

Seven Questions

Mobile Advances in Identifying Head Trauma

Lt. Col. Chessley Atchison is the program manager for the Combat Casualty Care Research Program. He has been working on new ways to quickly identify stress and injury using hand-held devices.

1. How would you describe the Defense Automated Neurobehavioral Assessment (DANA)?

DANA is a sophisticated mobile app that can be used to assist in the detection of ... concussion, combat-related psychological distress [and] deployment-related exhaustion, and to determine “cognitive efficiency,” an indication of someone’s cognitive functioning based on how fast and accurately someone responds to tasks presented on the screen of a smartphone or tablet.

2. How will DANA allow medical personnel to detect psychological health conditions?

It has multiple tests on it to include something as simple as reaction time. It also has some psychological questions that it can ask to look at the stress of the soldier ... and how he’s coping. It also has some questions [and] weeds out the [soldiers] that aren’t having problems. ... The fact that it’s an app that can be on a hand-held device—our soldiers are very, very comfortable with hand-held devices—and thus it’s not something that’s groundbreaking technology; it’s application of old tests that have been around for a long time, but we’re able to put it directly in the hands of the medic and the soldiers. A lot of these tests have been in the literature for years, and so basically all that is done is they’ve taken those tests and adapted them to a handheld.

3. Why will DANA be significant to active duty soldiers?

Why it will be significant is because you can take capability that’s normally in a clinic and you can put it on the field as far forward as you can put it. These tests may help medical personnel determine the functional cognitive readiness of their troops. This is especially useful downrange following a blast or extended combat.

4. How will the mobility of DANA help health care providers on the battlefield?

Mobility is the awesome thing about it because you can go as far forward with it on the battlefield as we push it or we take it.

DANA can be useful for assisting in the determination of initial impairment due to combat-related incidents or ongoing stress as well as assisting in determining readiness for return to duty. DANA was developed to be simple to use for all types of providers, easy to interpret, and reliable and valid for determin-

ing how service members are performing cognitively, as compared to prior testing. Since it is lightweight and portable, medical personnel may carry DANA with them on missions or use it in the rear.

5. Will DANA help with additional research of traumatic brain injuries, post-traumatic stress disorder and other combat-related injuries?

Absolutely. In fact, I personally am designing studies right now from Fort Benning [Ga.] and additional locations, ... and this will probably be for sure one of the devices we will include in those studies.

When you get to the point where we are now, it’s more of a validation-of-how-do-you-use-it thing. ... The “how you use it” is who do you give it to, how do they do this, and how do they transfer when they get back. OK, so you have a handheld, so how do you download this information and how do you transfer that information to the health care provider? So those are the kinds of steps we’re working on now.

6. How is the research and development of DANA funded?

The Navy and the Army have both funded the development of the DANA. The Army RIF BAA [Rapid Innovation Fund Broad Agency Announcement]

funded the work to help DANA receive [Food and Drug Administration] clearance. We are currently seeking funding to determine the ability of medics to use DANA in the field to help determine concussion and recovery and for commanders’ use to determine overall cognitive status.

7. How many cases of traumatic brain injury are diagnosed each year in the military?

During the wars in Iraq and Afghanistan, estimates suggested up to 20 percent of service members were concussed at least one time. I think that answer ... was based on one of the years DVBIC had done a review—and that’s Defense and Veterans Brain Injury Center. They did a retrospective epidemiological study and saw this, and so that’s why it’s important on the battlefield. We’re also looking at traumatic brain injury, though, in garrison, because the vast majority of traumatic brain injuries occur in “combat basketball,” if you will. The soldiers love to have fun, they love to play sports, and then they do stuff, and so we’re also looking at how we can apply this technology both in theater but also in the garrison environment.

—Jennifer Benitz



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