CONDITION

Ascariasis

Learn how ascariasis, an intestinal roundworm infection, spreads, what symptoms and complications it can cause, and how it is diagnosed, treated, and prevented.

WHAT IT IS
Intestinal parasitic roundworm infection

BODY SYSTEM
Digestive

MAIN SYMPTOMS
Abdominal pain, nausea, dry cough, wheezing

WHAT CAUSES IT
Swallowed infective Ascaris eggs

HOW IT IS DIAGNOSED
Stool microscopy for parasite eggs

MAIN TREATMENT
Antiparasitic medicines

CAN IT BE CURED?
Yes, antiparasitic medicines kill adult worms

IS IT AN EMERGENCY?
Sometimes, severe abdominal pain with swelling and inability to pass stool or gas

LONG-TERM OUTLOOK
Usually good with treatment, but reinfection is possible

Overview

Ascariasis is an infection caused by Ascaris lumbricoides , a large parasitic roundworm. The adult worms live in the small intestine. Ascariasis is one of several infections known as soil-transmitted helminth infections. "Helminth" is a medical term for a parasitic worm.

The infection begins when someone swallows microscopic Ascaris eggs from soil, food, water, or hands contaminated with human feces. The eggs hatch in the intestine. The young worms, called larvae, travel through the bloodstream to the lungs. They then move up the airway, are swallowed, and return to the small intestine, where they mature into adult worms.

Adult worms can live for one to two years. Female worms lay eggs that leave the body in stool. These eggs must remain in suitable soil for a period of time before they can infect another person. For this reason, ascariasis does not usually spread through immediate, direct contact

with someone who has the infection.

Many people have no symptoms. However, a large number of worms can affect nutrition, growth, or intestinal function. Worms may also block the intestine or move into the bile or pancreatic ducts. These complications need prompt medical care.

Ascariasis is more common in warm regions where sanitation and access to clean water are limited. It can also occur in travelers, immigrants, and other people exposed to contaminated soil or produce.

Symptoms

Most people with a small number of worms do not notice symptoms. When symptoms occur, they may change depending on whether larvae are moving through the lungs or adult worms are living in the intestine.

Symptoms during the lung phase may include:

These symptoms can occur because the immune system reacts as larvae pass through lung tissue. A blood test may show an increased number of eosinophils, a type of white blood cell involved in responses to parasites and allergies. Similar lung symptoms can have many other causes, so they do not confirm ascariasis on their own.

Intestinal symptoms may include:

Adult worms can be long and may resemble large, pale earthworms. Finding a suspected worm can be upsetting, but it does not always mean there is an emergency. Place it in a clean, closed container if this can be done safely, and contact a healthcare professional for identification.

Seek emergency care for severe or rapidly worsening abdominal pain with a swollen abdomen, repeated vomiting, or inability to pass stool or gas. These can be signs of an intestinal blockage. Significant difficulty breathing also requires emergency care.

Contact a clinician urgently for yellowing of the skin or eyes, dark urine, fever with upper abdominal pain, or severe pain that spreads to the back. These symptoms may indicate that a worm has entered a bile or pancreatic duct.

- Dry cough, wheezing, or chest discomfort
- Mild fever
- Shortness of breath
- Coughing up mucus, sometimes with small amounts of blood
- Abdominal discomfort or pain

- Nausea or reduced appetite
- Diarrhea or irregular bowel movements
- Poor weight gain or slowed growth in children
- A worm passed in stool or, less commonly, from the mouth or nose

Causes and risk factors

Ascariasis occurs after a person swallows infective Ascaris eggs. The eggs come from stool and become infective after developing in soil. They are too small to see without a microscope.

Exposure can happen through contaminated hands, water, or food. Produce may become contaminated when it is grown in soil containing human feces, washed with unsafe water, or handled without proper hygiene.

Risk is higher with:

Pigs can carry a closely related Ascaris parasite, and infection linked to pigs can occasionally occur. People who work around pigs or pig manure should use careful hand hygiene and avoid eating or drinking in animal areas.

The worms do not multiply directly inside the human body. New worms develop only when additional infective eggs are swallowed. Treating an infection does not create lasting protection, so reinfection is possible if exposure continues.

To reduce exposure, wash hands with soap and water after using the toilet, changing diapers, working with soil, or handling pigs. Wash, peel, or cook produce when contamination is possible. Safe disposal of human waste is central to community prevention.

- Living in or traveling to areas with inadequate sanitation
- Limited access to clean water and handwashing facilities
- Eating unwashed or unpeeled raw produce from contaminated soil
- Using untreated human feces as fertilizer
- Regular contact with contaminated soil
- Pica, which is repeatedly eating nonfood items such as soil
- Young age, because children may play in soil and put unwashed hands in their mouths

Diagnosis

A healthcare professional may consider ascariasis based on symptoms, travel or residence history, sanitation conditions, and possible exposure to contaminated soil or food. Symptoms alone are not enough to make the diagnosis.

The main diagnostic test is a stool examination for parasite eggs. A laboratory examines one or more stool samples under a microscope. More than one sample may be requested because eggs are not distributed evenly in every bowel movement.

Stool testing has limits. Eggs may not be present early in the infection, before worms have matured. They may also be absent if the intestine contains only male worms. During the early lung phase, stool testing is often negative.

