

What is a post-polio syndrome?

During the epidemic in North America, the polio virus affected thousands of children and adults. The polio virus attacks the nervous system, often causing paralysis and leaving some unable to breathe on their own. Several decades later, after polio survivors had adapted to their physical disabilities, a growing number of survivors began to experience new symptoms.

Post-polio syndrome refers to the new health issues and symptoms affecting individuals who contacted poliomyelitis earlier in their lives.

Symptoms of post-polio syndrome

Symptoms may include:

- New muscle weakness
- New muscle atrophy (decrease in muscle mass)
- Muscle and joint pain
- Increased muscle fatigue
- General fatigue
- Cold intolerance



The symptoms may vary between individuals and often encompasses generalized weakness, muscle and joint pain, and excessive fatigue. Respiratory deficiency, sleeping disorders, and problems swallowing (dysphagia or dysphonia) may also occur.¹

In addition, emotional difficulties often result from encountering new problems after living so long in a stable condition. Symptoms of psychological stress may result because polio survivors don't know why they are experiencing these new symptoms.

Who is at risk of post-polio syndrome?

- Polio survivors (especially those who have had paralytic polio)
- People aged 55 and older
- People who were born or lived in a country where a polio epidemic has occurred or continues today
- Anyone who has not received the polio vaccine

Diagnosing post-polio syndrome

It is important to note that many health professionals may not be familiar with post polio syndrome. Polio survivors often must act as advocates and bring awareness about post polio syndrome to healthcare professionals.

To determine if a patient has post-polio syndrome, medical professionals will use a **diagnosis of exclusion**: this means all other diagnoses (neurological, medical, orthopedic or psychological causes for the deterioration) must be ruled out before the classification of post polio syndrome is assigned.



Post-polio symptoms may still exist with the presence of other medical conditions and may be classified as post-polio sequelae or the late effects of polio.

Doctors will most likely complete a full clinical workup and follow the proposed diagnostic criteriaⁱⁱ:

- History of paralytic polio with motor neuron (muscle function) loss and related symptoms
- A period of partial or full recovery of the initial illness followed by an extended time interval (usually around 15 years or more) of stable functioning
- A gradual or sudden onset of progressive muscle weakness and fatigue and other new symptoms (above)
- New symptoms lasting for at least a year
- Exclusion of other neurological, medical, and orthopedic problems that may cause similar symptoms

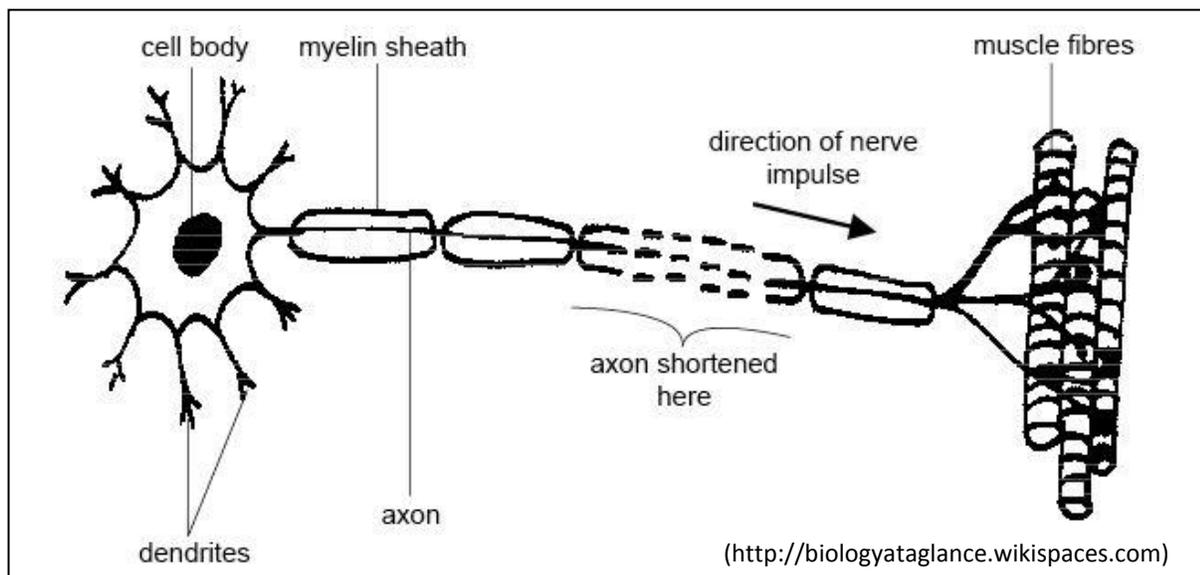
Polio survivors who are female or had widespread initial muscle weakness from original polio virus are said to be more at risk of post polio syndrome.

Some doctors may use CT or MRI scans to detect muscle cell loss. There is no single test to diagnose post-polio syndrome.

What causes post-polio syndrome?

The most generally accepted theory behind post-polio syndrome involves the degeneration of motor neuron cells (nerve cells in the muscle). During the initial polio episode, the poliomyelitis virus invades motor neuron cells which normally branch to contact different parts of the muscle. The infected cells are destroyed by the virus resulting in a lack of supply of neurons to polio-affected muscles. On a large scale, these changes can result in muscle weakness and/or paralysis.

Following the initial polio viral infection, surviving motor nerve cells of the spinal cord and brain stem create new branches, or 'sprouts', to re-connect the nerve cell to muscles affected. These new branches are responsible for triggering contractions in the muscles, often regaining lost muscle function. The normal aging process and 'wear and tear' of muscles over several decades result in new symptoms of muscle fatigue and weakness.ⁱⁱⁱ



Above: A motor neuron cell. According to this theory, many of these cells are destroyed by the original polio virus. Several decades later, the shortage of these motor neuron cells will result in new muscle weakness as muscle function is affected by the lack of nerve cells to muscle cells.

ⁱ Farbu E. *Update on current and emerging treatment options for post-polio syndrome*. Neurocenter and National Competence Center for Movement Disorders, Stavanger University Hospital, Stavanger, Norway. *Therapeutics and Clinical Risk Management* 2010;6 307-313

ⁱⁱ March of Dimes (M.o.D. in the United State) Diagnostic Criteria

ⁱⁱⁱ Julie Silver M.D., *Post-Polio Syndrome: A Guide for Polio Survivors and Their Families*. Julie Silver M.D.; 2001, Yale University