

Meet and greet Mark & Joyce Burrell

Polio Regina Members at Swift Current

Last Spring, Blenda and I dropped in for a brief visit with Mark and Joyce Burrell of Swift Current, two long time members of Polio Regina Inc. whom we had never met. We had lunch and talked about how they are coping with Post Polio Syndrome.

Mark contracted Polio in 1951 following his discharge from the Canadian Army where he served for a year as a paratrooper in the Korean War. On his return, he served as steward in the officer's mess until they sent him for discharge in Regina.

Prior to the war he worked on the farm with his father and later with the Agricultural Research Centre at Swift Current studying forage crops.

When he was struck down with polio, Mark spent a year of recovery at the Deer Lodge hospital at Winnipeg and later spent numerous hours undergoing Swedish message therapy which eventually resulted in the removal of a body brace which the doctors thought he would have to wear for a long time and perhaps for the rest of his life. He was able to discard the body brace after three months when his back straightened out.

In 1958, he fell in love with Joyce Joy, the oldest daughter of Fred and Eva Joy. They married on December 6, 1958 and together raised four fine sons, which now has expanded to four grand daughters and one grand son- all of whom are the delights of their lives.

Joyce had trained as a CNA nurse before they married and worked in the profession for many years. During the first 17 years of their married life, Mark, because of his extensive background in horticulture, worked as a commercial custom gardener in the Lloydminster area. In 1978, the family moved to Swift Current where Mark worked in a Vac Shop for various firms. He then went into marketing of Watkins Products, then Needlepoint embroidery and later woodworking, which has become a life-long hobby.

His wife, Joyce has had surgery on her pituitary gland for a tumour then two heart attacks and five stents.

"After that, we decided to stop working the malls twice a week like we had been doing, as she certainly did not have the strength to handle my products, nor the health to keep up doing a bit of woodwork" he said.

Best regards to that gang at Polio Regina Inc. - Mark & Joyce

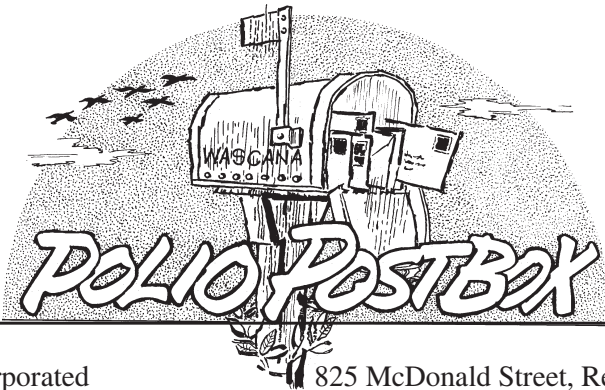
Congratulations to Gen and Murray Grant who also celebrated their 50th Anniversary in August. We were pleasantly surprised to see Jeanne Baldy (our member from St. Paul, MN) at the celebration and we managed to have a short visit with her. We promised to exchange our Post Box Newsletter with her Polio Organization as we feel we can benefit from each other's ideas.



Mark and Joyce Burrell



Gen and Murray Grant celebrate



September, 2001

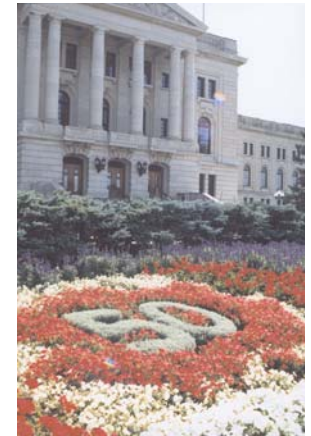
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Message from Editor

We hope everyone had an excellent summer! Polio Regina is looking for a new vice president to complete the balance of the year. As you are probably aware, Suzanne Lalonde, our genial vice president for the past two years, has left the province to assume a new teaching position. We need a new candidate and if you would like to serve on the executive for the balance of the year, please submit your name to our secretary, Don Volpel, 543-8958. You'll love the VIP experience!



