IR AND BLUETOOTH: OPTIONS THAT CAN LEAD TO GREATER INDEPENDENCE

For many people who utilize high-end complex rehabilitation mobility products, access to their everyday environment can be very frustrating and limited by their disability. If someone does not have, or is in the process of, losing function of their upper or lower extremities, activities the rest of the population consider common, can be out of reach. This can lead to a feeling of helplessness and frustration. That, along with feelings of loss of independence and control, may cause the person to either lash out at those around them or lose the motivation to fully participate in daily life.

Something as simple as controlling the mouse on a computer, answering a cell phone, changing the channel on a television, or controlling the temperature in a room can be unattainable without utilizing available assistive technology options. Anyone who works in the complex mobility field is focused on the consumer's abilities, needs and goals to achieve independence. That is why, as a group of professionals, we need to remember and explore what other assistive technologies can benefit the people we are working with on a daily basis.

Each of the main power wheelchair manufacturers have systems available that can be added to a power base in order to control Bluetooth and infrared (IR) technology. Some manufacturers may make use of radio frequency, so be sure you are aware of what type of technology a manufacturer utilizes to support access to the environment. Also, be aware of whether these features are standard or optional (additional cost).

Unfortunately, this type of enabling technology, despite promoting independence and inclusion, is underutilized. People may not know it is available or even that it may exist in the wheelchair electronics they already own. One reason for this may be a misconception that it takes too long or is too complicated to program.

As professionals, we need to educate the consumer on what is available and what features could benefit them. It is important to explain to the consumer that the set-up may take some time to program to their exact needs. In addition, consumers and their care providers need to become comfortable with the use of this technology and take responsibility for possible future programming.

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BLUETOOTH:

Pairing the power wheelchair and an external Bluetooth capable device can provide access for communication, computer use and control of other “smart” devices in a variety of environments. The driving method can now control the paired device. The evaluation should include a thorough exploration of the consumer's needs to determine if Bluetooth technology is required. Specific Bluetooth features vary between electronics systems. This needs to be reviewed to help the consumer make an informed decision about which power wheelchair manufacturer provides the best technology match to meet their needs.

When it comes to Bluetooth capabilities, there are several factors to consider. Personally, I have found that speech generating devices (SGD) are often times the most temperamental devices to pair with Bluetooth technology. Some SGD manufacturers have a Bluetooth chip in their devices which is only usable with the equipment they sell. If Bluetooth can be paired, the power wheelchair driving method now acts as mouse input on the SGD. This allows the client to use the power wheelchair input device to control the mouse movements of the cursor on the SGD screen. The SGD includes strategies to send mouse clicks to choose desired vocabulary.
If Bluetooth cannot be paired, the SGD can instead be interfaced with the wheelchair electronics, but this requires additional equipment to be purchased. Doing so will allow the input device to be utilized as a means to access the SGD by sending switch signals for scanning or to control an external mouse emulator. Also, keep in mind that if you are programming the power wheelchair driving method to be used to access the SGD, the consumer needs a back-up access method. In other words, if the power wheelchair is being repaired or not functioning properly, the consumer should still be able to access their SGD from a manual wheelchair or other base.

The Bluetooth technology offered on wheelchairs today empowers the consumer to access laptop and desktop computers (Mac and Windows) and some tablets with Windows-based and some Android operating systems (see Picture 1). Typically, once the Bluetooth chip on the wheelchair has been initially paired to the computer, the wheelchair user only has to pull up to that device, go to the access screen for Bluetooth on the wheelchair display, and the system will pair with the computer automatically. In addition, many Bluetooth options allow the user to control the mouse on the screen. The consumer can move the mouse to the icon or application they desire, provide a mouse click command and take control. The mouse click command options vary by electronic systems. A click may be executed by a quick hit of a directional switch or use of an external switch. Dwell software programs, which can often be downloaded for free on the internet, enable various mouse clicks (i.e. left, right, double click) by “dwelling” over the desired selection. With either option for mouse clicks, Bluetooth is a great option to provide full access to computer functions which will ultimately lead to greater independence.

Most smartphones can be paired with a power wheelchair with Bluetooth capability. If a power wheelchair manufacturer does not offer Bluetooth as an option, then an Interfacing module and a Tecla Shield can be operated together to allow access to many different Bluetooth devices. Access to smart phones with Bluetooth is in its infancy, therefore access will depend on the manufacturer of the smartphone. iPhones and iPads have two options: VoiceOver and Switch Control. Most Android devices offer Bluetooth access through the ClickToPhone app, although some Android devices include a mouse function. Please note that the ClickToPhone app is not free. Typically the procedure to pair the power wheelchair to a cell phone is as easy as pairing to a computer. An auxiliary profile is set up on the power wheelchair and then the Bluetooth chip is activated through programming. Once the power wheelchair Bluetooth chip is discoverable/active, specific steps to pair with a cell phone should be followed. These steps vary between power wheelchair manufacturers. This process is similar to how you would pair a Bluetooth headset with your cell phone. The more you perform the activity, the easier it will become.

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INFRARED:

Infrared, which is a signal frequency utilized by some wheelchair manufacturers, can also open access to the person’s environment and allow a greater level of independence. This type of independence can make the difference between needing a caregiver present constantly or being able to remain alone for periods of time.

Simple activities such as changing the channel or controlling the volume on a television or stereo can enhance someone’s life tremendously (see Picture 2). Sometimes, being able to do something that is seemingly minor can truly make a large difference in a consumer’s life. I have had the experience of setting up a television or a stereo to the infrared transmitter on a consumer’s wheelchair. This experience has allowed me to see the elation in their face when they realize that they now have another activity they can achieve independently. Keep in mind that not all remote controls utilize infrared signals. Satellite and cable TV companies often use both radio frequency and infrared signals in one remote control. The easiest way that you can identify whether a company is using a radio frequency or an infrared signal is to press a button with the remote pointed at your cell phone camera and look at the cell phone screen. If you can see the transmitter light up, then infrared is being utilized (you cannot see infrared with the naked eye, but you can see it on a cell phone camera). Another way to identify which technology is being used is to go into an adjoining room and press a button on the remote. If the television or device changes channel, then radio frequency is being applied, as infrared requires line of sight to function.

Programming infrared signals in wheelchair electronics is much easier now than ever before. With universal remote technology set up inside most IR transmitting modules on wheelchairs, it is as simple as following the programming steps on the wheelchair electronics display, pointing a remote at the display and pressing the buttons on the remote control. Does it take time? Yes, but it is worth it for the individual whose life was just enhanced. Furthermore, they will gain an unforgettable experience with you and therefore will consider working with you again in the future. The extra effort makes a big difference.

Other appliances that can potentially be controlled by infrared technology include thermostats, stereos, individual heat sources and air conditioners, televisions, cable/satellite boxes, sound systems, lights, doors and many other devices found around the house. Visit the website http://www.Insteon.com or http://www.smarthome.com in order to look at the capabilities of infrared systems and how you can meet the needs of each individual you work with.

CONCLUSION:

Meeting the consumer’s everyday needs beyond the wheelchair can seem daunting when you already have a significant work load. Just keep in mind that maximizing a consumer’s independence is something that they will never forget. This type of professional effort will keep them coming back year after year and allow you to feel satisfied that you are making a difference in the lives of consumers.

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