

balance

What it's all about.

BC Association for Individualized Technology and Supports for People with Disabilities

ISSN 1916-7709

March 2012

Technology has Enriched and Expanded My Life



By Robb Dunfield: I remember the first time I used an environmental control 33 years ago, after suffering a severe spinal cord injury (SCI) that left me a C2 ventilator-dependant quadriplegic.

Lying in bed at George Pearson Centre, I used the technology to turn my TV and lights off and on from my bedside. I thought a small miracle had happened—I gained back a piece of my independence. It was the catalyst for believing that technology would allow me to live an enriched quality of life and that so much more could be possible in my future.

Fast forward to today, and I've been married for 20 years to an amazing woman, Sarah, and have two incredible 15-year-old twin daughters, Emma and Sophia. I live in my own home in Crescent

Beach, BC, and work full time for the Rick Hansen Foundation (RHF) as a Senior Coordinator for the Ambassador/Speakers Program.

To get to this place, I've learned that everyone needs different levels of support to reach their dreams. I feel fortunate to have had many organizations and individuals who believed in me and helped me achieve what most people thought was impossible.

Through technology provided by TIL, I am able to access my computer and phone system which allows me to communicate from my home office to the 200-plus people across Canada who are involved in the RHF Ambassador Program.

These volunteer speakers, who represent the diverse SCI community, engage audiences to create awareness of what someone with a disability can achieve, if given the opportunity.

They are also trained to share RHF's mission of working together towards an inclusive and accessible world, where everyone

can fully participate in society, no matter what obstacles they face.

I've not only been the beneficiary of adaptive devices created by TIL, but I've also been the recipient of the amazing work of PROP. I was one of the first individuals to move into my own home and receive the much-needed support of the respiratory program. PROP gives me the opportunity to live a full, independent life in a safe environment because

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Humidifiers and Water: A Love- Hate relationship

When clients use Bipaps to assist with breathing, they sometimes find the air to be too dry and bothersome. So, people often attach humidifiers to the Bipap to help moisten the air being delivered to the user.

Water is, of course, essential for the humidifier's function. It is added to a chamber, where it is heated and turned into steam that moistens the air running through the tube to the client.

However, it's very important to remember that electronics and water don't mix well at all.

If the Bipap and humidifier are picked up, when water is in the chamber, often water flows back through the chamber and tubes, and into the Bipap! PROP has had to replace several motors and circuit boards as result.

So, whenever you need to transport your Bipap and humidifier, **be sure to empty the humidifier chamber first.**

THANKS SO MUCH!
YOUR FRIENDLY BIOMED



Technology Has Enriched, continued from previous page

of the continuous tech support and regular follow-ups from the Respiratory Therapists.

The work I've done for RHF in the past 12 years has been possible because of the technology that's available to me.

At the Foundation, I've witnessed many equally exciting initiatives and innovations that are improving the lives of people with SCI and other disabilities.

My latest project supports the 25th Anniversary activities of Rick Hansen's Man In Motion World Tour. Currently, the 12,000-kilometre, nine-month Rick Hansen Relay is retracing the route of the original Tour and honouring 7,000 Canadians who are making a difference in their local commu-

nities. The Relay will culminate on May 22 in Vancouver (25 years to the day since Rick returned home from his 26-month Tour).

The Relay is celebrating not only what has been done in the past 25 years, but also what can happen when the "many in motion" work to build more inclusive and accessible communities.

I'm convinced that, as Rick says, our best work lies ahead of us. I hope that everyone will come out and cheer the Relay as it comes through your community.

For more information, visit www.rickhansenrelay.com. We look forward to having all of you join us in this once-in-a-lifetime experience. ●



Ask the BioMed

Backup power and travelling with your Bipap by Wayne Pogue

During a power outage, how do I keep my Bipap running?

Bipaps are a necessity for many of our clients. Their main weakness is they aren't manufactured with a battery installed to make them more portable or useful during an interruption in power.

