

From Henry's Desk:

Polio, Technology, and Me by Henry Holland

My life would have ended in April 1967 if it were not for medical technology. Every day my life is extended by medical technology. We all live with technology that is potentially life saving on a daily basis. I am a member of a church with 2200 members. There has been recent discussion at my church to have on premises a cardiac defibrillator. Like many large churches our church has a medical protocol if someone becomes acutely ill or faints. Our membership includes many physicians of various specialties and several are in attendance at almost every service. Thus a defibrillator might save a life even before the rescue squad arrives. In almost every area of medicine, technology makes diagnosis easier and treatment more effective.

When I had polio in 1950, I did not require an iron lung. Those whose lives were saved by iron lungs were benefited by the earliest of respiratory technology. However in April 1967, my life was saved by a surgical tracheostomy and medical technology. A Bird respirator breathed air and oxygen into my lungs for several weeks before I recovered from that bout of pneumonia. Over the next four years I developed recurrent episodes of respiratory failure, which required hospitalizations and painful intubations. Finally on January 15, 1970 (33 years ago today) I was advised by my pulmonary physician that I would need a permanent tracheostomy. At the time I believed this recommendation was a death sentence. Even as a young physician I did not know anyone who had any quality of life depending on a tracheostomy and a ventilator machine. The tracheostomy was performed while I was conscious. After the actual tracheostomy had been accomplished, the nasotracheal tube was removed and the tracheostomy tube was quickly inserted in that new hole in my neck. The advantages of the tracheostomy tube were several. I could move my head freely and there was much less pain. I could talk when the cuff (a small balloon surrounding the distal end of the trach tube) was deflated. The cuff was inflated to prevent air from leaking past the trach tube. I still have that same tracheostomy hole in my neck and still depend on mechanical technology and electricity for daily life.

The technology has greatly improved as my own dependence has increased. In December 1971, my pulmonary physician convinced Blue Cross Blue Shield (my health insurance carrier at the time) that I would require fewer less expensive hospitalizations if I had a mechanical ventilator at home. As a result I initially had an electric air compressor to produce air for a Bird respirator. This was all set up at bedside. At night I connected the tube from the ventilator to my trach tube. For the first time in several years I was able to sleep at home and feel rested in the morning. As it was proven that this system was therapeutic, my physician and the insurance carrier were able to provide me with a Bennett MA-1 ventilator at home. This was the Mercedes of ventilators at the time. That machine kept me alive for almost twenty years and never failed me. It was a large machine, much like a medium size rolling refrigerator. It was noisier than the machines of today. The inhalation and exhalation of that machine were very soothing. That machine brought about a type of resurrection in my life. I regained a lot of energy. My breathing during the day when I was off of the ventilator was much stronger and better sustained and I began to practice my specialty of medicine with enthusiasm and gratitude.

My daily routine from early 1972 to 1991 was the same. I got up from a restful sleep, disconnected my trach tube from the ventilator, removed the night time medal trach tube and replaced it with a lighter plastic trach tube which I plugged. When the tube was plugged I could breathe by it with ease despite the presence of a foreign body in my neck. I could talk normally, and a turtleneck shirt would easily hide the tracheostomy and trach tube. I became a daily wearer of turtlenecks and discarded neckties forever. I still wore a leg brace on my right leg, but I walked where I wanted to go and climbed steps if necessary. My own church did not get an elevator until 1985 and I climbed those church steps every Sunday. At night I removed the plastic trach tube and replaced it with the medal trach tube, which I hooked up to the ventilator tube before retiring for the night. I improved so much that I did not need to inflate the cuff on the trach tube at night.

During the 1980's I met a man who had depended on an iron lung since he had polio in the 1950s. He spent more time in the iron lung than out of the iron lung. He had his iron lung at home and his wife was his main caregiver. He lived over thirty years because of that iron lung. That lung worked for him and he was not interested in trying new technology. I realized that I was essentially the same even though I was using newer technology in comparison to him. However, Post-Polio Syndrome began to hit me in 1990 and I had to try new technology or simply decline even more.

