I used to think Merriam Webster Dictionary was named after an old, famous woman. Merriam-Webster is the last names of two men who are the founders of the dictionary we know today. This is the first time Merriam-Webster disappointed me. The second time I was disappointed was when looking up the definition of collaborate. According to Merriam-Webster, the definition of collaborate is “to work jointly with others or together especially in an intellectual endeavor.” This definition of collaborate does not give enough justice to the collaboration, although surely intellectual, going on at the Richmond VAMC through the Assistive Technology Program.

The Assistive Technology (AT) Program allows multiple professional disciplines to work together to help veterans improve their quality of life and be able to do activities they want and need to do. These professional disciplines within Physical Medicine and Rehabilitation Service (PM&RS) include occupational therapy, physical therapy, recreational therapy, kinesiotherapy, speech and language pathology, physicians, and rehabilitation engineering. The PM&RS staff members were asked to provide examples of collaboration between professions which improved veteran quality of care and outcomes. Several important areas stood out when reviewing the examples provided, including self-care, communication, mobility, and leisure participation.

Self-care is a daily set of activities that can sometimes be taken for granted. Completing basic self-care activities can be challenging for many veterans with disabilities and/or illnesses. Self-care consists of feeding, bathing, grooming, dressing, toileting, and any other activity to take care of oneself. Physical strength, endurance, flexibility, and coordination are only some of the requirements to complete these basic self-care activities. An occupational therapist collaborated with an AT rehabilitation engineer to help a veteran with ALS be able to apply deodorant on his own. This veteran was experiencing upper extremity weakness making it difficult to hold and apply deodorant. The occupational therapist and rehabilitation engineer collaborated on an adaptive deodorant applicator idea. They created a long handled deodorant applicator with a custom 3-D printed deodorant holder on one end and a universal cuff adaptive handle on the other. Telehealth services were used with the veteran to ensure the applicator worked well and met the veteran’s needs.

Communication is another important area of life in which assistive technology collaboration can improve the life of a veteran. Occupational therapists, physical therapists, and AT rehabilitation engineers have brainstormed together on numerous occasions to promote independence with communication for veterans experiencing access problems. These examples include a 3-D printed pen holder, adaptive keyboard assessment and training to return to work, one handed smart phone use with adjusted settings, and adaptive call bell for hospital beds, such as a head switch. In addition, eye gaze communication systems for veterans with difficulty speaking require the collaboration between speech and language pathology, occupational therapy, physical therapy, and rehabilitation engineering to obtain the best outcome for specific veteran needs. The AT team can also provide comprehensive application searches, for instance a search for a calendar app that allows for an analog clock display and the ability to import pictures in place of text. Unfortunately, after a thorough and exhaustive search, it was determined there are not readily available apps for people with aphasia.

On the other hand, sometimes assistive technology can help us determine more about a veteran’s abilities and even surprise us. A good example of this was when an occupational therapist worked with a psychologist on a switch-adapted phone for a veteran with cognitive impairments. (cont. page 2)
RESNA 2019 Summary

The Rehabilitation Engineering and Assistive Technology Association (RESNA) 2019 annual conference took place from June 24-28 in Toronto, Canada. This year’s conference was held in conjunction with Rehab Week 2019 which brought together six different conferences in the field of rehabilitation technology.

The RESNA portion of the conference contributed many presentations on assistive technology research and clinical practice. Topics included Adaptive videogaming, Assistive Technology in education, wheelchair performance standards, posture care management, international collaboration, cellphone alternative access, electronic aids to daily living, and telehealth service delivery.

Collaboration between Professions, cont.

This veteran was able to use the switch-adapted, phone to call the Dallas Cowboys hotline to determine when the next game was playing. It appeared this veteran was more cognitively intact than previously believed!

The next area to discuss is mobility, particularly operating and navigating a manual or power wheelchair. Physical therapists, occupational therapists, and AT rehabilitation engineers regularly work together on wheelchair positioning needs and alternative drive control options to enhance a veteran’s ability to independently operate a manual or power wheelchair. Custom joysticks for a power wheelchair can be designed to fit the specific needs of a veteran. The goal of all these professions is to promote functional mobility independence, despite physical or cognitive challenges.