If the power fails and you want to continue using your Bipap, there are battery backup systems available at your local hardware store that will keep your Bipap running long enough to get through a short power outage—or at least long enough to put your emergency preparedness plan into action. That plan will include getting to a pre-determined location that has emergency power backup. It is a good idea to discuss your plan with this location beforehand so they can be prepared for your arrival.

What kind of battery backup system does my Bipap require?

Your Bipap will work with any backup power system. A common one is Canadian Tire's Motomaster Eliminator series backup power system that comes in a range of sizes. If you need help determining which one will work for you, please contact the PROP Biomedical Engineering department and we will be happy to assist you in making that decision.

Should I use my humidifier while running from a backup power system?

No. You must always remove the humidifier, before running your Bipap using a backup power system! This is essential for two reasons. First, the humidifier will be damaged beyond

repair, if it is powered by one of the these backup power systems. Second, you will likely be moving your Bipap around a lot during transport to a location with emergency power. You might spill water from the humidifier back into the Bipap which will damage your Bipap.

I need to use my Bipap when I fly. Can I take my backup power system onboard the airplane?

According to the International Air Transport Association (IATA), you will have to discuss this option with the airline. Because battery backup systems use non-spillable gel batteries, there shouldn't be a problem. But, before you purchase your tickets, get written permission from the airline to bring your backup power system with you.

You will have to remove the humidifier from the Bipap to protect it from damage and that water doesn't flow into the Bipap during takeoff, landing or turbulence.

Do I need to remove the humidifier if travelling by car?

Yes, the humidifier will still need to be removed, as powering it with your backup power system will damage it. Also, there is a lot of movement in a car, and water will likely flow back into the Bipap, possibly causing a lot of damage.

I want to go camping on the weekend with my Bipap and need backup power. What do you recommend?

You have a couple of options. Purchase a backup power system large enough to power your Bipap throughout the entire night, then

leave it plugged in to charge at the campground office during the day. Of course, you will need permission from campground operators before leaving for your camping trip. You will not be able to use your humidifier, if you use this option.

Or you can purchase multiple backup power systems—one for each night—so you don't need to recharge to make it through the weekend. This option can be very expensive and you will not be able to use your humidifier for the weekend.

Finally, you can find a campground that has electrical outlets available and use their power, and a long extension cord, to run your Bipap and Humidifier for the weekend, without worrying about running out of power. This is a great option because you will be able to use a humidifier and you don't need to purchase any backup power systems. Most provincial campgrounds do have campsites with electricity available.

If you have any questions regarding backup power systems or travelling with your Bipap, please don't hesitate to contact the PROP Biomedical Engineering department at 1-866-326-1245 or prop@bcits.org.



A Primer for Our Ventilated Clients

Are You Ready To Leave The House? by Valerie Shaver



Do you have your emergency bag with you? When was the last time it was checked to make sure everything you need is in the bag and all the equipment is working? Do you or your care workers know what to do if you accidentally tear a hole in your ventilator circuit, lose a connector down a storm drain or your ventilator loses power?

PROP staff can talk you through many different and difficult situations, but we can't help if you haven't brought the proper supplies or what you have brought isn't working properly. A few regular

checks on your emergency bag and equipment could save your life.

You can't pack everything you may need, but a few key items, and checking your equipment is in good working order, could save you from a real emergency. Here are some important tips from PROP.

Manual Resuscitator/Manual Bagger This is the most important thing to have. Close off the end of the bagger by blocking the hose or pinching the flex tube, then squeeze the bag. The bag should be very difficult to squeeze, if the end is blocked properly. If not, the bagger may have a faulty or torn duckbill valve, the parts may not have been assembled properly after the last cleaning, your flex tube is worn and has holes, or some other problem.

Ventilator Battery Although your ventilator is usually plugged into your power chair, you should check the internal battery on the ventilator itself. If your power chair malfunctions, you need to know your ventilator will still work.