A worm passed in stool or from the mouth may be identified by a laboratory. If possible, follow the healthcare facility's instructions for collecting and transporting it rather than handling it unnecessarily.

Other tests may be used when symptoms suggest complications:

Testing decisions depend on the stage of infection and the symptoms present. A clinician may also consider other parasitic, digestive, or lung conditions.

- A complete blood count may show increased eosinophils, although this finding has many possible causes.
- An abdominal X-ray, ultrasound, CT scan, or MRI may help identify a group of worms or an intestinal blockage.
- Ultrasound or specialized imaging of the bile and pancreatic ducts may be used for jaundice or upper abdominal pain.
- Endoscopy may allow a clinician to see and sometimes remove a worm from a duct or the upper digestive tract.

Treatment and management

Ascariasis is treated with antiparasitic medicines, also called deworming medicines. Common options include albendazole, mebendazole, and ivermectin. Treatment is usually brief, but the appropriate medicine and schedule depend on factors such as age, pregnancy, other health conditions, local availability, and the possibility of complications.

These medicines generally work well against adult intestinal worms. Temporary effects such as abdominal discomfort, nausea, headache, or dizziness can occur. A healthcare professional or pharmacist can explain what to expect from the selected medicine.

Tell the treating clinician about pregnancy or breastfeeding, medicines and supplements being

taken, and treatment for other parasitic infections. Children should receive a medicine and formulation selected for their age and ability to swallow it. Treatment should not be shared with another person.

A person with signs of intestinal obstruction should be evaluated before routine deworming at home. Hospital treatment may include intravenous fluids, bowel rest, a tube through the nose to relieve pressure in the stomach, and close monitoring. Surgery is sometimes required if the blockage does not resolve or if the intestine is injured.

Worms in the bile or pancreatic ducts may need removal with an endoscopic procedure. During this procedure, a flexible camera and small instruments are passed through the mouth into the digestive tract. Antiparasitic medicine may be used as part of the overall treatment plan.

Household members are not automatically treated simply because they have had ordinary contact with an infected person. Immediate person-to-person spread is unlikely because eggs must first mature in soil. However, people living in the same setting may share the same environmental exposure. A clinician or local public health service can advise whether testing or community treatment is appropriate.

In some high-risk areas, public health programs provide periodic deworming to groups such as school-age children. These programs reduce illness but do not replace clean water, sanitation, handwashing, and safe food handling.

Complications

Complications are most likely when many worms are present, but they can sometimes occur with fewer worms.

A mass of worms may block the small intestine. Children are particularly vulnerable because their intestines are narrower. Without treatment, a severe blockage can damage the bowel.

Adult worms may leave the intestine and enter nearby ducts. This can lead to:

Long-lasting or heavy infection can interfere with appetite and the absorption or use of nutrients. In children, this may contribute to poor growth, reduced weight gain, or difficulty thriving. Ascariasis may occur together with other intestinal parasites, which can increase the overall effect on nutrition and health.

Lung inflammation during larval migration is usually temporary. More intense inflammation can cause marked wheezing or breathing difficulty and needs medical assessment.

- Blockage or infection of the bile ducts
- Gallbladder inflammation

- Pancreatitis, which is inflammation of the pancreas
- Liver abscess in uncommon cases
- Appendicitis or intestinal injury

Follow up

Routine follow-up depends on the severity of the infection and whether symptoms improve. Take the prescribed medicine exactly as directed and contact the treating clinician if a dose is missed or vomited rather than repeating it without advice.

A repeat stool test is not necessary for every person, but a clinician may recommend one when symptoms continue, worm burden was high, treatment response is uncertain, or ongoing exposure is likely. Testing too early may not answer every question, so follow the timing provided by the healthcare team.

Arrange routine medical follow-up if:

Reinfection can occur. Continue handwashing and safe food practices after treatment. People returning to or living in an area where ascariasis is common may need advice based on local public health programs.

Seek urgent care for new jaundice, fever with significant abdominal pain, persistent vomiting, or worsening breathing symptoms. Seek emergency care for severe abdominal pain with swelling and inability to pass stool or gas, repeated vomiting with weakness, or major difficulty breathing.

- Abdominal, bowel, or breathing symptoms do not improve
- Worms continue to appear after treatment
- A child has poor appetite, weight gain, or growth
- Eosinophil levels remain elevated
- There is continued exposure to unsafe sanitation, contaminated soil, or pig manure

Sources

- Centers for Disease Control and Prevention. About Ascariasis . Information on transmission, symptoms, diagnosis, treatment, and prevention.

- Centers for Disease Control and Prevention. Clinical Care of Soil-Transmitted Helminths . Clinical treatment information for ascariasis and related infections.
- Centers for Disease Control and Prevention. DPDx: Ascariasis . Laboratory identification, life cycle, and diagnostic information.
- World Health Organization. Soil-Transmitted Helminth Infections . Fact sheet on disease effects, transmission, prevention, and public health control.
- Jourdan PM, Lamberton PHL, Fenwick A, Addiss DG. Soil-transmitted helminth infections. The Lancet . 2018;391(10117):252-265 31930-X). Peer-reviewed overview of epidemiology, disease, diagnosis, treatment, and prevention.