

VENTILATOR-ASSISTED LIVING

FORMERLY IVUN NEWS

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A Change of Plans

Greg Franzen, St. Louis Design Services, Chesterfield, Missouri (design@netscad.net)

It didn't seem like that bad of an idea at the time. After all, I was a good swimmer. I checked my environment. I tested my footing. I even waited 45 minutes after I ate before entering the water. It was the summer of '83, and my entire family was enjoying our annual vacation at our cottage in northern Wisconsin, relaxing in the sunshine, water skiing, fishing — the works.



Greg Franzen and client on job site.

I was sixteen and out of the corner of my eye, I was looking with great anticipation at my senior year of high school in Chesterfield, Missouri. I was captain of the varsity football team; the season was soon to start. I had thoughts of dating, Homecoming, college plans, and becoming an architect. But, oh, how quickly plans can change.

Finally, the moment came. I ran and dove off a neighbor's dock and quickly found myself under water unable to move or breathe. I had broken my neck and completely severed my spinal cord at the C3-4 level. But I didn't, I couldn't, have a proper realization of the magnitude of what happened. It soon became evident after I arrived at a hospital in Duluth, Minnesota, that I was going to be completely paralyzed from my neck down and would need to use a ventilator to breathe.

Spinal cord injuries bring an instantaneous life change. Instead of attending my senior year of high school, I spent 369 days in two different hospitals and in Rusk Rehabilitation

at the University of Missouri Hospital in Columbia, Missouri. Instead of football, Homecoming, and plans to be an architect, there were IVs, a tracheostomy and LP3 ventilator, spinal fusions, a body weight drop from 175 pounds to 105 pounds, a chin-controlled wheelchair, and on and on. Yet, the Lord has good plans for our lives even when things look darkest, when our lives dramatically change.

It's now been twenty years since those early days after my injury, and many blessings and surprises have occurred in my life. One surprise that seemed unlikely to occur was my dream of becoming an architect, but I graduated from the University of Columbia, Missouri, in 1990 with a degree in architecture.

I can't move my arms to sketch, to draw concept drawings, to build models of my client's structure, or to produce the construction documents. But this capability isn't a prerequisite for being a designer. What matters primarily is a desire to design, to be creative.

Through the use of computer technology, I'm drawing straighter lines, more accurate photo-realistic renderings, and more precise blueprints than I ever drew before my injury or even thought possible. How ironic.

Respiratory Effects of Common Medications

Charles Atwood, Jr., MD, FCCP, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania
(atwoodcw@upmc.edu)

Many types of medications can cause respiratory problems in individuals with NMD who are generally more susceptible to respiratory side effects. A good rule of thumb for use of all medications is to start at the lowest possible dose and increase the dosage slowly. This is especially true of medications that may affect breathing.

Individuals with neuromuscular diseases (NMD) are particularly vulnerable to medications that can depress ventilation. Many people are familiar with certain well-known examples of this, e.g. the depressive effect that morphine and other potent narcotics have on breathing. The effects that other medications have on breathing are less well known. An informed individual can (and should) discuss the use of these medications with his or her physician.

Opiates. Opiates are a class of drug that includes commonly used narcotic painkillers such as morphine or demerol. Drugs such as oxycodone (OxyContin) and oral morphine (MS Contin) are commonly prescribed narcotic painkillers that have been associated with respiratory depression in a small number of cases. This class also includes medications that are less commonly thought of as opiates, such as propoxyphene (Darvon), a low-potency narcotic. Other opiates, such as hydrocodone (Vicodin, Lortab) are intermediate in their potency and their degree of respiratory side effect.

Opiates have diverse effects on the brain as pain medications. Potentially, any opiate medication can decrease breathing by depressing the respiratory center. The potency of the drug, the dose, and the experience of each person with narcotics are all important factors. Individuals with NMD are more vulnerable to narcotic-related respiratory depression because their respiratory system is already impaired.