Thanks to Blenda for writing and editing the Post Box this month. Fred's summer were spent renovating the entire house which included installing new kitchen cabinets, new flooring, two new bay windows, painting the interior and exterior, removing a huge tree from the front of the house etc. We also tried to rest and relax.

"To commemorate the 50th Anniversary of the March Of Dimes, two flower beds were planted in front of the Provincial Legislative Building. The sign on each plaque read:

"We proudly honour Saskatchewan mothers who "Marched for Dimes" 50 years ago to raise funds for the medical treatment of people struck down by Polio in the 1950's. Their tremendous efforts saved hundreds of lives."

Annual Christmas Banquet will be held December 7, 2001 at the Eagles Club, 1600 Halifax St. (corner of Halifax and Saskatchewan Drive). Ticket prices will be the same as last year at \$13.00 per person and will be available at our October meeting. Entertainment will be the Cosmo Cats from Moose Jaw. Mark your calendar.

Sport and Leisure Programs for People With a Disability

The Recreation Network and City of Regina are offering a free Swim Program at Wascana Rehabilitation Centre Pool on Saturday afternoons from 2-4 pm starting September 29th. The program will provide individuals with disabilities the opportunity to participate at a level suitable to their interest and ability. For Registration forms or more information call Bev at 777-7149, Regina.



Taoist Tai Chi & Health Recovery Tai Chi

Tai Chi is an ancient Chinese method of exercise and relaxation. It is a safe and effective form of exercise for everyone including those who suffer from illness and disabilities. General Classes or Health Recovery Classes are being offered this fall. For more information call Dr. James Parker, Taoist Tai Chi Society, Regina at 525-9700.

Waist-Watcher Hint:

When a recipe calls for ½ cup of margarine, use:

¼ cup margarine

¼ cup of pureed fruit (apple sauce, prunes, etc.)

If the final dish tastes okay, the next time, reduce the margarine portion and increase the fruit portion.

When a recipe calls for an egg, use two egg whites instead.

We are sorry for the inconvenience caused when we had to cancel our September meeting due to a scheduling problem. However, we must remember that we have been meeting at the Wascana Hospital free of charge for many years and we are thankful that they have allowed us to enjoy their facilities so we should not complain.

Intervention: The training group completed a 40-minute general fitness training session in warm water twice weekly. Assessment instruments included the bicycle ergometer test, isokinetic muscle strength, a 30-meter walk indoors, Berg balance scale, a pain drawing, a visual analog scale, the Physical Activity Scale for the Elderly, and the Nottingham Health Profile.

Main Outcome Measures: Peak load, peak work load, peak oxygen uptake, peak heart rate, muscle function in knee extensors and flexors, and pain dimension of the NHP.

Results: The average training period was 5 months; compliance was 75% (range, 55-98). No negative effects were seen. The exercise did not influence the peak workload, peak oxygen uptake, or muscle function in knee extensors compared with the controls. However, a decreased heart rate at the same individual workload was seen, as well as a significantly lower distress in the dimension pain of the NHP. Qualitative aspects such as increased well being, pain relief, and increased physical fitness were reported.

Conclusions: A program of non-swimming dynamic exercises in heated water has a positive impact on individuals with late effects of polio, with a decreased heart rate at exercise, less pain, and a subjective positive experience. The program was well tolerated (no adverse effects were reported) and can be recommended for this group of individuals.

Condition Strikes Several Decades After Paralytic Polio

New Guidelines Issued for Post-Polio Syndrome (PPS)

By John Gushue, WebMD Canada Medical News

Reviewed By Joshua Tepper, MD -June 6, 2001.

New guidelines have been issued on post-polio syndrome to help physicians identify and treat a condition that is not well known and originates with a disease most doctors today know only from their textbooks.

The guidelines were produced through a 2000 international consensus conference on diagnosing and treating post-polio syndrome (PPS).

