

What Your Voice is Saying About You: Vocal Changes and the Late Effects of Polio

Mary Spremulli, MA, CCC-SLP, Punta Gorda, Florida, info@voiceaerobicsdvd.com



Image courtesy of Passy-Muir, Inc., Irvine, CA.

A speech-language pathologist in private practice, a clinical consultant with Passy-Muir, Inc. and a national seminar leader on medical topics, Mary Spremulli addresses how voice changes may relate to polio survivors, a topic raised frequently by PHI readers.

Why does my voice sound this way?

Over the last few years, a number of individuals with a history of polio 40 or 50 years ago have been referred to my speech pathology practice complaining of changes in their vocal function. They were often young children at the onset of their polio, so some of them are unsure if their original diagnosis was bulbar or spinal.

Now, many of them in their 60s or 70s report voice problems or changes, such as: “my voice is weaker,” “my voice gives out by the end of the day,” “my voice is scratchy and hoarse.” Not infrequently, these changes in voice are accompanied by changes in swallowing function with associated complaints of increased “choking” when eating or drinking.

Is this related to having had polio?

In many of these instances, the change in voice can represent further weakening of the respiratory and phonatory (voice production) system. In particular, if individuals had initial bulbar polio symptoms, they have likely already spent a lifetime using some compensatory respiratory and oral-pharyngeal muscle function. This muscle function may now be further weakened due to further muscle

degeneration, age related changes, muscle disuse atrophy or vocal misuse. Separating out the causes and contributors to current voice problems can be challenging for the voice therapist or otolaryngologist.

Why should I see an Ear, Nose, and Throat Doctor (ENT)?

Any sudden change in voice function, or any change, such as hoarseness, that persists for more than a few weeks warrants an examination by an ENT. The ENT will conduct a direct visualization of your vocal folds and larynx (voice box) by passing a small scope with a camera through your nose and making sure there are no growths, such as nodules (calluses that form from misuse) or polyps (a usually benign, fluid-filled outgrowth of tissue that also may be from misuse) or tissue changes suggesting a more serious diagnosis.

A direct visualization can also confirm the contribution of acid reflux, in particular stomach acid that escapes from the top muscle of the esophagus (food pipe). This type of reflux, is also referred to as laryngopharyngeal reflux or “silent reflux,” and it is often a factor causing hoarseness or other voice changes.

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What is your voice saying about you?

“Our voice resonates with life. Because this is so, it can touch the lives of others. The caring and compassion imbued in your voice finds passage to the listener’s soul, striking his or her heart and causing it to sing out; the human voice summons something profound from deep within, and can even compel a person into action.”

— Daisaku Ikeda
Buddhist Philosopher

PHI's mission is to enhance the lives and independence of polio survivors and home mechanical ventilator users through education, advocacy, research and networking.

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Editor: Gayla Hoffman
editor@post-polio.org

Designer: Sheryl R. Rudy
webmaster@post-polio.org

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How to contact PHI

Executive Director: Joan L. Headley, MS
director@post-polio.org

Post-Polio Health International

Including International Ventilator Users Network

4207 Lindell Blvd., #110
Saint Louis, MO 63108-2930 USA
Phone: 314-534-0475
Fax: 314-534-5070
info@post-polio.org
www.post-polio.org

PHI is sending *PHI Membership Memos* via email. Be sure to set your spam filter to receive emails from info@post-polio.org.

Worthy of Note

Post-Polio Directory 2010 is Now Available Online

PHI's *Post-Polio Directory 2010* has been updated and posted at www.post-polio.org/net/pdirhm.html. The sections – Clinics, Health Professionals and Support Groups – are now separated online so you can access each section more easily. The complete directory can be downloaded, too. The *Directory* is updated continually.

