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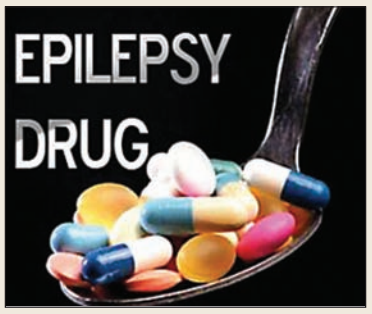

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The Presidential Election and the Health Care Stakes: Where Do the Candidates Stand?

BY GINA SHAW

What will the 2012 Presidential election mean for health care in general, and for neurologists in particular? *Neurology Today* outlines the two candidates' positions on various health care-related issues, and spoke with two experts about how this election might reshape the health policy landscape going forward.

PRESIDENT BARACK OBAMA MITT ROMNEY

THE AFFORDABLE CARE ACT

If President Barack Obama is re-elected, this will obviously mean that all of the provisions of the *Affordable Care Act* (ACA), upheld by the US Supreme Court this past summer, will continue to be implemented. Some of these provisions are already in place, and others are scheduled to go into effect by 2014:

- An individual mandate to carry health insurance or face a tax penalty
- A requirement that insurers allow young people up to age 26 to remain on their parents' health insurance
- A ban on lifetime caps for health insurance coverage
- A ban on denying coverage for pre-existing conditions, and on charging higher premiums based on things such as health status and gender

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TWO DISTINCT RNA PROFILES IN EARLY STAGE MS SHOW DIFFERENCES IN DISEASE ACTIVITY

BY JAMIE TALAN

A team of scientists at the Brigham and Women's Hospital and Harvard Medical School has identified two distinct RNA transcriptional profiles in patients in the early stages of multiple sclerosis (MS) and has evidence that the subsets could identify differences in disease activity.

Philip L. De Jager, MD PhD, associate professor of neurology at Harvard Medical School, and colleagues wanted to address the age-old question of heterogeneity in the disease — the variability in symptoms, brain scans, disease progression, and treatment response. At present, there is no way to predict the trajectory of the disease in any individual patient, Dr. De Jager pointed out.

Dr. De Jager and his colleagues wanted to know whether studying the RNA profile in frozen peripheral blood samples from untreated patients and those on several

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PERIODICALS

Military Expands Brain Injury Blast Detector Pilot to More Troops

BY KURT SAMSON

A wristwatch-sized device that can measure the sudden pressure and acceleration changes caused by an explosive blast is being used with US soldiers in Afghanistan to help field medics to identify soldiers who show no outward signs of brain damage but have been exposed to blasts.

Developed for the Defense Advanced Research Projects Agency (DARPA) by researchers at Rochester Institute of Technology (RIT) in New York, the Blast Gauge can help detect possible traumatic brain injury (TBI) in soldiers with no overt signs of damage.

DARPA first tested the Blast Gauge in a field trial among 900 active combat soldiers and almost 6,500 active duty personnel during its second phase. Encouraged by the results, the military is now expanding testing to between some 11,000 service members in Afghanistan.

TBIs are considered the "signature" wound among US soldiers in the Middle East, largely due to the increased use

THE BLAST GAUGE is attached at the neck, shoulder and the base of the skull. It measures the form of the blast wave, its duration, abrupt changes in air pressure, and head axis acceleration.

by insurgents. Milder TBI is often invisible but can cause a range of physical, cognitive, social, emotional, and

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Blast Injury

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ARTICLE IN BRIEF

US soldiers in Afghanistan are wearing an experimental device that helps measure the form and extent of blast wave exposure and injury. The goal is to help field medics identify soldiers who show no outward signs of brain damage but have been exposed to blast waves.

behavioral problems over time. More than 33,000 TBIs have been diagnosed in US soldiers since 2000.

HOW THE GAUGE WORKS

Blast gauges are attached at the neck, shoulder and the base of the skull. They measure the form of the blast wave, its duration, abrupt changes in air pressure, and head axis acceleration. In the event of an explosion, combatants or medics can depress a recessed button.

After performing an assessment, medical personnel can then detach the gauges and download information using a USB port to create a more detailed diagram of blast characteristics using an Excel spreadsheet. The data are then analyzed using a special built-in algorithm program that determines if the exposure was potentially dangerous, triggering a flashing red, yellow, or green light.

The green light means the level of exposure was not sufficient to have caused any head/brain trauma that might require medical attention. If the light is yellow or red, it signals the need for field triage. The specific data on blast wave characteristics can help neurologists better ascertain any possible harm to a combatant and signal the need for further monitoring or treatment.

> 'The most important feature is that they allow for immediate triage for milder brain trauma, while at the same time providing data that can be used for scientific purposes, once larger data sets are available.'