In the past some anti-diarrheal preparations contained low doses of narcotics, but this is no longer the case. From a

respiratory standpoint, the risk of toxicity from drugs such as loperamide (Imodium) and paregoric (diphenoxylate) is extremely low.

Sedatives and Hypnotics. Sedatives and hypnotics refer to medications used to facilitate sleep, muscle relaxation, and treatment of anxiety. The most commonly used medications in this category are benzodiazepines, such as Valium, Ativan, Restoril and Ambien. Benzodiazepines are central nervous system depressants. They vary somewhat in how much respiratory depression they can cause; however, in high enough doses, all may have some effect. Because these are very widely used drugs and individuals with NMD are vulnerable to depressed ventilation, caution is advised when using these medications. As in the case of opiates, patients vary widely in susceptibility to their effects. Prior experience with the drug (tolerance), the potency of the drug, and the dose taken are all important factors to consider in determining risk of breathing depression from benzodiazepines.

Barbiturates. This class of drug is used much less now than in previous decades. Benzodiazepines have largely replaced barbiturates as sedatives and hypnotics because they have a greater safety profile than barbiturates. Examples of this class include phenobarbital, secobarbital and pentobarbital. The drugs are capable of significant central nervous system depression and therefore respiratory depression. Unless used carefully under close physician supervision, they should generally be avoided by individuals with NMD. ●



Noninvasive Ventilation: A History of My Life

Jim Costello, Chairperson, Post-Polio Support Group,
Dublin, Ireland (jicos@indigo.ie, www.ppsg.ie)

As a respiratory polio survivor, I have used a ventilator in one form or another for 45 years. Initially, I used the iron lung and the cuirass (chest shell) which was powered by a Cape Engineering motor. Then I tried a Tunnicliffe jacket, like an anorak tied at the arms, neck and waist over a lightweight metal chest frame, and I also tried a rocking bed.

Currently I use the iron lung for sleeping. I am the only polio survivor in Ireland still using an iron lung.

I also now use a Nippy 1, a British pressure support ventilator (B & D Electromedical, www.bdemed.fsnet.co.uk), and recently I acquired a BREAS 403, a Swedish pressure support ventilator (BREAS Medical AB, www.breas.com). The interface for both is nasal pillows (Puritan Bennett, www.puritanbennett.com). I tried a mask but found it very claustrophobic and difficult to get a good seal.

I can walk with the assistance of a spinal brace (an adaptation of a Milwaukee brace), but have practically no use of my arms, just one hand that cannot grip to direct the computer mouse. I use my computer mainly by voice control. I need assistance with all the activities of daily living, and I set up the iron lung with various controls at my feet for the television, the radio, the heating within the lung, the telephone (using an external electric arm and headset) and other devices.

The original “fever” hospital — Cherry Orchard Hospital — which cared for me (free for people with infectious diseases in Ireland) when I originally contracted polio at age 15 continued

to care for me whenever I needed treatment for various respiratory and other illnesses. The hospital now cares for me three to five days (my choice) per week. I use the BREAS in hospital in the early evening, but I usually sleep in the iron lung there — the British alligator model. When not in hospital, I am cared for at home by my partner.

Originally, I paid for the cuirass, but since I started using the Nippy (about the last eight years), my local Health Authority has paid for all my ventilatory equipment. I can breathe on my own throughout the day either sitting or standing, but whenever I lie down or get any form of respiratory infection, I need to use a ventilator.

I keep my Nippy at home to use when resting and sleeping. When I am travelling about town, I take my BREAS with its internal and external batteries. When I am on holiday either in Ireland or abroad, I always take both ventilators in case of breakdown. I use both set on pressure control ventilation (20 bpm, 22 cm H₂O pressure).

Last year, I developed a severe mucus problem due to a sinus condition. I tried a coughing machine, but probably did not allow sufficient time to learn how to use it properly. For me, using the ventilator in combination with frog breathing clears my secretions.