Sign Up For PHI Membership Memos

Increasing communication: *PHI Membership Memos*, sent electronically in the eight months a print newsletter is not sent, contain brief summaries and links to information related to your general health, the world of disability and the activities of like-minded organizations. If you don't currently get the *Memo*, but would like to start receiving it, please send your email address to info@post-polio.org. If you already receive the *Memo*, you do not need to do anything at this time. Also, set your spam filter to receive email from info@post-polio.org. If you don't have email, rest assured that we will put major news in the print newsletter, focusing on articles that will help you as you live and age with the late effects of polio.

Keep Those Cards and Letters Coming!

PHI appreciates your letters and emails containing questions, suggestions and supporting comments. They are very helpful to us as we create content for the newsletter and websites – www.post-polio.org and www.ventusers.org. My email address is director@post-polio.org.

Be Good to Yourself: Attend a Post-Polio Wellness Retreat

Bay Cliff Health Camp's fifth annual Post-Polio Wellness Retreat will take place September 13-18, 2010. Applications will soon be available on www.baycliff.org/site/post-polio.html. The camp, located in Big Bay, Michigan, on Lake Superior about 28 miles northwest of Marquette, will hold a reunion for alumni of prior camps the weekend of October 4-7, 2010. (Questions? 906-345-9314; baycliffhc@aol.com.)

Joan L. Headley, Executive Director, PHI



Our Journey to India

Holly H. Wise, PT, PhD, Charleston, South Carolina, wisehh@muscc.edu

Sunita “Soni” Dodani, MD, PhD, FCPS, MSc, FAHA, Kansas City, Kansas, sdodani@kumc.edu

Over the past several decades, South Asian countries including India, Pakistan, Afghanistan, Bangladesh, Sri Lanka and several countries in Africa have been under the “double burden” of diseases – both communicable as well as non-communicable. This is a reflection of poverty, poor sanitation and decreased access to healthcare. The global effort to eradicate poliomyelitis is the largest public health initiative in history, and efforts are concentrated in these countries.

While most of the resources and time continue to be focused on eradicating polio in these countries, very little attention has been paid towards polio survivors. In a country where the polio virus has not been eradicated, it is commonplace to see individuals with obvious gait deviations walking with no canes, braces or any assistive devices. Rarely are individuals seen in manual or power chairs/scooters in public. If this sounds like the mid-20th century in the United States, guess again! Come with the authors on their journey to India in December 2009.

The Dream

Dr. Sunita “Soni” Dodani contracted polio in Pakistan at the age of two. Raised in an enriched environment, her parents were able to provide her with the best in rehabilitation care, and, despite some physical limitations, she ultimately received her education in medical science and became a cardiologist practicing in the United States. After working and living in the United States for many years, Dr. Dodani became acutely aware of the disparity in health care services for polio survivors in South Asia.

She saw the need for a state-of-the-art rehabilitation center in India that could serve both children and adults from India and Pakistan. In 2008,

overcoming many initial hurdles and disappointments, a diverse group of humanitarians, researchers, information technologists and healthcare professionals who had worked with polio survivors, met to help establish the Center for Post-Polio Rehabilitation in India (CPPRI). The group came from three continents and included post-polio organizations, orthopedic surgeons, physical therapists, orthotists and cardiologists.

Following this meeting, Dr. Dodani submitted a grant to the Bill and Melinda Gates Foundation to help build CPPRI to serve patients with physical disabilities and polio in particular. If funded, CPPRI would provide evidence-based surgeries and rehabilitation treatment options to achieve optimum outcomes in India and Pakistan. In addition, the creation of a central surveillance database of all individuals with polio in India and Pakistan was proposed. Although the initial grant proposal was not funded, feedback from Gates Foundation encouraged Dr. Dodani to collect pilot data to document the need and benefit for such a center and resubmit the proposal.

Finding a Partner

To help with the collection of pilot data, Dr. Dodani needed to secure a

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Chaitanya Hospital and rehabilitation center in Pune, India, welcomes Dr. Holly Wise and Dr. Sunita Dodani.



Children at a school wait to be examined by the CPPRI team for polio treatment.