Leisure and social participation is an extensive area in which AT collaboration can advance the quality of life for a veteran. Recreational therapists and occupational therapists work with AT rehabilitation engineers for adaptive gaming systems for veterans with limited physical function, for instance from tetraplegia or a stroke. Game controllers have been adapted for one handed use or truly any function the veteran has voluntary control over. 3D printing can help with designing custom pieces to work with already available game controls. Consulting with AT can even help introduce you as a professional to new equipment and devices already existing. Additionally, AT collaboration has helped veterans with limited movement be able to use switch access to change the channel on the television, another daily task of life sometimes overlooked.

Some of the examples obtained for this article do not nicely fit into a category, so I will call this “other” instances of collaboration. Rehabilitation engineering and occupational therapy worked together for medical intervention ideas as well, including a way to change pads on an alpha stim unit and to use a Myoelectric arm more efficiently. Physicians and AT rehab engineers have even joined up to determine an adaptive device for a PM&RS resident with a hand deficiency be able to use an ultrasound machine for invasive procedures!

Most of these examples took multiple trials and errors before arriving at the best solution. However, the veterans in these stories received the quality of care and dedication to their goals they deserved. Collaboration is important because each profession brings a different and enlightening perspective on the same situation and issue. Without this type of welcomed collaboration, we would be missing a piece to the puzzle. Collaboration with other professions allows the veteran to receive a holistic assessment and well-rounded outcome. Challenges veterans are experiencing can potentially be resolved with an AT consult and combined creative ideas. The veteran benefits when we as professionals are open to new and innovative ideas, especially from another professional with a varying education background and viewpoint.

A special thank you to all the PM&R staff members who contributed veteran stories for this newsletter.
Lance Knadler is a 29 year old Marine Corp Veteran who was involved in a car accident resulting in a C5 ASIA B injury. He served in the Marines for 6 years. He is married and has a 9 year old daughter. He loves playing video games with one of his goals being able to get back into e-gaming.

Tell us about your experience with the Assistive Technology Program (Speech, driving rehab, OT/PT/RT).

My experience with Assistive Technology has been fantastic! It has helped me in every aspect in life.

What challenges were you having that had you referred to the program?

I was having trouble breathing, my ability and confidence to drive had gone, I was also having problems with the strength in my upper body.

Who did you see?

Driving Rehab: David, OT: Tressa and Heather, PT: Meg and Ted. AT: Seth and John

What device/program did you get?

Speech I received 2 devices. (1) to help with my lung capacity (2) to help with my diaphragm. OT I received (1) a bioness for my Hands, (2) I received 2 braces for night time use to help prevent my fingers from becoming completely closed. PT I have an FES Cycle and a Standing frame. AT I have an XBOX adaptive gaming controller.

How has the device changed your life or impacted your life?

It changed my life completely. It’s giving me the chance to gain my independence back.

What activities (things) are you doing now that you were not able to do before?

I’m able to now add more weight to my legs with the standing frame. I’m able to play video games with my Daughter. I can grab and hold items with my hands.

Would you say your quality of life has improved?

Yes, my quality of life has improved and is continuing to improve every day.

Is there anything we have not covered that you would like to include?

No, everything has been covered. I’d just like to say that I am completely satisfied with everyone who has helped me through out this journey with the Assistive Technology Program.

Veteran’s Story…Lance Knadler
Laser cutting acrylic trays to create all the components for both accessories. The final products fit perfectly into the existing ADA Lap system and could be easily swapped in and out for other accessories.

Brian Burkhardt has been working on a new and improved adaptive call bell system using an off-the-shelf wireless doorbell, wiring it with a 3.5mm jack for switch access, and designing a compact, durable, intuitive casing for the system. He added in a 3D printed translucent port so that a user can see visual feedback when the doorbell is working. He also included a mounting hole to hang this from a bedside or wheelchair. This innovation is cheaper and better than purchasing existing call bells that has already been switch-adapted. The next iteration will be even easier to assemble so that frontline clinicians can utilize this device without any soldering experience.

John Miller worked on two adaptive sports projects proposed by recreational therapist Nicole Shuman. The ADA Lap system is an off-the-shelf wheelchair tray and accessory system that empowers wheelchair users to easily install a post in their seat that can hold a tray, camera mount, umbrella, and more in front of the user. Nicole asked for two compatible accessories that could hold bocce balls and a bowling ball. John designed and assembled various components in a CAD software program, then used a combination of 3D printing brackets and laser cutting acrylic trays to create all the components for both accessories. The final products fit perfectly into the existing ADA Lap system and could be easily swapped in and out for other accessories.