

New World Screwworm Myiasis

Recommendations for Healthcare Providers

[New World screwworm \(NWS\) myiasis](#) is a disease of warm-blooded animals, especially livestock, but can also affect wildlife, pets, and humans. Every country in Central America and Mexico is reporting cases of NWS in both animals and people. Your patients may be at an increased risk for NWS infestation if they are in areas where the flies are present, particularly in areas near infested livestock or other infested animals.

Risk Factors

NWS is endemic in the American tropics and subtropics which includes countries in South America, Cuba, Haiti, and the Dominican Republic. However, Central America and Mexico are experiencing an outbreak of NWS with cases in both animals and humans for the first time in decades.

People at higher risk include

- Those living in rural areas in regions or countries where NWS is endemic or in countries currently experiencing an outbreak, and where livestock are raised.
- People who frequently work with livestock.
- Anyone with open sores or wounds, including from recent surgery, as the flies will lay eggs on open sores.
- Vulnerable populations, including people who are immunocompromised, those at extremes of age, and people experiencing malnutrition.

Transmission

New World screwworm infestations begin when a female fly lays eggs on a wound or orifice of a live, warm-blooded animal. The odor of a wound or an opening such as the nasal or eye openings, umbilicus of a newborn, or genitalia attracts female flies. Wounds as small as a tick bite may attract a female fly to feed. One female can lay 200 – 300 eggs at a time and may lay up to 3,000 eggs during her 10- to 30-day lifespan.

Eggs hatch into larvae that burrow into the wound to feed on the living flesh. After about 7 days of feeding, larvae drop to the ground, burrow into the soil, and pupate. The adult screwworm fly emerges from the soil after 7 – 54 days depending on temperature and humidity. Female flies mate only once in their lifespan.

Clinical Features

Consider NWS in patients

- With visible larvae or egg masses in a wound, ears, eyes, nose, mouth or other body orifice
- With destruction of healthy tissue
- Who report sensation of movement, foul odor, bloody discharge, swelling, and pain
- Who report recent travel to regions where NWS is present.




Refer to the [USDA webpage](#) for the most up-to-date locations of NWS infestation in animals.

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.
- Wear loose-fitting, long-sleeved shirts and pants, socks, and hats to limit exposed skin and use [Environmental Protection Agency \(EPA\)-registered insect repellents](#).

- Encourage patients, if possible, to avoid spending time where livestock or other infested animals are located or housed.
- Avoid sleeping outdoors, especially during the day.
- Protect sleeping quarters with screens or bed nets, especially for people who have wounds or active nasal or ocular discharges. Screening of hospital windows and doors is essential.

		
<p>New World screwworm maggot (left) next to a nickel, for size comparison. <i>Image courtesy of Mark Fox, Centers for Disease Control and Prevention.</i></p>	<p>The New World screwworm flies have orange eyes, a metallic blue or green body, and three darker-shaded stripes along their backs. <i>Image courtesy of Denise Bonilla, U.S. Department of Agriculture.</i></p>	<p>New World screwworm infestation in a patient's leg. <i>Image courtesy of Dr Isaac Bogoch, Toronto General Hospital.</i></p>

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 or eggs may result in the new introduction and spread of NWS in the local environment (see specimen handling and submission).**
- Reexamine treated lesions after 24 – 48 hours to confirm no live larvae remain. Remove and safely dispose of any remaining larvae as described below.

Diagnosis

There are many morphologically similar species of flies that can cause myiasis. Submission of larvae is critical for [morphological diagnosis and species identification](#). Diagnostic confirmation for suspected human cases is available through CDC's Diagnostic Parasitology Laboratory, DPDx, at dpdx@cdc.gov.

Specimen Handling & Submission

Submit larvae for clinical diagnosis and confirmation at CDC.

- Send at least 10 larvae. If you have fewer than 10, submit them all.
 - If you have more than 10, send at least 10.
 - If multiple stages of larvae are present in the lesion, try to include a representative sample from each stage. Email dpdx@cdc.gov for specimen submission instructions.
- Place larvae and eggs in a leak-proof container with 70% ethanol. The volume of liquid should be sufficient to fully submerge larvae and eggs.
 - The ethanol will both kill and preserve them for identification.
 - 70% (or greater) isopropanol or 5% – 10% formalin are acceptable alternatives.

- **Do not dispose of any larvae or eggs in the trash or outside on the ground.**
- 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.

Reporting Suspect Cases

- **Report all suspected human cases immediately** to the [local or state public health department \(Epi on Call\)](#), followed by CDC at 404-718-4745 or parasites@cdc.gov.
 - Human infestations can be an indication of local circulation of flies and possible infestations in animals. Areas where human infestations are identified will need to be evaluated by agriculture and public health officials for implementation of control measures.
- Direct clinical inquiries and patient management-related questions to your [local or state public health department \(Epi on Call\)](#) or to CDC's Parasitic Diseases Hotline at parasites@cdc.gov or 404-718-4745.
- Direct clinical inquiries outside of regular business hours to CDC's Emergency Operations Center at 770-488-7100.
- Direct non-clinical questions to newworldscrewworm@cdc.gov.