Our Journey to India

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Dr. Anant Bagul (right) and his staff at the Chaitanya Hospital.

partner in India – a non-governmental organization (NGO) and/or an individual dedicated to helping individuals with polio and willing to assist in this endeavor. Many long distance telephone calls, emails and letters later, Dr. Dodani invited Dr. Anant Bagul, an orthopedic surgeon in Pune, India, to join the CPPRI team.

Dr. Bagul donates 30 percent of his time to work with children and adults with disabilities resulting from polio and other diseases. Ten years ago, Dr. Bagul created a charitable NGO to assist in the funding of his work and established Chaitanya Hospital and rehabilitation center. An interdisciplinary team of nurses, physical therapists and orthotists provide rehabilitation following the corrective surgeries that he performs.

The Journey

In December 2009, Dr. Dodani and CPPRI team member Holly H. Wise, PT, PhD, met in Pune, India, and spent a week collaborating with Dr. Bagul and collecting pilot information.

Dr. Wise is a physical therapist with more than 25 years experience working with polio survivors. During the week in India, they traveled to a special school for children with disabilities to identify children and young adults who would benefit from corrective surgery. Fifteen corrective surgeries were completed followed by rehabilitation.

Following the surgeries, physical ther-

apy was implemented to return the individual to the highest level of physical function whether walking with or without a cane, crutches brace or other assistive device. The most common corrective surgeries involved soft tissue releases of the hip, knee and/or ankle where contractures developed due to imbalances in muscle strength caused by polio. A femoral osteotomy or surgical breaking of the thigh bone to realign the knee joint was the second most common surgical correction for polio survivors. This surgery is generally followed by six weeks in a long leg walking cast that allows the individual to walk without braces even when the quadriceps muscle is severely weakened or absent.

Functioning and Disability in India: A Time Machine?

In India, Dr. Dodani and Dr. Wise reported feeling as if they had taken a journey in a time machine back to an era in America when polio survivors were rarely seen out in public places and President Franklin D. Roosevelt refused to be photographed in a wheelchair.

“We saw first-hand how the interaction of environmental factors – social influences, physical accessibility, transportation, assistive equipment – and personal factors such as health, age, gender, money, education and attitude determine participation in life activities,” said Dr. Dodani.



Drs. Wise, Dodani and Bagul evaluate a child for polio surgery.

“When informally interviewing patients and family members, we were told that there is a stigma associated with using braces, canes or any type of assistive device unless you are old,” she said. “Individuals would rather walk with a noticeable limp and inefficient gait than use a cane, brace or crutch. Corrective surgery to realign or fuse the lower extremity is viewed as a better choice over the long-term use of an assistive device.” She noted that while patients temporarily use these devices post-surgery, they are rarely adjusted to the correct height.

“Even though many polio survivors in India have been identified in need of medical care and support by health-care providers, support groups are non-existent, said Dr. Wise. “Given the stigma of physical disability, it is easy to understand why there has been an absence of these groups.”

“There does not seem to be an equivalent to the Americans with Disabilities Act in India,” said Dr. Wise. “When driving around Pune and the surrounding countryside, people using wheelchairs or scooters out in the community were never seen. Safety may be one concern as the streets are overcrowded and very congested with traffic (as well as goats and free roaming bulls). Motorcycles and scooters often crowd the sidewalk, and curb cuts have not been routinely implemented.”

Dr. Dodani said that the ability to use bathroom facilities is very difficult for someone with a physical limitation. “Many public bathrooms in India are holes in the ground consistent with the traditional method of squatting

when toileting. Elevated toilets have side extensions for foot placement to allow squatting on an elevated seat, but there are no grab bars in public bathrooms.”

The two said they observed vast differences in the reality of circumstances for an individual in India as compared to the United States. Poverty, poor sanitation and low educational levels are examples of the personal factors contributing to the decreased ability of polio survivors in India to participate fully in life activities. Awareness of strategies to reduce the late effects of polio is minimal. Personal motivation and confidence in individual ability to manage limitations associated with polio may be diminished by the reality of environmental factors.