In 1991 I finally realized that my old Bennett MA-1 ventilator was outdated. I was provided with a new Puritan Bennett ventilator. This machine was much smaller, about the size of a large car battery or small cooler. However this newer technology could do all of the functions of my old Bennett MA-1 ventilator. All ventilators have alarms to alert someone when something is wrong. The alarm can go off when there is a disconnection of tubing, blockage of tubing, leaking air, low pressure, high pressure, and loss of power. One gets accustomed to these alarms as well as being grateful that this technology works. I have never progressed to the newer plastic trach tubes for nighttime use. I still use a medal trach tube at night. This same tube has lasted for thirty-three years. It is medal and that is the reason. In 1991 and because of PPS I began to use my ventilator during the times I was not at work. I used my vent by attaching a mouthpiece to the intake tube. Thus I could lie prone on my bed, use the vent, rest my muscles, talk on the phone, watch TV or read. However I never had to take my vent to work.

In 1996, the debilitating fatigue of PPS forced me to give up a hospital office location and to discontinue a full time practice. After a prolonged rest, I was able to resume a limited part time practice in a home office. I still did not find it necessary to carry a portable ventilator whenever I left home. I gradually noticed that my respiratory muscles were getting weaker and weaker as each year passed. I also noticed that my muscle power was gradually weakening as each year passed. Also my oxygen saturation on room air was declining with time. This past June my pulmonary physician convinced me that I should use my ventilator all of the time. If I did not, I would run the risk of right heart failure and increasing edema.

Thus, after some exchange of medical information, my home health company provided me with a second ventilator. Beginning in 1999 I was supplied with a Life Care PLV – 100 ventilator. This vent is smaller but weighs twenty-eight pounds. In June 2002 I was supplied with a second PLV – 100 which I place on the floorboard of my scooter. I also carry a thirty plus pound battery on the same scooter floorboard. This rechargeable battery provides power to my ventilator while I move about on my scooter. All of this new equipment has paradoxically given me more freedom. I can now go to church,

meetings, restaurants, shopping malls and almost anywhere without laboring for enough air. I am more alert and probably in a better frame of mind. However, I can do none of this moving about with this rolling life support system without the help of my wife and partner in this life. She helps me get dressed for every day. She assists me in bathing. She loads and unloads my scooter in my van. She transfers the battery and vent from my scooter to my van whenever we go anywhere and she repeats this process in reverse when we arrive at our destination. The technology is almost magical but human help is still required.

The future technology is promising. I may soon get a newer portable ventilator that has proven itself in Europe. This vent is smaller than the PLV – 100. It weighs only fifteen pounds and has a rechargeable internal battery that will provide power for ten hours. The internal battery can be recharged while the vent is running on house current. This vent can be powered in a car with a cigarette lighter plug in. This vent does everything that the old Bennett MA-1 could do. It is ten inches high, ten inches wide, eight inches in depth and fifteen pounds in weight. This newer vent requires less electric power to operate and may even be powered for sixty hours by an external battery. The new technology is simply amazing and has come a long way from the iron lung of just fifty years ago.

This article may be of little interest to most readers unless you have some pulmonary problem as a result of polio or PPS. However, nearly every polio survivor with PPS is using some type of technology that helps make your life more fulfilling and safer. Even with all of the technology that not only improves our quality of life, and in my case actually sustains my life, most of us look to words of spiritual sustenance. I look to words written over two thousand years ago in the ancient text of Isaiah. These words proclaim so much hope:

Don't you know? Haven't you heard?
The Lord is the everlasting God; he created all the world
 He never grows tired or weary.
 No one understands his thoughts.
 He strengthens those who are weak and tired.
Even those who are young grow weak; young people can fall exhausted.
But those who trust in the Lord for help will find their strength renewed.
 They will rise on wings like eagles; they will run and not get weary;
 they will walk and not grow weak. (Isaiah 40:28-31)