

# Neurocysticercosis

Neurocysticercosis is a preventable parasitic infection caused by larval cysts (enclosed sacs containing the immature stage of a parasite) of the pork tapeworm (*Taenia solium*). The larval cysts can infect various parts of the body causing a condition known as cysticercosis. Larval cysts in the brain cause a form of cysticercosis called neurocysticercosis which can lead to seizures.

Neurocysticercosis, which affects the brain and is the most severe form of the disease, can be fatal. Neurocysticercosis is considered a Neglected Parasitic Infection, one of a group of diseases that results in significant illness among those who are infected and is often poorly understood by health care providers.

## How people get neurocysticercosis:

A person acquires neurocysticercosis from unknowingly ingesting microscopic eggs excreted by a person who has an intestinal pork tapeworm.

For example, a person eats undercooked, infected pork and develops a tapeworm infection in the intestines. She excretes tapeworm eggs in her feces. If she doesn't wash her hands properly after defecation, she may contaminate food or surfaces with feces containing these eggs. They then can be accidentally ingested by another person. Once inside the body, the eggs hatch and become larvae that find their way to the brain. These larvae cause neurocysticercosis.

## Risk factors for acquiring neurocysticercosis:

People are at a higher risk for getting neurocysticercosis by accidentally ingesting parasite eggs if they:

- Have a pork tapeworm infection (autoinfection)
- Live in a household with someone who has a pork tapeworm
- Eat food prepared by someone with a pork tapeworm infection

In general, most individuals in the United States with neurocysticercosis are immigrants from regions where the disease is common, including Latin America.

Neurocysticercosis is a preventable disease with known risk factors. Prevention measures, such as hand washing and identifying and treating people infected with tapeworm disease, would drastically reduce the number of new infections.

## Why be concerned about neurocysticercosis in the United States?

Neurocysticercosis is a leading cause of adult onset epilepsy worldwide. It is costly to diagnose and treat but entirely preventable.

There are an estimated 1,000 new hospitalizations for neurocysticercosis in the United States each year. Cases are most frequently reported in New York, California, Texas, Oregon, and Illinois. Additionally, neurocysticercosis creates a tremendous economic burden. In a recent study, the average cost of hospitalization due to neurocysticercosis was \$37,600, with the most common form of payment being Medicaid (43.9%).

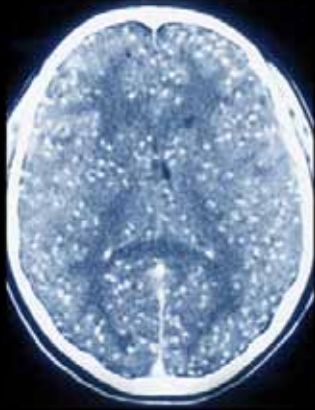
Currently, there is little being done to monitor, prevent, or treat neurocysticercosis.



Healthy brain



Brain of a patient with neurocysticercosis



MRI credit: Courtesy of Medscape Reference

<http://reference.medscape.com/features/slideshow/neurocysticercosis/>

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## **What CDC is doing to address neurocysticercosis:**

CDC and partners are working to prevent the spread of neurocysticercosis and to appropriately identify and treat persons who have the disease. Identifying and treating tapeworm carriers will reduce a preventable cause of infectious seizures, help more people live healthy, productive lives, and lead to lower economic expenditures on health care.

In particular, CDC is working in partnership with state and local health departments to:

- Advise health care professionals on management of patients with neurocysticercosis
- Follow up with persons who have neurocysticercosis to determine how they might have acquired the disease, and whether others in their household might be the source of infection
- Support local public health laboratories to assist with diagnosis of cases of neurocysticercosis and tapeworm infections

Additionally, CDC is developing better diagnostic tests to detect tapeworm infection and cysticercosis.

## **What more needs to be done:**

1. Obtain a better estimate of the burden of disease. Understanding where the at-risk populations are will help ensure that people who have neurocysticercosis receive appropriate care.
2. Improve healthcare provider understanding of neurocysticercosis so they can better recognize and appropriately treat patients.
3. Educate persons about steps they can take to prevent the disease.
4. Continue to work with states to prevent the spread of neurocysticercosis in the United States. For example, help develop guidelines to ensure that professional food handlers are free of tapeworm infection.

For more information on Neglected Parasitic Infections, please visit [www.cdc.gov/parasites/npi.html](http://www.cdc.gov/parasites/npi.html)