Hope for Polio Survivors in India and Pakistan

Dr. Dodani’s goal for the establishment of CPPRI is to improve services to individuals in India and Pakistan diagnosed with polio. She sees CPPRI becoming a demonstration center for accessible, evidence-based healthcare, innovative rehabilitation technology and appropriate assistive devices and equipment.

Once established, CPPRI would provide the optimum environment for fostering polio support groups in India. Through educational initiatives, the stigma of disability would be reduced. Informed healthcare professionals and support groups would begin to advocate for changes in social policy that will ultimately enable individuals with polio to participate in life activities and improve their quality of life. ▲



Dr. Holly Wise and Dr. Sunita Dodani.

Holly H. Wise, PT, PhD, is Associate Professor, Division of Physical Therapy, at the Medical University of South Carolina in Charleston, South Carolina.

Sunita Dodani, MD, PhD, FCPS, MSc, FAHA, is Director, Center for Outcome Research and Education, Division Director, Outcome Research, Quality Care and Education and Associate Professor of Internal Medicine, Preventive Medicine and Health Policy and Management at the School of Medicine, University of Kansas Medical Center, in Kansas City, Kansas.

WEBSITES:

Center for Post-Polio Rehabilitation in India: www.cfppr.org

Chaitanya Hospital: www.edisability.org

FINAL REPORT: Persisting Noninfectious Genome Fragments of Poliovirus in PPS Patients

Antonio Toniolo, MD;
Andreina Baj, MD;
Giuseppe Maccari, MS –
Laboratory of Medical
Microbiology and Virology,
Department of Clinical and
Biological Sciences,
University of Insubria Medical
Center, Varese, Italy

Laura Bertolasi, MD;
Salvatore Monaco, MD –
Department of Neurological
Sciences, University of
Verona Medical School,
Verona, Italy

Correspondence to:
antonio.toniolo@uninsubria.it

Dr. Toniolo's team submitted an interim report that is posted online at www.post-polio.org/res/.

UPDATE on PHI's Research Fund:

The money invested in the fund is on the rebound with a current value of \$550,000.

PHI received six Phase 1 applications for its next award to be given in late 2010. The submissions, from Brazil, Israel, United States and Sweden, will be reviewed by an expert panel, which includes polio survivors, to determine which applicants will be asked to submit Phase 2 requirements.

Purpose of the grant: The funds our team received from The Research Fund of Post-Polio Health International helped us continue our ongoing research of identifying poliovirus (PV) genome fragments in the survivors of polio. Our goal also is to clarify whether the presence of fragments is related to the symptoms of post-polio syndrome (PPS).

Recent findings: Using molecular tests and cell lines expressing poliovirus receptors, PV genome fragments and low-level infectivity have been detected in CSF (cerebral spinal fluid) and peripheral blood leukocytes of 52 out of 63 patients (82 percent) diagnosed with PPS (median age, 58 yrs; range 46 to 81 yrs; median time from acute paralytic poliomyelitis, 55 yrs).

Using these same methods, PV genome fragments could be detected in only one of 58 control subjects (blood donors, n=26; family members of PPS patients, n=21; adult pathologic controls with neurologic conditions other than PPS, n=11).

In a few PPS patients undergoing surgical procedures, PV genome fragments have been detected also in primary cultures of skeletal muscle, peripheral nerve and duodenal mucosa cells.

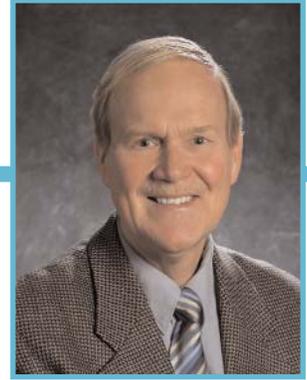
The amounts of PV genome fragments were extremely low in all patients. This made the detailed analysis of these fragments extremely difficult. When dealing with other viral infections, it is common to "sequence" the genome of the virus isolated from the patient (i.e., to express the composition of its genome as a sequence of nucleotides). The sequence of the viral isolate is then compared to genome

sequences of reference strains of the same species in order to identify potential unique properties of the isolate. In the case of PPS, sequences of genomic PV fragments must be compared to those of the three wild-type PVs.