Frog breathing has always helped me, especially before ventilators became small and portable. In pulmonary function tests with the spirometer, I can only blow 800 ml, but with frog breathing I can blow 2200/2400 ml. ●

Frog breathing has always helped me, especially before ventilators became small and portable. Frog breathing (glossopharyngeal breathing) involves the use of the tongue and pharyngeal muscles to add to inspiratory efforts by “gulping” boluses of air.

Ninth International Noninvasive Ventilation Conference: "From the ICU to Home"

October 23-25, 2003, Orlando, Florida

More than 230 respiratory healthcare professionals gathered to learn about the latest in noninvasive ventilation in both the acute and long-term settings. The conference also offered an opportunity for healthcare professionals to learn from and network with long-term home ventilator users. The 20 ventilator users in attendance had an opportunity to meet and discuss their challenges. The challenges fell into two categories: equipment and healthcare.

Thanks to the supporters of the ventilator users' travel scholarship fund:

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EQUIPMENT

Many polio survivors use old ventilators, some dating from the polio epidemics, which are gradually being phased out by manufacturers. How long this older equipment should be maintained and repaired by the manufacturer was the subject of discussion. The manufacturers are trying to transition people to newer, more efficient and reliable equipment, but the transition is difficult in many cases.



Dominique Robert, MD, Lyon, France, **Audrey King, MA**, and **Dina Brooks, PhD**, (both from Toronto, Ontario, Canada), discussed home care and long-term ventilator users. King and Brooks also presented findings from their research study "Ventilator User's Perspectives on Important Elements of Health-Related Quality of Life." (www.post-polio.org/QofL/FINALREPORT-Sept2002.pdf)



Laura Hershey, Denver, Colorado, a disability rights advocate and writer presented "Empowerment and Advocacy" — how Colorado's Medicaid waiver and attendant services program works. More on Laura's website: www.cripcommentary.com.

Discussion followed on whether ventilators need to be so high-tech, and why older, simpler ventilators are no longer manufactured. Is there a global marketplace for simpler equipment and technology? Is there a need in developing countries?

Backup ventilators are a must, especially when power failures occur or equipment is being repaired. Suggestions were offered for battery backup, generators, and an emergency plan.

All technology is risky. It's time to reassess all the technology and consult with rehabilitation engineers and designers.



Linda Bieniek, CEAP, Chicago, Illinois, and **Bill Miller**, Leesburg, Florida, discussing "Intimacy and Sexuality and Long-term Mechanical Ventilation." Bieniek's presentation, "Breathing Intimacy into Our Lives," is available online: www.post-polio.org/ivun/brea.html.

HEALTHCARE

Health care issues, such as access, affordability, knowledgeable healthcare professionals, are universal, but disparity in health care services exists, especially in the U.S. There is a shortage



Larry Becker, PhD, Roanoke, Virginia, and **Anita Simonds, MD, FRCP**, London, England, discussed "Transitions: From Middle Age to Elderly." Larry discussed the tipping point problem: "I expected a steady, gradual decline through my 50s and 60s, interrupted by lengthy plateaus of stability. What I got, much earlier than I expected, was a point in the decline beyond which there was a sudden, huge drop-off in functional abilities. I suspect this is characteristic of the aging process for people with major disability. Facing this is difficult, because it may force major life changes before you are ready for them . . . and before you appear, to the outside, to need to make them." (More on this session in the next issue of *Ventilator-Assisted Living*.)



Joanne Kocourek, with Brooklyn, service dog for her daughter Kristen, and **Allen Goldberg, MD**, (both from the Chicago area) discussing a solution (service dogs) to the nursing shortage. The dog was trained extensively by East Coast Assistance Dogs (www.ecad1.org) to react to ventilator alarms while Kristen, who has CCHS and mitochondrial cytopathy, sleeps. ECAD is the only assistance dog training program that is willing to work with children and teens who use ventilators.

of nursing care, especially for pediatric cases. Attendant care services enable ventilator users to live at home in the community, instead of in costlier institutional settings, yet reimbursement for such services is difficult. Legislation (in the U.S.) on such reimbursement is pending.