As many as 50,000 Canadians suffer from the neurological disorder, which attacks

Birthdays:

Sept. 8 Marlene Dreger
Sept 14 Keith Ball
Sept 16 Jeanne Hoffman
Oct. 1 Clarence Biberdorf
Oct. 8 Javonne Miller
Oct. 11 Blenda Ramsay
Oct. 16 Carol Biberdorf
Oct. 17 Murray Grant
Oct. 20 Mark Burrell

Nov. 1 Virginia Denzin
Nov. 7 Jim Allonby
Nov. 9 Anne Bartel
Nov. 16 Suzanne Lalonde
Nov. 23 Joan McIver
Dec. 11 Grace Lekivetz
Dec. 16 Del Hayden
Dec. 23 Ruth Adelia
Dec. 31 Patrick Matheson

Up Coming Anniversaries:

Oct. 11 Lloyd & Anne Bartel
Oct. 15 Lloyd & Inge MacPherson
Oct. 21 Jim & Pat Allonby
Oct. 23 Ross & Verna Copeland
Nov. 16 Norm & Bernice Beliveau
Dec. 28 Keith & Jackie Ball



Jeanne Hoffman
celebrates her 80th birthday

We Congratulate Jeanne Hoffman on celebrating her 80th birthday September 15th. We understand Ross and Verna Copeland were in attendance at her Come & Go Tea held in the Plains Hotel. Jeanne celebrated with about 191 family and friends and received many cards, flowers and good wishes. She lives at Zehner and stays very active. We wish you all the best in the years to come!

In Memoriam

We were saddened to learn of the passing of Barry Williams’ father, J.D. Williams who passed away on June 25. Our sincere condolences go out to Barry, Betty and their family. Barry and Betty have been working at a camp in Alberta all summer.

from getting worse, but fortunately the new weakness is very slowly progressive — something on the order of 1% per year,” Cashman said.

“So most of this is a waiting game, and providing the mobility aids and other disability aids that people need at various stages of their disease.”

Julian Lo, MD, medical director of the post-polio clinic of the West Park Health Care Centre in Toronto, says a multi-disciplinary approach should be considered when devising a management plan. His clinic’s team includes physical, occupational, and speech therapists, among others. It’s important to recognize that many polio survivors are not ready to acknowledge that a disease they assumed they had beaten has returned to their lives.

“For many people, the original polio may be a long-forgotten problem,” he says. “They were functioning quite well, and now they experience these new-onset symptoms. [So] one of the first goals is educating the polio survivor, to let them know about the disorder, what’s available, support groups, educational seminars, and that type of thing. That helps them cope.”

While many patients naturally tend to be older, emigration from countries that still encounter polio outbreaks affects the demographics of PPS.

“At the clinic, we really see a whole cross-section of individuals,” he says. “Now we’re seeing individuals who are a lot younger. These individuals are usually from countries that still have wild polio virus, or just recently eradicated polio.”

A cornerstone of therapy involves teaching patients to know their limits. Because the nervous system and muscles are weaker, the patient has to learn to live life differently, Lo says.

“We teach them about pacing themselves, so they’re able to manage their lifestyle as best they can without over-fatiguing causing more problems,” he says.

The Ontario March of Dimes offers information kits for clinicians, regardless of whether they live in Ontario or not.

For more information, call (416) 425-3463 or write to the Ontario March of Dimes, 10 Overlea Blvd., Toronto ON, M4H 1A4.

Conclusions: These data support the hypothesis that decreased dopamine secretion, possibly secondary to poliovirus damage to the basal ganglia, may underlie not only fatigue and impaired attention but also word finding difficulty in polio survivors.

Changes in strength over time among polio survivors

Klein MG, Whyte J, Keenan MA, Esquenazi A, Polansky M
: Moss Rehabilitation Research Institute, Philadelphia, PA 19141, USA.
Arch Phys Med Rehabil 2000 Aug;81(8):1059-64

Objective: To study changes in the strength of different muscle groups in polio survivors over a period of approximately nine months.