So far, we have only been able to obtain partial sequences of some genomic fragments (the so-called 5'UTR, VP1, and 3D^{pol} regions). However, the limited data obtained have been sufficient to indicate that the majority of patients (70 percent) were carrying genome fragments belonging to PV type-1, 16 percent to PV-2, and 4 percent to PV-3 (some fragments remain to be identified). Partial sequences also showed that the genome fragments detected in PPS patients contained extensive mutations as compared to wild type PVs. Tests in cultured cells exposed to PV genome fragments showed that these fragments contained some residual biological activity, such as low production of PV capsid proteins and induction of some pro-inflammatory cytokines.

Conclusions: The data indicate that low-level PV activity can persist for decades in most polio survivors. The results, however, *do not* provide a pathogenetic link of PV persistence with the development of PPS. Through collaboration with other virology laboratories, we now hope to characterize in detail the mutated PV strains obtained from PPS patients in order to understand their possible contribution to pathogenetic events.

Subsequently, we will use *in vitro* assays to test the activity of novel antiviral compounds against the mutated and persisting PV strains. The hope is to find drugs capable of eradicating viral genome fragments from the body of PPS patients. ▲



Frederick M. Maynard, MD

Question: *Has there ever been a study of whether antidepressants help relieve muscular pain and fatigue? Is it a plausible treatment for people who have had polio?*

A: There have been studies showing reduction of fatigue and pain (not specifically muscular pain) among depressed patients treated with antidepressant medications, but none considered pain as a “primary treatment outcome.” Depressed mood was always the primary goal of treatment. Fatigue, pain, poor sleep, headache and other bodily symptoms are usually considered to be manifestations of the primary abnormal condition – depression.

I am not aware of any studies which specifically treated post-polio patients with antidepressant medication. I do know many physicians (including me) who have treated post-polio patients with antidepressant medications primarily for the purpose of helping them better cope with disabling pain and/or fatigue. Particularly when poor sleep and a general sense of hopelessness/despair about their condition are present, even if they don’t “feel depressed” themselves, a careful trial of treatment with an antidepressant medication can be worthwhile.

It is always best that these patients be evaluated and possibly treated by a clinical psychologist or other mental health professional, either in combination with medication or as an alternative. Cost and access to counseling are common barriers to this approach, as is the attitude of the patient toward mental health treatment. Support from family, friends, post-polio peer groups and spiritual counselors can be helpful. Several of my

patients experienced resolution of their PPS symptoms with this holistic approach, which usually also involves lifestyle changes.

Question: *I am a polio survivor with PPS. Recently I began to suffer severe knee instability, but a sports medicine specialist recommended against braces, saying they would inhibit the muscles from regenerating. It seems to me that polio-atrophied muscles will not regenerate anyway and that braces would at least help to prevent collapse. Your thoughts?*

A: If your knee instability is a result of polio-involved muscles around the knee weakening – especially the quadriceps muscle that extends the knee and must be sufficiently strong to prevent its buckling – then I totally disagree with the specialist who recommended against a brace.

You will need a brace to stabilize the knee joint and prevent its collapse during walking. There are several different brace designs that can be considered, in addition to a traditional “locked-knee” brace, and the optimal brace will depend on your overall strength, alignment issues in adjacent joints and your functional needs.

You are right that doing nothing and waiting for muscle strength to improve by regeneration does not make sense for a polio survivor. If your knee instability is a result of ligament looseness, bracing may still be needed if the quadriceps muscle was significantly affected by polio and is very weak and/or unable to be strengthened by exercise. Please see a physical medicine and rehabilitation specialist familiar with post-polio syndrome for a second opinion. ▲

SEND YOUR QUESTIONS
FOR DR. MAYNARD TO
INFO@POST-POLIO.ORG.