"The gauge provides doctors with information on what their patient actually experienced during an exposure." said DARPA program manager Jeffrey Rogers, PhD, who has overseen the development of the gauge.

"This is an entirely new capability and has already helped medics and doctors in treating injured combatants," said David A. Borkholder, PhD, associate professor of electrical and microsystem engineering at RIT, who built the device with a team of colleagues.

Individual exposure is not easily determined because the impact and pressure wave characteristics of each blast involve several factors, including the type of explosive, proximity and location to a blast, and where the explosion occurred — in an open or a more closed area, he explained.

FALSE POSITIVES LOW

Dr. Rogers emphasized that the gauge is an environmental monitor rather than a diagnostic device. He said it took less than a year and four generations to develop the version currently in the field.

"The first generation was pilot tested in members of the US Army Special Forces, and in July of last year was tested among members of the US Army Special Operations Command," he told *Neurology Today* in a telephone interview.

He noted that a number of considerations had to be taken into account, including the effectiveness of the units during wide fluctuations in temperature and whether they would burden or interfere with the men or women wearing them in combat situations. But the pilot programs and field tests have demonstrated the devices are viable.

An estimated 11,000 combatants are now wearing the units — those at highest risk of being exposed to blasts.

"Feedback from the field is encouraging. In terms of usability and on the ground there have been no complaints," he said. "Weight is not a problem and the rate of false alarms is below one percent."

Take a brief tour here of the National Intrepid Center of Excellence, a national center for the treatment of TBI and psychological health for veterans, which opened in 2010: **http://bit.ly/P06k8n.**

The value is that neurologists can use the data downloaded from the devices to evaluate real exposure to pressure waves — the first time quantitative data will be available for evaluating the relationship between blast waves and milder brain injury.

Many soldiers do not report exposure if they are not incapacitated, in order to remain with their unit and continue operations.

"But we have found some who have had more exposure than they thought," he said. "The most important feature is that they allow for immediate triage for milder brain trauma, while at the same time providing data that can be used for scientific purposes, once larger data sets are available."

OUTCOMES RESEARCH

Yelena Bogdanova, PhD, assistant professor of psychiatry at Boston University School of Medicine and the VA Boston Healthcare System, said that developing methods and measures to predict outcomes following blast-induced TBIs can help in prioritizing cognitive rehabilitation and information from the gauges might prove useful for future research.

"While little is known about the pattern of recovery following TBI, the available evidence suggests similar profiles of impairment in cognitive functioning and similar post-concussion symptoms associated with blast and non-blast TBI," said Dr. Bogdanova, who holds doctorates in both behavioral neuroscience and clinical neuropsychology. [Dr. Bogdanova has done extensive research on the impact of different types of blast injury on TBI and recovery.] •

FOR FURTHER READING:

- *Neurology Today* archive on traumatic brain injury: **http://bit.ly/SpzL2J.**

THE CHALLENGES OF RECOVERY FROM DEPLOYMENT-RELATED TBI

Yelena Bogdanova, PhD, assistant professor of psychiatry, Boston University School of Medicine and the VA Boston Healthcare System, said available evidence suggests similar impairments in cognitive functioning and post-concussion symptoms associated with blast and non-blast traumatic blast injury.

The most common impairments are cognitive deficits in the domain of executive functioning (planning, goal setting, cognitive flexibility and behavioral control), complex attention, and learning and memory, she told *Neurology Today*.

"But there are other deployment-related factors that may complicate and extend the course of natural recovery in returning veterans with TBI, such as prolonged stress exposure and related psychiatric sequelae."

However, post-traumatic stress disorder (PTSD) may exacerbate cognitive symptoms of TBI and compound functional difficulties, she noted, and there is ample evidence that stress adversely impacts outcomes.

"Patients under high levels of stress at the time of brain injury typically have worse recovery, and the presence of stress-related symptomatology early following mild TBI has been identified as an important predictor of poor long-term outcome," she said.

"The majority of interventions for TBI are designed for rehabilitating moderate to severe injuries, but there is only limited evidence that these approaches are useful for treating patients with milder TBIs," Dr. Bogdanova noted.

"Nonetheless, some preliminary evidence points to their efficacy in individuals, specifically executive function and problem solving. Although limited, these results are encouraging, and suggest that further studies of executive function interventions in veterans with blast-related TBI and federally funded clinical trials currently underway are warranted."

At a 2010 consensus conference on cognitive rehabilitation, convened by the Defense Centers of Excellence for Psychological Health and TBI and the Defense and Veterans Brain Injury Center, recommended that cognitive assessment and rehabilitation for mild TBI should take place in combination with a complete mental health assessment, and mental health treatment as indicated.

"Neurologists can play a key by providing interdisciplinary and coordinated care to ensure optimal delivery of cognitive rehabilitation programs and quality care for veterans with milder TBI and associated comorbidities," she said.

—*Kurt Samson*