Design: Longitudinal study.

Participants: One hundred twenty subjects (57 men, 63 women) were studied on three occasions, each 3 to 5 months apart. Subjects were recruited through the Einstein-Moss Post-Polio Management Program. newspaper advertisements, and polio support groups.

Main Outcome Measures: Isometric strength of 30 muscle groups (16 in upper extremities, 14 in lower extremities) was measured, using a hand-held dynamometer.

Results: Data were analyzed in two separate groups: upper-extremity muscles and lower-extremity muscles. Results for the upper-extremity muscles revealed evidence of a significant deterioration in strength. The amount of deterioration differed among muscles and increased with age. There was also evidence of deterioration in strength in the flexor muscles in the ankle, hip, and knee. However, the rate of deterioration in these muscles was not strongly related to age, time since polio, gender, symptom status, or history of residual weakness.

Conclusions: Strength is deteriorating among polio survivors at a rate higher than that associated with normal aging. This deterioration is not occurring in the extensor, or so-called “weight-bearing” muscles, but is occurring in many of the upper-extremity muscle groups and in the flexor muscles in the lower extremities.

“This study suggests that those with CFS remain disabled because they don’t get off the couch,” he says. “The more fundamental question is what caused their muscles to become so weak that they were forced to stay on the couch in the first place.

Our research in polio survivors and CFS patients suggests that there is a central cause of fatigue in all chronic fatigue syndrome: damage to the neurons that activate the brain and allow the brain to activate the muscles.”

The researchers are also inconsistent when they imply that the fatigue occurs because of perception, says Bruno.

“That’s like having muscle atrophy in a leg that’s been in a cast for several weeks and saying that the reason it’s harder to walk is because your brain has changed, not the muscle,” he says.

Ellen Goudsmit, PhD, editor of a London CFS publication for physicians, is critical of the study on two fronts: the CFS population that participated in the study and the exercise recommendations.

“Their definition of CFS is very broad and non-specific, and 20 of the patients were taking antidepressants,” Goudsmit tells WebMD. “Usually, people with CFS can’t take antidepressants. They are very sensitive to all drugs. That is suspicious ... and it makes one wonder what type of CFS they were suffering from.”

On the question of exercise, Goudsmit agrees that patients should attempt to do some type of activity, “but the question is how much and when to stop. With graded activity, you don’t stop when you’re fatigued. [It] is better to do what you can, then stop. I’m recommending that CFS patients implement a pace-and-switch regimen — that is, do what you can with one muscle group, then do something that requires different muscles.”

Those who develop CFS, she says, are more often than not “activity-prone people who go and go and crash and recover, then start feeling better, then crash again. We try to get them to rest before they are fatigued.”

“The data concord with my own observations concerning abnormal muscle energy metabolism in *some* CFS cases,” says Russell Lane, BSc, MD, FRCP, who wrote an

We welcomed our first great grandson on Sept.2 (Devstin Robert John Richardson) and a week later a granddaughter on Sept.11 (Ava Ireland Ramsay) who arrived at the same hour as the terrorist attack of the World Trade Towers in New York. This will be a day we'll never forget.

The newsletter is changing shape. Instead of the full 8½” by 11” size it has been reduced to half size for mailing and easier handling. We are always looking for fresh ideas for our meetings and for the post-box. Give us a call. We strive to keep you informed and your comments are always welcome.



Our last meeting was our annual picnic held in June at the Rotary Centre. We had a great time with 40 people in attendance and everyone enjoyed the chicken dinner. Thanks to president Norm Beliveau, Ross & Verna Copeland and Lloyd & Inge MacPherson for making the arrangements. The executive is now planning our annual Christmas gathering and tickets will

be available at our next meeting.