Promoting Positive Solutions



Stephanie T. Machell, PsyD

Dr. Stephanie T. Machell is a psychologist in independent practice in the Greater Boston area and consultant to the International Rehabilitation Center for Polio, Spaulding-Framingham Outpatient Center, Framingham, Massachusetts. Her father is a polio survivor.

QUESTION: Although all couples face challenges and adjustments due to age and health, how can people diagnosed with post-polio syndrome (PPS) make sure that the “health” issues don’t become the main focus in the relationship?

Stephanie T. Machell, PsyD:

Communication is key for keeping any relationship in balance. Even though it may seem counterintuitive, talking about health issues is the best way of keeping them in perspective and finding solutions that work for the couple.

Polio survivors’ independence is one of their greatest strengths. However, this independence can make it difficult to discuss physical changes, especially those that might mean that assistance is needed. All too often, what *isn’t* discussed takes up far more space in the relationship than what is, and health issues can easily become the “elephant in the room.” Needs that are clearly expressed can be met. Unspoken – and thus unmet – expectations create resentment that can erode the relationship.

This is especially important when issues of mobility or energy and fatigue create the need for the person with PPS to accept help from their temporarily able-bodied (TAB) partner. If this assistance involves personal care, it can affect the romance in the relationship. If the couple is aware of this and other issues that might come up, they can work together to consider whether it would be better to hire outside help, such as a personal care attendant or “bath person,” or if there are ways to use this as an opportunity to deepen their intimacy.

When the TAB partner has to take over tasks that were previously the responsibility of the partner with PPS,

the balance of the relationship shifts, and resentments can arise in either or both partners. A reexamination of tasks may be needed. Are there tasks that the polio survivor could take over that require less energy and/or mobility to complete? If possible, it may be helpful to look for outside assistance, such as hiring a housecleaner or landscaper. Taking a fresh look at tasks could turn into a positive experience, with each partner finding new interests and strengths.

The biggest concern I hear from those with PPS in terms of their relationships is how energy issues affect activities with their partners. They worry that they are holding their partner back, even when the partner protests that this is not the case. It is helpful to find ways that the person with PPS can either continue to participate in valued activities (perhaps by giving up an activity that is less essential or valued) or to find new activities that both can enjoy together while encouraging the TAB partner to continue to pursue more strenuous activities with others.

Another concern that often comes up is the fear of being or becoming a burden to those around them. Again, communication is key in addressing this, but in my experience all too many polio survivors suffer in silence with these and other fears. Simply talking with the TAB partner about this will often reduce this fear. It is a good idea for this to be an ongoing conversation, as these fears tend to recur with real or perceived changes in the polio survivor’s functioning, as well as when the TAB partner takes on any new responsibilities.

If the couple is having difficulty communicating about health concerns, or

if it seems that health concerns have already taken over the marriage and neither party can see a way to change this, it may be helpful to see a couples counselor. An objective third party can help sort out concerns and provide the freedom to bring up difficult subjects.

Finally, I strongly believe that humor, including black or gallows humor, can help in most situations. Couples that can laugh together can get through almost anything.

QUESTION: *I heard about the late effects of polio about 10 years ago. I am 65-years-old now and, admittedly, I fret about my current and future health. My children have suggested I stop reading post-polio newsletters. Do you think this is good advice?*

Rhoda Olkin, PhD:

I had to laugh – I stopped reading about breathing problems in persons with post-polio because every time I read them I had trouble breathing! But I don't mean to make light of your question, because it's a good one, one that confronts many of us.

When is information helpful and when might it be harmful? When does reading about others' experiences feel validating and when does it create fear? How do I plan realistically for my future as an older person with a disability without making myself crazy?

