Sunday, October 05, 2008

Local Neuro-Imaging Research Has Potential To Save Taxpayer Money, Cut Social Costs

By Autumn Gray

What if there were a way to not only see inside the criminal mind but also pinpoint why that person behaves as he does — and then stop the illegal behavior?

Or if mental illness could be detected and treated at onset?

How much would society benefit if education improved because teachers better understood how the brain learns?

No doubt all would have a huge impact on the common welfare. But there's another byproduct — staggering savings to the tune of thousands of dollars annually for every individual nationwide.

The research to make all of the above possible is being done right here in New Mexico by scientists at The Mind Research Network. Located in the 52,000-square-foot Nancy and Pete Domenici Hall on the University of New Mexico campus, the MRN (formerly known as The Mind Institute) was created in 1998 with $10 million in congressional appropriations for the study of mental illness, specifically schizophrenia. One of Domenici's daughters suffers from the disorder.

But the network has expanded. In addition to focusing on neuroimaging and genetics to help prevent disease, it has also generated programs with great social implications in the areas of crime, education and health.

Evaluating Psychopaths

The societal cost of crime in the United States is $1.3 trillion annually, according to the MRN. That translates into more than $4,400 per year for every resident of New Mexico, which ranks third in the National Crime Index, the network reports.

Some of the most dangerous criminals, and those likely to be repeat offenders upon release from incarceration, are those classified as psychopaths — about 15 percent to 20 percent of the inmate population, says Dr. Kent Kiehl, director of the Mobile Imaging Core and Clinical Cognitive Neuroscience at the MRN, and associate professor of psychology and neuroscience at UNM.

"These people lack empathy, guilt and remorse. They are the high-risk inmates," 80 percent of whom will recidivate violently after being released, committing four times as many crimes as those who don't exhibit psychopathic behavior, he says.

To help assess the mechanics behind the personality and behavior disorder, Kiehl developed a mobile magnetic resonance imaging system that is taken into prisons to evaluate the brain images of criminals and gang leaders. He has the green light from Gov. Bill Richardson to work in all state prisons, and he hopes to scan about 1,000 inmates annually.

"It's the only one designed to do functional imaging, and it's the fastest MRI ever to be out in a trailer," Kiehl says, adding that the machine has been in use about a year and a half.

Ideally, by taking pictures of the working brains of inmates, Kiehl can map out brain function and see how it responds to various treatments.

"They don't want to be there," Kiehl says of the inmate volunteers. "So if I can do a treatment that will help them, they're all for it. ...

"If I can show the research stopped one murder from happening, that would be a huge benefit."

EARLY Program
Dr. Steven Adelsheim wants to cut off the potential for violence even earlier by researching mental illness in youths that could be precursors to psychopathic behavior.

The director of UNM's Center for Rural and Community Behavioral Health at UNM has started a program to research the early signs of mental health problems in young people. It's called the EARLY program, or Early Assessment and Resource Linkage for Youth.

"We need to find young people (ages 12-25) who may be in the early phases of hearing voices or are starting to worry about people talking about them, or are getting confused about what's happening in their head or not doing a good job of self-care," Adelsheim said.

The focus initially will be in the ZIP codes linked to the areas around Albuquerque, Highland and Valley high schools, he said.

For more information or to see if you or your child could benefit from volunteering to be part of the research, call 888-663-2759 or visit www.earlyprogram.org.

Patients chosen for the study will receive a state-of-the-art psychological assessment and brain scanning, medication as appropriate, support around school or work, and possibly referrals to other types of support.

More people nationwide suffer from either schizophrenia or depression than from either Alzheimer's or breast cancer, the MRN reports. The cost of schizophrenia alone consumes about $63 billion per year for direct treatment, societal and family costs, according to information provided by the MRN.

Education Methods
For young people with apparently normal brain function, the challenge is often how to maximize their learning potential.

To that end, Dr. Mike Weisend, director of the EEG (electroencephalogram) program at the MRN, is conducting learning and memory research to see how brains change as a result of acquiring information.

The practical side is this: Teachers can be helped to streamline their teaching methods according to learning patterns and individual behaviors discovered through brain imaging. Secondly, a better-educated community inevitably leads to a stronger local economy.

So Weisend this year partnered with New Mexico Mesa, a nonprofit that helps to advance math, science and engineering in schools, to develop a program called SCORE, or Scientific Collaboration on Research and Education. So far, it has operated in the form of free seminars for anyone who is interested, including local teachers, principals and students.

"There's a very targeted commercial that's on TV and radio about how the educational system in America and especially in Albuquerque, based on college entrance exam scores, is just not up to snuff compared to other states and other countries. I got tired of being an armchair quarterback and decided to get off the couch and do something about it," he said.

Seminars held in the spring focused on everything from using brain imaging to understand brain activity, to discovering how people learn, to seeing the behavioral results of brain malfunctions.

Future seminars are scheduled for Feb. 19, March 19 and April 16. For details, call Dolores González, director of external affairs at The Mind Research Network, at 925-4747.

The MRN also conducts research in the areas of addiction, traumatic brain injury, neurodevelopment, neurogenetics and more, with the goal of improving prevention, diagnosis, treatment and ultimately cures. Visit www.mrn.org for more information.