LegendAire When your ventilator is unplugged from a power source, it should alarm. You then press the alarm silence button. Does the battery icon appear at the top of the screen and show you how much battery life you have; for example, 100% or 85%? Don't leave home if the battery is too low or less than 50%. Your ventilator will constantly alarm when it reaches a critical level (25-30%) and will not operate when fully discharged. The manufacturer suggests a full 8-12 hour recharge between uses.

LTV		
LED Color	Battery Level	Approx. Battery Time
Green	Internal battery is acceptable	60 minutes
Yellow	Internal battery level is low	30 minutes
Red	Internal battery is critically low	7 minutes
TOTAL BATTERY TIME		1 Hour 37 minutes

For other ventilators, please refer to your operating manual.

Suction Machine Is the battery charged? Does it hold a charge? If you have charged the battery, but it won't hold a charge, please contact PROP to have it replaced. Before you leave home, test the suction machine. Turn on the suction machine and close off the end or bend the connecting tubing. The suction machine should increase in intensity, trying to overcome the blockage. You should see the pressure rise, if the machine is equipped with a pressure gauge. If not, check to ensure that a cracked lid or container isn't creating a leak. Make sure the lid is on tight and all connections are tight. Is the bacteria filter wet? A wet filter will not allow suction.

Some Handy Extra Supplies

Duct tape or waterproof tape: this can fix a tear or rip in your circuit, fix a crack in your suction container and other uses. But make sure you order another circuit from PROP as soon as you return home.

Extra tubes or connectors: if you have room in your bag, pack an extra flex hose or tubing connector.

You can't pack everything you may need, but a few key items, and checking your equipment is in good working order, could save you from a real emergency.

Trach Tubes: Make sure you have your size and one smaller. The smaller size will be easier to insert, if your normal size is difficult to get in due to swelling or stress.

It is critical to test your internal battery on a monthly basis, so you are aware of the approximate backup battery time.

Make sure you review what is in your Emergency Bag and that all personal care attendants know how to check the equipment.

Below is a general list of Emergency Supplies that should accompany a trached and ventilated client on outings, as provided in our Trach Vent Course.

Please feel free to customize this to your needs and make sure the equipment and contents are checked on a regular basis.

Emergency Equipment and Supplies

- Manual resuscitator/Ambu bag with flex hose, trach adapter and mask. Test units regularly.
- Spare trach tube with ties, actual client size and one smaller than client size.
- Emergency circuit.
- Tissues or swabs.
- Disposable gloves.
- Suction catheters, client-specific.
- Saline instillations (if required and ordered by a doctor).
- Suction machine, fully charged.
- List of emergency telephone numbers, especially family members and contact numbers.
- Saline container and saline.

Keep An Emergency Bag

A backpack or tote bag can be used to hold these emergency supplies.

This should be checked daily to make sure all equipment and supplies are in good working order and fully stocked.

Keep the emergency bag in full view in your room at all times for easy access or on the back of the wheelchair.

NB: Caregivers should check backpack and supplies daily. ●

balance

BALANCE is published three times a year by the BC Association for Individualized Technology and Supports for People with Disabilities (BCITS).

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BC Association for Individualized Technology and Supports for People with Disabilities is the home of Technology for Independent Living (TIL) and the Provincial Respiratory Outreach Program (PROP).

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TIL is funded by the Province of British Columbia Ministry of Health and Direct Access to Gaming. PROP is funded by the Province of British Columbia Ministry of Health through Vancouver Coastal Health.

Publications Mail Agreement No.
41682526

Supplies, Supplies, Supplies by Elaina Zebroff



In the last Balance, I wrote an article strongly encouraging all clients to have "back up" supplies for their specific respiratory care needs.

For example, back up bi-level masks, back up hoses, filters for your bi-level or ventilator, ventilator circuits and tracheostomy tubes. It is a new year which is an opportunity to get organized and take stock of what supplies you may or may not have.