You might be interested in reading an interesting feature article called: “Affliction’s echo stalks polio survivors” printed recently in the Globe and Mail about polio survivor, Jeannette Shannon of Toronto. The story (too lengthy to publish here) can be found on the Internet @globeandmail.com on June 5 or contact us for a copy if you are interested. For subscribers to the Internet, just click “POLIO” and follow the links to obtain all kinds of information.

Dynamic water exercise in individuals with late poliomyelitis

By Willen C, Sunnerhagen KS, Grimby G.
Archives of Physical Medicine and Rehabilitation.
Reference: Arch Phys Med Rehab 2001 Jan; 82(1): 66-72.



Objective: To evaluate the specific effects of general dynamic water exercise in individuals with late effects of poliomyelitis. **Design:** Before-after tests. **Setting:** A university hospital department. **Participants:** Twenty-eight individuals with late effects of polio, 15 assigned to the training group and 13 to the control group.

Our next meeting will be held on Thursday, **October 25^h**, @ **7:00 in** Salon A & B on second floor of the Wascana Hospital. After a short business meeting, Peter from the “Flower Hut” will give us a demonstration on Flower Arranging. Our meeting in November will be held on **November 29th**.

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POLIO REGINA Inc.

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2001: International Year of Volunteerism
Volunteers:
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Think of others first, and
Make the world a better place for us all.

the bodies of patients who had contracted paralytic poliomyelitis earlier in life. Symptoms of PPS usually appear about 30 or 40 years after polio, but this interval can vary widely. The most prominent symptoms of PPS are fatigue and new muscle weakness.

Neil Cashman, MD, a University of Toronto professor and a principal investigator with the Centre for Research in Neurodegenerative Diseases, says the guidelines will help broaden the knowledge of the disorder in Canada.

“These days, it’s much better known than it was 20 years ago, but I’m sure there are some clinicians who have never heard of it,” Cashman tells WebMD.

“I think the value for clinicians is having a consensus document, something where the authorities on post-polio got together and tried to agree on certain points. What you see in the document is the distillation of a lot of presentation and debate among ourselves, about what the irreducible nut of post-polio syndrome is.”

Criteria for post-polio syndrome include:

- Prior paralytic poliomyelitis with evidence of motor neuron loss;
- Partial or complete recovery from polio, with a long period of stable neurological function;
- Onset of progressive, persistent new muscle weakness, with or without generalized fatigue, muscle atrophy, or muscle and joint pain;
- Symptoms persist for at least one year.

Because these symptoms overlap with other conditions, PPS tends to be a diagnosis of exclusion, Cashman says.

“It’s a symptom complex, more than anything. There isn’t any trick or anything that’s completely diagnostic. There’s no test that allows you to say that this is or it is not post-polio syndrome,” he says.

Management of PPS cases can also be complicated. The consensus guidelines describe best practices in care as “still evolving.”

Cashman says while there is no cure, physicians can still take action to minimize suffering and to help patients cope with a debilitating disorder.

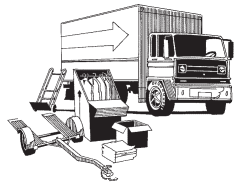
“We do have treatments, medicines, and other therapies for fatigue and also for pain. We don’t seem to have a medicine that will reverse the new weakness or even stop it

Virginia and Maurice Denzin celebrated their 50th Anniversary in June. Would you believe that Maurice could still fit into his wedding suit? Congratulations to this young couple!

Get Well Message goes out Don Volpel. We hope you will be with us at our October Meeting.

Moved to Alberta:

Suzanne Lalonde is now working at a French School in Calgary. Her address is #1110-5300 Rundlehorn Dr. N.E., Calgary. AB. T1Y 3V5. Phone (403) 293-4886. We miss you Suzanne. You can e-mail her at sulalo@hotmail.com



Marlene Dreger has moved and can be reached at Box 1743, Didsbury, AB TOM OWO.