So I suggest that you ask yourself a few probing questions: 1. How is your health other than polio/PPS? 2. Are you someone who will fret anyway, whether you read about polio or not? 3. Is worry about the future preventing you from experiencing pleasure in the present?

What's the importance of these questions? The first one, about your general health, is important because other health issues, rather than polio per se, are probably a better predictor of future problems. Polio/PPS might make you feel tired, slow you down, even contribute to falling, but you can go about your life anyway. The second and third questions relate more to your mental and emotional health. Those need tending as much as your physical health.

I recommend two questions to use before deciding whether to read something about polio: 1. Is this information new to you? 2. If you knew this information would you need to take action?

Let's take an example. Suppose you see an article that says swimming laps improves breathing. Is this new information? It might be to you. Does the information mean you need to take action? It could – it might encourage you to go swimming, or it might mean you swim even though it fatigues you or it might lead you to increase the number of laps slowly over time. On the other hand, if you don't have access to a pool, or it hasn't stopped snowing yet or you don't even own a bathing suit, then probably the article won't be meaningful for you. Stop reading!

And if the article makes you feel guilty or creates new anxiety then *really, really* stop reading.

So next time you see an article, ask yourself those two questions. If you can't answer YES to both questions, move on. You are not required to be an expert in polio. When was the last time at a dinner party someone asked you whether there was a statistically significant correlation between swimming and breathing for people with polio/PPS? ▲



Rhoda Olkin, PhD

Dr. Rhoda Olkin is a Distinguished Professor of Clinical Psychology at the California School of Professional Psychology in San Francisco, as well as the Executive Director of the Institute on Disability and Health Psychology. She is a polio survivor and single mother of two grown children.

Send questions for Drs. Olkin and Machell to info@post-polio.org.

What Your Voice is Saying About You: Vocal Changes and the Late Effects of Polio

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Mary Spremulli, MA, CCC-SLP, is the author of *Voice Aerobics DVD*, a three-part voice and exercise workout, *Voice Aerobics Grand Slam™* and *Voice Aerobics CD Songbirds™*, speech and vocal exercise set to music (www.VoiceAerobicsDVD.com). A speech-language pathologist in private practice, she leads national seminars on medical topics and serves as a clinical consultant with Passy-Muir, Inc. (www.passy-muir.com), manufacturer of tracheostomy and ventilator swallowing and speaking valves.

Patients are often surprised when the ENT prescribes anti-acid medication for their voice changes, not realizing that our anatomic design places the opening of the esophagus and the opening to the windpipe dangerously close, and the vocal folds often receive the insult of acid which may escape from the top muscle of the esophagus.

What is a voice evaluation?

Following an ENT examination, patients are typically referred to a speech-language pathologist (voice therapist), who may conduct further instrumental examination using videostroboscopy. In videostroboscopy, a rigid scope with a camera attachment is placed through the mouth to visualize the larynx and evaluate the dynamic movement of the vocal folds.

The voice therapist will also perform a clinical evaluation of vocal function. This exam involves taking a thorough history that includes questions about how you use your voice throughout the day, medication use that may be affecting your voice – particularly inhalers and steroids – as well as any surgery you may have had on your throat or any tubes placed down your throat during surgery or in an emergency to maintain ventilation. Measurements of pitch, vocal intensity and voice duration are obtained, as well as observations of your respiratory patterns.

In addition to this history and perceptual data, the voice therapist will observe how you use your breath support and voice during conversational speech. Behaviors that can harm the vocal folds, such as frequent throat clearing or coughing, will also be noted as these common habits over time can injure the vocal folds. You will likely

also be asked about hearing, since a decline in hearing may cause difficulty in your ability to accurately judge vocal intensity in your own voice or others.

Although not directly related to voice production, the vocal folds' position at the opening of the windpipe also makes them gatekeepers against foreign bodies entering into the upper airway. Therefore, you will be asked about any problems you may be having with choking or coughing when eating or drinking. These symptoms may also be an indication that the sensation of the larynx or function of the vocal folds have declined in some way, permitting food or liquid to now enter your upper airway. A separate swallowing evaluation may be recommended.