More centers of excellence in home mechanical ventilation are needed, such as the Northwest Assistive Breathing Center in Seattle headed by Josh Benditt, MD, to educate critical care physicians, nurses, anesthesiologists, and especially respiratory therapists about home ventilators and long-term ventilator users. Continuity of care is vital.

Home care programs need to be more consumer-oriented. ●

Audiotapes of the conference sessions are available from CME Unlimited, 800-776-5454, www.CMEunlimited.org/accp.

Assisted Living for Ventilator Users

Ashley Hoskins, Madonna Rehabilitation Hospital, Lincoln, Nebraska (www.madonna.org)

Nine years ago, a gunshot wound paralyzed Jack Coleman, now 30, at level C4. After six years of around-the-clock care at home by nurses and family, Coleman, who uses a ventilator, moved into the newly opened Thomas C. Woods III House on the grounds of Madonna Rehabilitation Hospital in Lincoln, Nebraska. "Before he moved into the house, Jack rarely got out of bed. Now, he's up every day and is very active," according to Woods House Manager, Judith Brown.



Jack Coleman

Coleman actively sought residence at Woods House because he wanted to live a more independent life.

Woods House is one of a very few assisted living facilities in the United States that offers services to ventilator users. It was created for the younger adult with

complex physical disabilities who wishes to live more independently in the community. Eighteen people, three with ventilators, have lived at Woods House since it opened in April 2000.

Coleman said that Woods House has improved his ability to direct his daily care and increase his independence. Susan Epps, Director of Community Service at Madonna, said, "Prior to coming to the program, Coleman had not been motivated to learn to be independent in mobility. Now, using a

sip-n-puff power wheelchair, he goes to the bank, main hospital and local stores by himself."

Staff members, called nursing associates, are available to help with daily care such as bathing, dressing, grooming, etc., but the tenants are involved in every process. The staff prepares the daily meals, but the tenants plan the menu. A staff member will administer medication, but only under the tenant's direction. To care for two tenants using ventilators and six others with high physical needs, staffing involves three associates during the day, three in the evening, and two at night, not including the manager.

Tenants follow their own individual schedules and plan their own daily activities. One attends a local college, others volunteer in the community. (Local transportation is provided.) Unlike other residential programs, structured daily activities are not offered.

Social interaction is a central focus at Woods House, and tenants are encouraged to dine together. A house meeting is held every month to plan group outings, to listen to concerns, and to discuss other housekeeping issues.

While some live at Woods House long-term, others see it as a transitional program. Coleman plans to move to California someday to live with family. "Woods House has given me the ability, both mentally and physically, to get out and be active without the help of other people," Coleman said. ●

For more information, contact:
Susan Epps, 402-483-9508
(www.madonna.org).

Tracheostomy Tubes

Louie Boitano, MS, RRT, Northwest Assistive Breathing Center, Pulmonary Clinic, University of Washington, Seattle, Washington (boitano@u.washington.edu)

Individuals who need long-term ventilatory support through a secure airway connection and/or cannot protect their airways because of swallowing (bulbar) problems often use tracheostomy positive pressure ventilation. People with motor neuron diseases such as ALS or muscular dystrophies often have bulbar muscle impairment and, when use of non-invasive mechanical ventilation becomes ineffective, need a tracheostomy. A tracheostomy is also the safest and most commonly used mode of airway management for infants and children with progressive muscle weakness, inability to handle secretions, central or obstructive sleep apnea, or whose airways have not developed.