PROP provides a wide variety of equipment and respiratory supplies to our clients. We understand clients have different needs and therefore supplies used throughout the year will vary, sometimes considerably. There are, however, a few things that all clients can do to help keep costs under control and we're asking for your participation to keep supply costs balanced.

Here are our recommendations to make ordering supplies easier, more convenient and more cost effective.

- Become familiar with the names of supplies. All supplies are sent to your home with a packing slip and on this slip you can find the ID code, product name and cost. Please keep this packing slip for your records. It will make ordering in the future easier.
- Did you know that you can email a request for supplies? Email us at prop@bcits.org.
- Please, please, please organize your supply needs, so you are only placing orders 3-4 times a calendar year. It is very expensive to ship supplies. With your help and planning ahead, we can all prevent excess shipping costs.
- If you have an RT or Biomed coming to your house, ask them to bring any supplies you may need.

- Tracheostomy/ventilator clients are encouraged to have about 3 months of supplies in the home. This means ordering should occur 3-4 times a year.
- Bi-level clients are encouraged to have a spare mask, hose and filters in the home.

Having supplies in the home is essential for day-to-day living, as well as proper emergency planning. The next time a PROP Respiratory Therapist is at your home, they will go over your last calendar year of supplies focusing on: the amount of supplies ordered, frequency of shipments and cost of supplies. This is a great opportunity for you to discuss your supply needs and concerns with a PROP RT.

As always, PROP looks to our clients for feedback, concerns and ideas. Please share your supply inquiries with us. ●

Yes, I Accept Your Invitation To Join BCITS



The BC Association for Individualized Technology and Supports for People with Disabilities (BCITS)
Home of Provincial Respiratory Outreach Program (PROP) & Technology for Independent Living (TIL)

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Please mail this form along with any applicable membership fees to BCITS - The Home Of PROP and TIL, #103-366 E. Kent Ave S., Vancouver, BC V5X 4N6

Cleaning the Inner Cannula

BY MIRANDA WHITELEY, BSc. RRT This is a task that is done at least once daily, every day of the year because a clean, clear tube is the only way to get the full breath from a ventilator into the lungs. A blocked inner cannula can lead to complications with your ability to breathe. So, this is an extremely important step in your day-to-day routine.

Here is a brief refresher on what PROP currently recommends for this cleaning process.

The procedure is slightly different depending on what type of tracheostomy tube you have. A plastic tracheostomy tube and a metal Jackson tracheostomy tube have different cleaning recommendations.

For a metal Jackson trach tube

1. Remove the inner cannula and place it in a container of saline.
2. Place a clean spare inner cannula into the tracheostomy tube.
3. Allow the inner cannula to soak in the saline for 10-15 minutes to loosen any hardened secretions.
4. Using the Tracheostomy cleaning brush, scrub the inside of the inner cannula clearing all mucus and secretions.
5. Rinse the inner cannula in fresh saline and allow it to air dry before storing it in a clean container.

For a plastic trach tube

1. Remove the inner cannula and place in a container of 3% hydrogen peroxide.
2. Place a clean spare inner cannula into the tracheostomy tube.

3. Allow the inner cannula to soak in the hydrogen peroxide for 10-15 minutes.
4. Using the Tracheostomy cleaning brush, scrub the inside of the inner cannula clearing all mucus and secretions.
5. Rinse the inner cannula in saline and allow it to air dry before storing it in a clean container.

For a detailed look at Stoma and Tracheostomy Cleaning recommendations, please visit <http://www.bcits.org/videoevents.htm> to see our video "Trach Care and Cleaning Inner Cannula". ●



Our Newest Team Member

Hi Everyone! My name is Esther Khor and I am a Registered Respiratory Therapist who graduated from SAIT in Alberta. I worked at the Rocky General Hospital, before moving down to beautiful BC. Since then, my fiancée and I got married and we are happily working in BC. We can't say we miss shovelling snow 4 months of the year.



