

# LINCOLNSHIRE

## Post-Polio Network

Reg. Charity No. 1064177

WEBSITE - <http://www.ott.zynet.co.uk/polio/lincolnshire/>

### Basic Information Leaflet for Health Professionals on Post-Polio Syndrome / Late Effects of Polio

#### **Poliomyelitis**

An acute entero-viral infection with a wide range of manifestation.  
95% do not get ill - 5% a non specific minor illness progressing through  
weakness to paralysis of limbs and death.

#### **Criteria for a Diagnosis in 2000 [4]**

A history of remote paralytic polio or  
findings on history, physical examination results, and  
laboratory studies compatible with poliovirus damage  
of the central nervous systems in earlier life.

A period where you recovered.

A stable period of functioning - 10 to 50 years.

New symptoms for which no other explanation can be found.

#### **Symptoms**

Fatigue often overwhelming, both physical and mental.

Loss of muscle strength and/or use,  
also in muscles thought not to be polio affected.

Pain in muscles and joints.

Trouble breathing and/or swallowing. Problems sleeping.

Intolerance for cold, causing muscle weakness and, sometimes, burning  
pain and/or discoloration in affected limbs.

There may be other symptoms that are related to old polio.

***There are no tests for PPS - It is Diagnosis by Exclusion.***

***Implications for Anaesthesia and drug prescription.  
See Leaflets or WebSite Library - Walker J, Bruno R.L.***

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## LECTURES ON POLIO REDUCED TO ALMOST NOTHING.

The arrival of the Polio Vaccine in the 50's meant that research and lectures in Medical Colleges on Polio reduced to a minimum. Most health professionals working today have not seen a case of polio. There has been little to no continuing education in the U.K. in the last twenty years regarding late functional deterioration following damage from the Polio virus in earlier life, despite many PPS Conferences around the World. Polio Survivors are individuals with different levels of damage, treatment, and recovery. They have lead varied lives often achieving way beyond expectation and can have all or just some symptoms and any other condition. As many as 75% do not show any easily visible external sign of the internal damage until they have new symptoms and functioning ability changes. (N.B. There are Implications for anaesthesia and drug dosage)

### CORRECT INITIAL ASSESSMENT IS IMPERATIVE

Single action Manual Muscle Testing which looks for weakness in each separate muscle in a limb (where weakness is being reported) will most often NOT provide corroboration. A limitation of manual muscle testing is that it does not examine the ability of a muscle to participate in a functional movement pattern, take into account substitution of muscles and using other muscles to help achieve actions. It does not test the repetitive or sustaining ability of a muscle, it does not test the endurance of the muscle. Assessment of a Polio Survivor needs to be holistic, multi-disciplinary and functional. It saves time, money, stress, and unnecessary further deterioration. Observational functional assessment of actions of daily living will provide info on which, and how, muscles are being used. Many polio survivors have developed/develop trick movements to continue to achieve function. N.B. Testing that takes place in hospital where normal daily living actions are not being performed/less energy is being used up, can give a higher ability level than would be found if testing took place under normal daily living conditions. Polio Survivors do not like admitting that they cannot do an action as well as they used to. Asking HOW do you do this action/observing it, will provide important information. Asking "Can you do this" will more than likely get you the answer Yes without any qualification of how different this is from the norm.

**BETTER ENERGY MANAGEMENT IS POSSIBLE** with early full assessment and correct diagnosis of all reported symptoms. Provide appropriate energy saving aids and orthotics that fit. Advise pacing and resting **each activity to its level** so muscles recover reducing fatigue. Advise planning week ahead using self decision energy tokens, 10 a day/70 a week. (We provide 5 leaflets and a 30 page Information Pack which includes Assess Yourself charts, Weekly Planning Sheet, Library article list)