There are two primary types of tracheostomy tubes: cuffless and cuffed. There are several manufacturers and a variety of brands from which to choose. The tubes can be disposable, usually made of PVC plastic or silicone, or nondisposable, made of metal, such as silver or stainless steel. Both cuffed and cuffless tracheostomy tubes are available with or without inner cannulas. Inner cannulas are available in reusable and disposable types, and are removed for periodic cleaning, or if need be, for immediate clearing of secretions blocking the airway while keeping the artificial airway in place.

The three largest U.S. manufacturers of these tubes are:

- ◆ Puritan Bennett Inc., Pleasanton, CA
www.puritanbennett.com (Shiley)
- ◆ Portex, Inc., Keene, NH
www.portexusa.com
(Portex, Bivona, Blue Line)

- ◆ Boston Medical Products, Inc.
Westborough, MA
www.bosmed.com
(Montgomery, Moore, TRACOE®)

Cuffless Tracheostomy Tubes.

Cuffless tracheostomy tubes are desirable because they allow exhaled air to pass through the upper airway enabling the individual to speak. A Passy-Muir speaking valve can be attached to the outer end of a cuffless tube to enhance speech by directing all exhaled air through the upper airway.

Most product lines have a range of standard tube diameters and lengths. These tracheostomy tubes are available with and without inner cannulas, and will support most people in need of a cuffless tracheostomy tube. For individuals with either thick or thin necks who cannot easily use the standard trach tubes, the Shiley brand offers an XLT (extended length trach) tube and Blue Line Extra Length tubes are available from Portex. Extended length tracheostomy tubes can be very helpful for people with difficult airways that are narrow, dilated, or misshapen. Both the Shiley XLT and Bivona tubes are composed of a soft, flexible silicone compound that can provide greater comfort.

Cuffed Tracheostomy Tubes.

These have a donut-shaped balloon surrounding the lower end of the tube that, when inflated, creates a seal between the tube and the trachea to protect the lungs from exposure to solids and liquids. These can be divided

Definitions

Tracheotomy. The surgical procedure in which an incision is made into the trachea (windpipe or upper airway).

Tracheostomy. The surgical opening (stoma) through which a tracheostomy tube is placed to maintain a secure airway.

Outer cannula. The outer part of the tracheostomy tube. Some tracheostomy tubes have only a single tube, others have an outer tube plus an easily removable inner tube.

Inner cannula. The inner part that can be removed for cleaning or when it gets clogged with secretions. It is held in place by either a twist lock or pressure clip fitting at the base of the flange. However, not all tracheostomy tubes have this.

Flange. A lateral neckplate that helps hold the tracheostomy tube in place. It has slits through which to thread a tie to fasten around the neck.

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Tracheostomy Tubes

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Resources

Dikeman, K.J., Kazandjian, M.S. *Communication and swallowing management of tracheostomized and ventilator-dependent adults*. San Diego, Singular Publishing Group, 1995.

Driver, L.E., Nelson, V.S., Warschausky, S.A. *The ventilator-assisted child: a practical resource guide*. San Antonio, Communication Skill Builders, 1997.

into three types: 1) high volume-low pressure, 2) low volume-high pressure and 3) foam cuffs. The Shiley and the Portex tubes use air to inflate the cuff.

High volume-low pressure cuffs are cylindrical-shaped and are used when a continuous seal between the trachea and the tube is needed to prevent aspiration of secretions or food. Examples of high volume-low pressure cuffed tracheostomy tubes are the Shiley LPC and the Portex Blue Line brands.

Low volume-high pressure cuffs are more circular-shaped and are generally used for intermittent sealing between the tube and trachea during sleep and while eating to prevent aspiration, such as the Bivona TTS™ (tight-to-shaft) model. When deflated, the cuff is flat

to the exterior surface of the tube, allowing exhaled air to pass freely between the tube and tracheal wall.