Since joining PROP, I have seen that it is supported by many dedicated people from all disciplines. This has definitely inspired me to put my best foot forward and I am looking forward to meeting the rest of the PROP's clients. ●

Did You Know?

In 1799, President George Washington developed pneumonia. He was treated by bleeding with leeches. This weakened his immune system, so he could not fight the disease. Today, it is believed that he developed an acute streptococcal infection of the larynx which caused swelling in the larynx leading to his death. A tracheostomy could have saved his life, but the technique was new and considered unsafe by elder physicians.

Have you ever wondered what a ventilator for an elephant would look like? An elephant by the name of Mr.



Tusko needed surgery to remove an infected tusk. Mallard Medical, Inc. built a custom anesthesia ventilator for Mr. Tusko and participated in the surgery. The Elephant Ventilator was designed for patients up to 18,000 lbs. (9 tons). Mr. Tusko later became a father to Sumudra, a 286-pound baby. The mother's name was Rose-tu. For the full story, visit <http://www.mallardmedical.net/elephsurg.shtml>. ●



The Life-Changing Diaphragmatic Pacer by Judi Schulz

In 2008, Alvin Schulz broke his C2 vertebrae, suffered a spinal cord injury and became ventilator-dependent. As he progressed through his hospital stay and his rehabilitation at GF Strong, he underwent the process to see if he qualified for a diaphragmatic pacer.

How a Pacer Works

In 2009, Alvin had the laparoscopic surgery and became part of a pilot study. His diaphragm was mapped for the best placements of the electrodes and four were placed, along with a ground wire. He has an exit site on the side of his chest for the wires to attach to a 6"x 4"x 2" pacer box. The long length of the wire allows great flexibility on where to

carry the pacer, so it can be kept out of sight.

There are so many benefits to having this procedure. Ventilators can be noisy. Without this noise, it's easier to have a conversation. Also, the breaths that Alvin takes are more like an "able-bodied" person, rather than having breath "pushed" in.

His lungs have been very healthy and it seems he has fewer secretions compared to his time on a ventilator.

One concern that all ventilator users have is disconnection. With the pacer, if there is a disconnection it can only happen where the wire connects to the exit site or the pacer itself.

It's also easier for Alvin to get dressed and transferred to the chair. We don't worry about pulling on hoses or breathing independently in uncomfortable positions.

From Ventilator to Pacer

The transition from ventilator to pacer didn't happen in a day. The diaphragm is a muscle that is designed to be used 24 hours a day, seven days a week. Within eighteen hours of being on a ventilator, the diaphragm will change from a type 1 muscle to a type 2 which means the diaphragm needs to be reconditioned.

To build the muscle's strength up again, the person practices breathing by the pulsations sent to the diaphragm from the pacer. It works just like nerve pulses. If Alvin needs an extra breath, he augments his breathing rate with his neck muscles.

At first, his diaphragm could only handle short periods, but as it grew

The diaphragmatic pacer system (DPS) relies on an intact nerve to the diaphragm. So, patients with diaphragm



paralysis cannot be helped with the pacer. People with high spinal cord injury, on the other hand, do have an intact nerve. It's these patients, who have a normal nerve and diaphragm, but cannot activate the nerve and muscle, who will benefit. Patients with high spinal cord injury are therefore the best candidates. The DPS has also been used for people with ALS, with benefits in selected patients. In Canada, the DPS can be placed in high spinal cord injured patients as a research protocol because full FDA approval has not been given. ALS patients are not offered DPS in Canada.

Dr. Road, PROP Consulting Respirologist

in strength, its ability to function grew exponentially. After seven weeks, he was using his pacer 24/7.

Ease of Use

It was easy to learn how to use the pacer. The electrodes are checked with each breath to make sure wire connections are good. And, if anything is wrong, a loud beep occurs.

The pacer runs on a specially designed C battery that lasts approximately two-and-a-half weeks.

Alvin was the sixth Canadian to have this operation. He will soon be coming up to his third year on the pacer. It has dramatically changed his quality of life for the better. ●