Dick Beck is in Lethbridge at 410B Canyon Blvd. W. T1K 6V2. We had a typo in our last Newsletter for his phone number. Please correct it to be (403) 327-8879.

Good News Regarding Hospital Records. Yvette Ast, a friend of the family, called me to say that she has finally tracked down the hospital records from when she had polio 48 years ago. She had called the Wascana Rehabilitation Centre, records department and gave them her maiden name, birthday, parents names etc. Apparently the clerk checked it out and came up with three pages of documents that had been saved on microfiche film. This document will now be printed off and sent to her doctor.

Needless to say Yvette was overjoyed to know that she now has something to prove to her doctors that she did have polio and where it affected her body. So if any one is looking the their polio records, you may want to try the Wascana Rehabilitation Centre in Regina as well, even though you may not have been a patient there. Good luck in your quest.

Study Sparks Debate About Exercise and Chronic Fatigue Syndrome

Etiology of CFS Still Under Dispute

By E' Louise Ondash, RN WebMD Medical News Aug. 31, 2000 –

Graded exercise therapy appears to help patients with chronic fatigue syndrome (CFS) feel better, according to a study by London researchers in the Sept. issue of the *Journal of Neurology, Neurosurgery, and Psychiatry*, but the findings are hotly debated.

The researchers conclude that their data “imply that physical deconditioning helps to maintain physical disability in CFS, and that a treatment designed to reverse deconditioning helps to improve physical function. [However] improved fitness and strength of the participants would be necessary if they were to exercise more.”

Lead researcher Kathy Fulcher, a physiotherapist, and P.D. White, MD, decided to undertake this study, because there were no physiology studies of patients with CFS who did not also have psychiatric disorders. The aim was to compare CFS patients with both healthy but sedentary subjects and patients with major depression.

They enrolled 66 patients with CFS, 30 healthy but sedentary people, and 15 patients with major depression. Exercise capacity and efficiency were measured and strength was evaluated by quadriceps contractions.

“Patients with CFS were weaker than the depressed, sedentary controls, and as unfit as sedentary controls,” write researchers. They maintain that their results support a hypothesis that “disability in CFS is maintained by both physical deconditioning and a low threshold for certain somatic perceptions.”

Richard Bruno, MD, director of the Post-Polio Institute in Englewood, N.J., disagrees with the study authors. The findings and the conclusions of this study don't jive, he tells WebMD in an interview seeking objective analysis of the study.

“The study found that CFS subjects had significantly more muscle weakness, reported more effort during exercise, did less exercise, and were equally heart-deconditioned as compared with sedentary controls. Yet the authors conclude that deconditioning helps to maintain physical disability, ignoring as a cause of disability the physical weakness that the study documents.”

Remember that the “No Pain – No Gain” Rule No Longer Applies To Us.
We now have to **“CONSERVE IT AND PRESERVE IT”**

The influence of PPS on independence and life satisfaction

Burger H, Marincek *Disabil Rehabil* 2000 May 10;22(7):318-22

Constitute for Rehabilitation, Ljubljana, Slovenia. helena.burger@mail.irrs.si

Purpose: The aim of the study was to find out the influence of the new symptoms on life satisfaction and independent living and the most frequent disabilities in patients with PPS that are affecting the satisfaction and independence.

Method: A questionnaire was sent to all the PPS (207) who visited the Rehabilitation Institute in Ljubljana at least once in the last ten years. We got 100 answers, which were analysed by SPSS (statistical package for social sciences).

Results: Sixty-nine reported that they had new symptoms that may be classified as PPS. **Conclusions:** We have found that the new symptoms in post-polio survivors, which may be classified as post-polio syndrome, increased their walking and climbing stairs disability, increased their disability to perform daily activities and also decreased their satisfaction with life.

PPS: assessments, pathophysiology and progression.

Gandevia SC, Allen GM, Middleton J

Prince of Wales Medical Research Institute, Randwick, Sydney, NSW, Australia.

