology Laboratory, DPDx, at dpdx@cdc.gov.
- DPDx may also be able to remotely confirm larval species using photographs that capture distinctive features of NWS larvae.

Prevent Spread

Do not throw any live maggots in the trash or outside as this could result in NWS spreading in your area.

Report all suspected human cases to the health department.

Specimen Handling & Submission

Submit larvae for specimen identification and confirmation at CDC.

- Send at least 10 larvae. If you have fewer than 10, submit them all.
- Place larvae and eggs in a leak-proof container with alcohol, either 70% ethanol (preferred) or ≥70% isopropanol.
  Use enough liquid to fully submerge larvae and eggs.
  - » The alcohol will both kill and preserve them for identification.
  - » 5% –10% formalin is an acceptable alternative preservative for identification if ethanol or isopropanol are not available.
- Collect the remaining larvae and eggs in a separate leakproof container, submerge them in alcohol, place the container into a zip-top plastic bag, and seal it. Dispose of the sealed bag in the trash or medical waste.

Treatment

- Use standard precautions when treating wounds and handling larvae. Remove and kill ALL visible larvae and eggs in patients with suspected NWS. This may require surgical removal. Failure to kill and properly dispose of all larvae and eggs may result in the introduction and spread of NWS in the local environment (see specimen handling and submission).
- Reexamine treated lesions after 24 – 48 hours to confirm no larvae remain.
- Monitor for and treat secondary bacterial infections as needed.

NWS in Animals

For maggots on any animal, whether livestock, pets, or wildlife, contact a veterinarian. Visit **screwwormnm.org for** more information about NWS in animals.

Learn more:
screwwormnm.org