The Bivona Fome-Cuf® is a type of high volume-low pressure cuff that uses the passive expansion of a foam rubber-filled cuff to maintain a seal with the tracheal wall. The foam cuff provides a continuous seal and can be used as an alternative to air-filled cuffs when persistent air leaks occur with mechanical ventilation.

These types of cuffed tracheostomy tubes come in standard diameters and lengths, as well as extended length tubes (Shiley XLT and Portex Extra Horizontal Length Tube models).

Passy-Muir speaking valves can be used with air-filled cuffed tracheostomy tubes, but with great caution. The

No More Inner Cannulas

Jerry Daniel, Vancouver, Washington (jerrydpd2000@aol.com)

Sometimes an innovative product comes along that truly makes a difference in living at home with a ventilator. As a polio survivor, it has been my choice for more than 40 years to use a trach tube to interface with my home care ventilators. When my wife became my full-time caregiver in 2000, we both became aware of nuisance chores associated with my trach.



Suctioning does not completely remove secretions from inner cannulas. Unless you can afford disposable ones, cleaning inner cannulas has always been routine drudgery – soaking and cleaning with pipe cleaners – that hasn't changed over the years. Now I use Bivona's silicone adult single cannula uncuffed tracheostomy tubes, and cleaning inner cannulas is history.

The Bivona soft silicone trach tube has no inner cannula, and secretions do not stick to the silicone surface so it is easy to clean in a mild soapy solution. It also works well with the Portex swivel connector. The Bivona trach tube is approximately half as expensive as the metal one I used to use; we change it about once a month. Besides being less expensive, it is less work for my caregiver. That's a winning combination.

cuff **MUST ALWAYS** be deflated when the Passy-Muir valve is in place in order to allow free exhalation through the upper airway. Use of a Passy-Muir valve without deflating the cuff may cause lung injury and possible asphyxiation.

Specialty Tracheostomy Tubes.

Talking tracheostomy tubes are offered by Puritan Bennett (Phonate™), Portex (Trach Talk Blue Line®), and Boston Medical (Montgomery® VENTRACH) to enable speech with an inflated cuffed tube.

Portex Blue Line Extra Length Tubes have two independently inflated cuffs on the lower end of the extended length tube that allow flexibility in sealing the tube in alternate locations, or increasing the seal by inflating both cuffs at the same time.

Bivona Adjustable Hyperflex Tubes from Portex are soft flexible tubes with a thin spiral wire molded in the tube wall that prevents constriction with tube flex. An adjustable flange collar allows the tube length to be adjusted to a desired length. Hyperflex tubes are available with TTS or low pressure cuffs.

A new Blue Line tracheostomy tube from Portex will allow suctioning of the airway above the cuff. This feature will allow the user to remove excessive upper airway secretions that could accumulate above the cuff and flow through the stoma.

The decision to use a specific tracheostomy tube is best made with input from both the physician and the individual. Custom tracheostomy

Talking with Tracheostomy Ventilation

E.A. Oppenheimer, MD, Los Angeles, CA (eaopp@ucla.edu)

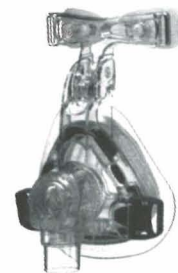
If you can currently talk, you can continue to talk with a tracheostomy. Many people believe that a tracheostomy impairs speech, but this is only true when the medical personnel involved do not know how to help a person with a tracheostomy achieve speech properly. There are a number of ways to achieve speech:

- fitting a cuffless tracheostomy tube to allow some air to leak upwards around the trach tube during the inspiratory breath, thus allowing speech as well as clearing secretions;
- using a cuffed tracheostomy tube that is not fully inflated — the so-called “minimal leak technique” that allows some air to leak upwards around the trach tube during the inspiratory breath — thus allowing speech as well as clearing secretions. (This was also particularly useful to avoid tracheal mucosal pressure injury many years ago before the low-pressure higher-volume trach cuffs were developed.)
- using a Passy-Muir tracheostomy speaking valve (www.passy-muir.com) with an uncuffed tracheostomy tube to allow smooth speech both during inspiration and expiration, and also to improve swallowing.