## SOME BASIC FACTS WITH REFERENCES.

- a) At least 90% of all anterior horn cells were in some way affected during the polio infection [1. Bodian 1947].
  - b) but required the death of more than 60% to demonstrate any paralysis [2. Bodian 1949].
  - c) That 40% damage found on autopsy had not shown clinically evident weakness. [3. Sharrard 1955]. Therefore the diagnosis non paralytic polio comes above 40% and below 60% damage.
  - d) The criterion for PPS stating '*had to have paralytic polio*' was incorrect and changed in 2000 [4. Halstead & Silver 2000] which quotes Lincolnshire Post-Polio Library article January 1999 Non Paralytic Polio and PPS [5. Falconer & Bollenbach 1999]
  - e) A polio muscle manually muscle testing at '5 - normal' is only functioning at 53 to 59%, 4 at 40%, 3 at 20%, 2 at 10% and 1 at 1%. [6. Beasley 1961 and 7. Perry 1995] (N.B. See New Research Article Changes in Strength Over Time in Polio Survivors [13])
  - f) Standard one-off manual muscle testing tests a single action - it does not test the functional ability of a pattern of movement - often does not show our reported weakness. [8. June LincPIN 1999]. Muscle fibres contract, then rest, allowing others to take over. Someone with PPS may have only 40% of his original muscle fibres so in a short while there are no substitutes to take the load off resulting in fatigue of contracting muscles. See Lincolnshire Post-Polio Library articles Polio Biology X & XI. [9 Bollenbach 2000] The actions of functional decline being reported must be observed.
  - g) Decreased muscle strength due to a loss of anterior horn cells is a normal part of the aging process [10 Holman 1986] but there is no significant motor neuron loss before the age of 60 [11 Tomlinson & Irving 1985] yet many postpolio individuals experience serious changes at a much younger age, lessening the credibility of the theory that aging alone can explain the late effects of polio. The youngest patient diagnosed with PPS in Montreal is reported as 14 years of age [12 Cashman 1997]
1. Bodian D. 1947. Poliomyelitis: Neuropathologic observations in relation to motor symptoms. Journal of the American Medical Association, 1947, 134:1148-1154).
  2. Bodian D. Histopathological basis of clinical findings in poliomyelitis. American Journal of Medicine, 1949; 6: 563-578.
  3. Sharrard, W.J.W. 1955. The Distribution of the Permanent Paralysis in the Lower Limb in Poliomyelitis. J. Bone and Joint Surg. 37B:540-558. [Lincolnshire Library Full Text]

4. Halstead & Silver 2000. Nonparalytic Polio and Postpolio Syndrome. Am J Phys Med & Rehab. Special Feature on PPS. Jan/Feb 2000
5. Falconer M & Bollenbach E. Jan 1999. Non Paralytic Polio and PPS. [Lincolnshire Post-Polio Library Article]
6. Beasley, W. C.: Quantitative muscle testing: principles and applications to research and clinical services. Arch.Phys. Med. and Rehab., 42: 398-425, 1961.
7. Perry J, Fontaine J, Mulroy S. 1995. Findings in Post-Poliomyelitis Syndrome - Weakness of Muscles of the Calf as a Source of Late Pain and Fatigue of Muscles of the Thigh after Poliomyelitis\* [Lincolnshire Library Full Text] - Journal of Bone and Joint Surgery Vol. 77-A, No. 8, August 1995, 1148-1153
8. Hallam H, June 1999 Polio Survivors need Holistic Multi-Disciplinary Assessment because the standard Physical Assessment is not adequate. LincPIN Newsletter June 1999 3-11. (Lincolnshire Post-Polio Network WebSite]
9. Bollenbach E, 2000. Polio Biology X - In PPS Manual Muscle Testing Problems Arise from Judgement & Biology. Polio Biology XI - The Biology of Fatigue. [Lincolnshire Post-Polio Library Articles]
10. Holman, K. (1986). Post-polio syndrome: The battle with an old foe resumes. Postgraduate Medicine, 79(8), 44-53.
11. Tomlinson, B., & Irving, D. (1985). Changes in spinal cord motor neurons of possible relevance to the late effects of poliomyelitis. In L. Halstead & D. Wiechers (Eds.), Late effects of poliomyelitis (pp. 57-70). Miami: Symposia Foundation.
12. Dr. Neil Cashman Answers Polio Quebec Members' Questions Polio Quebec AGM Sept 1997.{Lincolnshire Library Full Text}
13. Changes in Strength over time among Polio Survivors - Arch Phys Med Rehabil 2000;81:1059-64 Klein M, et al. (Further research project now being undertaken to include more repetitive and sustaining power testing)

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