Can voice therapy help?

Once an accurate diagnosis of your voice problem is made, treatment will likely be a combination of medical and therapeutic management. Problems requiring further medical treatment will be handled by the ENT. These may include medications to treat acid reflux, thin/thick mucus/secretions or to reduce post-nasal drainage. More serious problems, such as polyps, may require surgery.

The voice therapist will focus on vocal hygiene, which includes modification of environmental factors that may be serving as irritants to the larynx and vocal folds, instruction in methods to eliminate throat clearing and other abusive habits, and encouraging improved hydration through water intake and/or steam.

Then, much like a music teacher, the remainder of voice treatment will focus on improving functional use of your voice instrument. In the case of 

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The Monday Afternoon Mahj Jongg Ladies

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City _____ State/Province _____

Country _____ Zip/Postal Code _____

email _____

Phone (include area/country code) _____

Fax (include area/country code) _____

I am enclosing a check for \$ _____ made payable to
"Post-Polio Health International." (USD only)

Please charge \$ _____ to this credit card:

VISA MasterCard Discover

Card No. _____

Exp. Date _____

Name on Card _____

Signature _____

Send this form to: Post-Polio Health International
4207 Lindell Blvd, #110
Saint Louis, MO 63108-2930 USA
Phone: 314-534-0475
Fax: 314-534-5070

▷ someone with poor diaphragmatic breathing and respiratory muscle use due to polio and post-polio symptoms, a modified respiratory muscle training program may be recommended.

Relaxation techniques and methods to reduce muscle straining in the neck muscles and larynx may be demonstrated. Use of optimal pitch and posture and techniques for improving loudness without straining will all be emphasized. Voice treatment may be offered for six to eight visits, with development of a home exercise program to encourage strengthening of the system, preservation of muscle function and maintenance of any improvement achieved. For individuals with voice changes from PPS, conservation techniques, including use of personal voice amplification devices may also be beneficial.

Our larynx is a rather amazing organ. Our ability to use its shared functions of breathing, digestion and voice production make it clearly one of our uniquely human gifts. Throughout our lives, our voice mirrors physical growth and other body changes. It conveys our physical and emotional health, and at times, it inspires poetry. ▲

Inside *Post-Polio Health* (Vol. 26, No. 2, Spring 2010)

What Your Voice is Saying About You ... pp. 1 & 10-11 ■ **Our Journey to India ... pp. 3-5** ■
Update on PHI Research Grant ... p. 6 ■ **and more.**

Moving? Change of address? Please notify PHI before you move by calling 314-534-0475 or email info@post-polio.org. It is helpful if you tell us your old *and* new addresses. **Will you be temporarily away?** If you send us your “second” address and the dates you will be at each address, we will do our best to send the newsletter.

**WE'RE
STILL
HERE!**
October 10-16, 2010
www.post-polio.org

Post-Polio Health International announces **OCTOBER 10-16** as the week for the worldwide 2010 campaign to highlight the contributions of polio survivors and call attention to their needs.

WE'RE STILL HERE! Photo Series: Polio World, an internet-based group, is coordinating a photo contest for WE'RE STILL HERE! week in 2010. Post-polio groups are invited to coordinate a local photo contest, selecting the most impactful series of three photos that best exemplify “WE'RE STILL HERE!” Details will be available April 21.

PHI encourages you to help Rotary International to end polio now.

Watch www.post-polio.org for fact sheets and ideas for a visit to your local Rotary Club to support them in their campaign.

After 20 years of hard work, Rotary and its partners are on the brink of eradicating acute poliomyelitis, but a strong push is needed now to root it out once and for all. It is a window of opportunity of historic proportions. Help Rotary raise \$200 million to match \$355 million in challenge grants received from the Bill & Melinda Gates Foundation. The resulting \$555 million will directly support immunization campaigns in developing countries. (www.Rotary.org) ▲