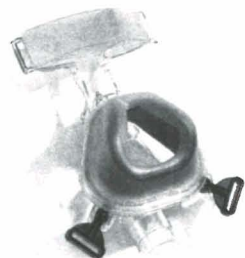
tubes can also be made, however the variety of tracheostomy tube types and lengths along with the development of more comfortable, soft tracheostomy tubes provides readily available alternatives to support a wide range of needs. ●

New Nasal Masks

■ **Mirage® Activa™** from ResMed Corp. (800-424-0737, www.resmed.com). The Activa™ uses ActiveCell™ technology that allows the mask frame to move independently of the mask cushion for better seal and less leakage. The mask has an expandable chamber that inflates when the CPAP or bilevel unit is turned on. The mask features forehead supports and quick release headgear.



Mirage® Activa™



ComfortGel™

■ **ComfortGel™** from Respironics, Inc. (800-345-6443, www.respironics.com). The blue gel first used in the Profile® Lite is combined with the dual-layer cushion design found in other Comfort Series masks. The inner gel layer can be easily customized for optimum fit. "Ball-and-socket" headgear provides freer movement and easy mask removal. A built-in "silent" exhalation valve evenly disperses air for quiet operation. 360° swivel for maximum tubing movement.

■ **DeVilbiss® FlexAire™** from Sunrise Medical (800-333-4000, www.sunrisemedical.com). Foam-filled air bladder cushion has a pump that allows the user to get a soft, comfortable, and leak-free seal. Quick release allows user to detach mask from soft Breathe-O-Prene® forehead pad without removing headgear. 360° swivel for maximum tubing movement.



DeVilbiss®
FlexAire™

■ **HC405** from Fisher & Paykel Healthcare (800-446-3908, www.fphcare.com). Features include the FlexiFit™ Cushion Technology with silicone seal and foam cushion for a comfortable fit, an air diffuser, moving front swivel, forehead rest, and glider mechanism for freer movement.

Greg uses three different ventilators: the LP3, LP4 and PVV. He says, "They are almost museum pieces, but I find them to be more durable and quiet than the ventilators introduced in the last 15 years. I use an uncuffed trach tube with an inner cannula."

A Change of Plans

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I use a high-end computer workstation with high-end architectural software packages such as AutoCad and MicroStation to accomplish these tasks. To input, I use a mouthstick which I find far faster than voice input. I use a pencil or pen held in my mouth for space relationship analysis sketches that are used to simplify and amplify each project's design problems and solutions. And I have the opportunity to trudge around construction sites to assess progress and quality.

It's a bit odd and even funny at times for someone with a high cervical lesion and with hands that make good paperweights to enter another architect's

office or to meet with a client for the first time. Some people still think one's arms and legs need to move to create something desirable and perfect.

Currently, my primary role in architecture is the design of custom homes and physical therapy clinics in a variety of places: Saint Louis, California and even China. I enjoy the design process and the ability to bring the architectural dreams of clients into a structural reality. It's terrific to be able to work in the profession I always hoped to work in. It seemed as though this would not be possible, but faith in the Lord has made all the difference in my life. ●

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The mission of Post-Polio Health International, including International Ventilator Users Network ... is to enhance the lives and independence of polio survivors and home mechanical ventilator users by promoting education, networking, and advocacy among these individuals and health care providers.

HOW TO CONTACT US ...

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CALENDAR

MARCH 27–APRIL 2, 2004.

Miami Ventilation Assisted Children's Center (VACC)
Camp. Miami, Florida. Contact Bela Florentin,
305-862-8222, bela.florentin@mch.com.

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EDITOR

Judith R. Fischer, MSLS

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Sheryl Rudy

EXECUTIVE DIRECTOR

Joan L. Headley, MS

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