

News Release

Editors: Valley high school student and inventor will present his award-winning medical device at the prestigious Barrow Grand Rounds Friday, June 22. Barrow doctors and residents will be in attendance.

The presentation is at 8 a.m. and Ben and physicians will be available for interviews afterward.

Location: Goldman Auditorium at St. Joseph's Barrow Neurological Institute, 350 W. Thomas Rd. Call 602-818-5179 when you arrive on campus.

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Barrow Physicians Inspire Student's Award-Winning Innovation Designed to Help ALS Patients

A Valley high school student has won a prestigious award in a national robotics competition for an innovation that was inspired and encouraged by physicians at Barrow Neurological Institute at St. Joseph's Hospital and Medical Center as a way to help individuals with amyotrophic lateral sclerosis (ALS) communicate.

Ben Mattinson, a senior at Phoenix Country Day School, was awarded the FIRST (For Inspiration and Recognition of Science and Technology) Future Innovator Award for the EyeWriterB 2.1, an eye-tracking system that allows patients with ALS to use their eye movements to control a computer. FIRST is a national organization founded to promote interest and participation in science and technology.

The inspiration for Ben's project came from Dr. Alan Pitt, a Barrow neuroradiologist whose mother became a quadriplegic following a horse-riding accident. Discouraged by the lack of affordable and effective adaptive equipment on the market, Dr. Pitt's research led him to a video of the EyeWriter, a similar device designed to help a famous graffiti artist with ALS draw again.

"I saw a video for the EyeWriter and wanted to take it to the next level," says Dr. Pitt. "I knew that there were high school robotics competitions, so I put two and two together. Rather than have talented students design robots to destroy, could we have them compete to build and modify inexpensive, technology-rich devices to help the disabled?"

Dr. Pitt connected with Rob Mattinson, Ben's father and a volunteer coach for the school's FIRST Robotics Team. Ben was intrigued by the idea. "I've always had a thing for applying technology to helping people and I thought that this was a good way to do that while also learning more about computer science."

Building on the existing device, Ben built a prototype of the EyeWriterB 2.1 and met with Suraj Muley, MD and director of Barrow's Neuromuscular Program, for feedback and to learn more about the disease. ALS is a neuromuscular disease that eventually leads to loss of function in the arms and legs and often to a complete loss of speech, resulting in almost no means of communication. However, ALS never affects eye movements.

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"Ben's device would allow patients with ALS to communicate with their families and caregivers through eye movements when they have no other means to do so. It would certainly improve quality of life in patients with advanced ALS," says Dr. Muley.

Ben spent most of last summer learning about computer programming and refining his device, which allows users to control most aspects of the computer, from typing to accessing the Internet. It works by using a camera and LED lights to calculate where on the screen the user is looking. The user can "type" on a virtual on-screen keyboard by holding their eye over a particular key to select it. The device also includes word prediction software, similar to that used on many smart phones, to speed up typing.

As part of his award, Ben will meet with a venture capitalist to discuss his invention and possible business applications. Barrow physicians believe it has potential to help patients with other diseases and disorders. Additionally, Pitt hopes Ben will be an example for other student-led patient-care innovations.

Ultimately, Ben's goal is to create a lower-cost product that is accessible to more people, especially in developing countries. "There are commercially available devices that do this, but they are expensive, costing thousands of dollars," says Ben. "My goal was to develop a comparable product at a tenth of the cost."

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