Disabil Rehabil 2000 Jan 10-20;22(1-2):38-42

While there have been many reports of the decline in motor function in patients with prior-polio, there have been few reports of quantitative changes in muscle function and the pathophysiological mechanisms for the deterioration are poorly understood. This paper describes the establishment of a post polio clinic and the principles adopted in quantitative muscle testing using twitch interpolation. Peripheral endurance and/or voluntary drive to muscles is impaired in about 30% of prior-polio patients attending the clinic. Progression of these deficits is slow and not easily predicted by factors associated with the original illness.

editorial accompanying study. He is in the division of clinical neurosciences and psychological medicine at the Imperial College School of Medicine in London.

However, he notes that “deconditioning may well be an important factor in the pathogenesis of CFS, but [the findings of this study] raise the possibility that some patients with CFS have a form of metabolic myopathy.”

He adds that “Whatever the mechanisms underlying ‘fatigue,’ exercise therapy is likely to become an increasingly important therapeutic modality ... particularly in the management of chronic fatigue syndrome.”

The health-related quality of life of patients suffering from the late effects of (post-polio)

Kling C, Persson A, Gardulf A : *J Adv Nurs* 2000 Jul;32(1):164-73

Department of Occupational Therapy, Department of Rehabilitation Medicine and The Nursing Care Research and Development Unit, Huddinge University Hospital, Stockholm, Sweden. catarinasson@telia.com

In Sweden alone, there are today approximately 10 000-16 500 polio survivors.

Between 60% and 80% experienced new symptoms several years after the initial attack of poliomyelitis.

The aims of this study were to investigate and describe the self-rated health-related quality of life and functional status of a group of Swedish patients with PPS, to investigate whether any differences within the group could be related to demographic or disease-specific data and to compare the PPS patients with individuals sampled from the general population. Data were obtained by using two questionnaires, the Swedish Health-Related Quality of Life Questionnaire and the Sickness Impact Profile.

A total of 150 patients, 86 women and 64 men with median age 61 (20-82) years, were consecutively included. The study showed that the patients mainly reported that their physical, functional status was affected by their post-polio condition. Factors found to be associated with the physical, functional status were age and the number of parts of the body affected by the polio.

On comparing the post-polio patients with two samples from the Swedish general population, it was found that the patients reported a poorer functional status and health-related quality of life. The women with post-polio reported more pain, as compared with both the men with post-polio and the women in the general population sample. The family life of the patients - in contrast to their physical abilities - did not seem to be affected by the new deteriorating condition.

It is concluded that, owing to the wide range of symptoms, the patients with post-polio need care and support from multidisciplinary teams, including nurses and occupational therapists.

Word finding difficulty as a post-polio sequelae

Bruno RL, Zimmerman JR:

Am J Phys Med Rehabil 2000 Jul-Aug;79(4):343-8

The Post-Polio Institute, Englewood Hospital and Medical Center, New Jersey 07631, USA.

Objective: Seventy-nine percent of respondents to the 1990 National Post-Polio Survey reported difficulty “thinking of words I want to say,” with 37% reporting frequent, moderate-to-severe word finding difficulty. This study was undertaken to objectively document polio survivors’ word finding difficulty and to identify its relationship to fatigue, neuropsychologic processes requiring cortical activation, and a peripheral marker for brain dopamine secretion. **Design:** In this study, 33 polio survivors were administered the Post-Polio Fatigue Questionnaire, Animal Naming and FAS Tests, and tests of attention and information processing speed. Plasma prolactin was also measured as a marker for brain dopamine secretion.

Results: Subjects reporting high fatigue severity and word finding difficulty had clinically abnormal or significantly lower Animal Naming Test scores compared with subjects with low symptom severity. Impaired performance on the most difficult tests of attention and information processing speed were also associated with lower scores on the word finding tests. A significant negative correlation between Animal Naming Test scores and plasma prolactin suggests that a decrement in brain dopamine secretion is related to reduced animal naming ability.