tion while driving but did not see a stop sign might have had a negative hallucination, or might simply have been daydreaming, or not paying attention.

To test the hypotheses that negative hallucinations exist, and that they are caused by over-activity of particular brain regions, we performed **functional magnetic resonance imaging (fMRI)** scans on PD patients who were taking medications and thought to have negative hallucinations. Subjects were scanned while taking their medications and exposed to their spouse or a spouse stand-in, who was part of a group of three, the two others being strangers. Each read a standardized script and the patient, was asked to describe the scene visually and to recall what was said. Only 10% of subjects with reported negative hallucinations had them during the study, so that only 4 subjects could be used. Each one of these showed increased fMRI activity in the supplementary visual cortex of Brodmann's area 121, suggesting an overactivity, as hypothesized.

While this result concerns only 4 subjects, and requires confirmation, it nevertheless should be sufficiently convincing that skeptical readers will at least consider the possibility that negative hallucinations exist. The implications of this finding are widespread.

Happy April Fool's.

– Joseph H. Friedman, MD

Disclosure of Financial Interests

Joseph Friedman, MD, and spouse/significant other. Consultant: Acadia Pharmacy, Ovation, Transoral; Grant Research Support: Cephalon, Teva, Novartis, Boehringer-Ingelheim, Sepracor, Glaxo; Speakers' Bureau: Astra Zeneca, Teva, Novartis, Boehringer-Ingelheim, GlaxoAcadia, Sepracor, Glaxo Smith Kline, Neurogen, and EMD Serono.

Conflicts: In addition to the potential conflicts posed by my ties to industry that are listed, during the years 2001-2009 I was a paid consultant for: Eli Lilly, Bristol Myers Squibb, Janssen, Ovation, Pfizer, makers of each of the atypicals in use or being tested.

Oh, How the Mighty Have Fallen

Stroke remains one of the major causes of disability and death in the United States. It is a terrifyingly sudden and unwelcome visitation. It swiftly deprives its victims of control over limb muscles and even consciousness. Speech is commonly impaired during the acute phases of the illness. Patients with stroke often identify their disease as an attack from the outside rather than a festering, internal impairment. Historically, stroke has frequently been considered by its victims as a punishment rather than a human affliction provoked by natural causes.

The United States Public Health Service estimates that about 795,000 Americans experience a new or recurrent stroke each year. In 2001 the Service initiated a broad surveillance program, enlisting 195 hospitals in Massachusetts, Georgia, North Carolina and Illinois to track the prevalence, demographic features, secular trends and risk factors preceding the disease. And in the course of these studies, some 56,969 patients with stroke, 18 years or older, were studied.

What findings did this surveillance program generate?

First, the most obvious: Stroke remains a major impediment to the health of Americans. Second, it continues to be an affliction primarily of the elderly with a median age of onset at 72 years. It is slightly more common in women (53.3%) but only because more women than men survive to live beyond the age of 70.

What prior risk factors increase the likelihood of stroke? A history of hypertension (high blood pressure) is the most predictive risk factor, encountered in 73% of stroke victims. Other past events that increase the likelihood of future stroke include a previous or transient stroke (31%), a history of diabetes mellitus (28%), a history of coronary artery heart disease (28%), a history of cigarette smoking (18%) or a history of atrial fibrillation (15%). The typical stroke patient in this study carried between two and three of these risk factors; and about one-fifth of this population of close to 57,000 patients were burdened with four or more of these risk factors.

Stroke, of course, is not a single disease but many etiologically unrelated disorders involving, in one way or another, the arterial blood vessels leading to or within the brain. The commonest pathologic lesion causing stroke is a functional narrowing or occlusion of a major cerebral artery thus depriving brain tissue of its needed oxygen-carrying blood supply. About 56% of patients fell within this diagnostic category. An additional 22% had an insufficient blood supply but only transiently so (called a transient ischemic attack or TIA) with a strong likelihood of functional recovery. About 14% had a massive intracranial hemorrhage not caused by any preceding head injury. This disorder has sometimes been called apoplexy. The remaining 8% were clinically ill-defined.

In decades past, a diagnosis of stroke carried a dismal prognosis with hospitals providing little beyond supervised bed-rest, supportive therapy and diligent nursing care. Patients lingered for weeks and were prone to develop secondary pneumonia, other internal infections and bed sores. Inpatient medicine has advanced considerably since then and stroke patients now are routinely treated to prevent these complications. Furthermore, advanced anti-thrombotic therapies are employed to reverse some of the cerebral damage. And rehabilitation services, including speech therapy, occupational therapy and physiotherapy are diligently prescribed to speed the recovery of the patients and to hasten their resumption of a full life in the community.

And the outcome of all of these medical, nursing and rehabilitative interventions? The in-hospital stay, instead of interminable months is now measured in days: an average of 6 days in this study. And instead of an acute mortality rate of over 35% in the past and most of the survivors then relegated to nursing homes, the survey recorded a mortality rate of 6.8%, 40.2% transferred to a rehabilitation center, nursing home or hospice and the remainder, about 53%, returning to their homes. A substantial improvement over the outcome data from a half-century ago.

As educational programs in preventive medicine have influenced an increasingly large population, the prevalence of stroke is gradually diminishing. Smoking-cessation programs,

adoption of prudent diets, medications to lower high blood pressure and other pharmacological interventions, are clearly influencing the frequency of this devastating illness.

The 20th Century witnessed an awesome shift in how the medical profession confronted stroke: From a silent bedside vigil with no meaningful interventions other than prayer and solace for the grieving family, to its current armamentarium of drugs and purposeful nursing and rehabilitation measures leading to an overall reduction of the disease; and a significant improvement in outcome when the disease does arise.

How frequent was stroke (sometimes called cerebrovascular disease) in the first half of the 20th Century? Consider these grim facts: Most great political leaders of those past decades who had not succumbed to assassination, dementia or the perils of war, died of stroke. This sad list includes, amongst many others, V.I. Lenin, Woodrow Wilson, Warren Harding, Franklin D. Roosevelt, Winston Churchill and Richard Nixon.

– Stanley M. Aronson, MD

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Stanley M. Aronson, MD, and spouse/significant other have no financial interests to disclose.

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Rehabilitation Medicine: Serving People With Disabilities

Jon Mukand, MD, PhD

Almost 13 % of non-institutionalized Americans between the ages of 21 and 64 (about 22.3 million people) reported a disability in the 2007 **American Community Survey (ACS)**. This means that in Rhode Island there are about 87,000 people with disabilities, as defined by three questions. First, are there any permanent conditions such as severe vision impairment or a limitation in at least one basic activity such as walking? Second, due to a physical, mental, or emotional condition, is there a mental disability (e.g. learning, memory, concentration) or a disability with self-care? Third, is there a disability with vocational or community activities such as with shopping?[1]

There are many causes of disabilities. Less than 15% are congenital, because most occur later in life.[2] More than six million Americans are survivors of a stroke,[3] more than 400,000 live with multiple sclerosis,[4] and more than 325,000 suffer hip fractures annually.[5] My perspective on disability is that of a medical director and rehabilitation medicine consultant at the **Southern New England Rehabilitation Center (SNERC)**, a joint venture of Rhode Island Hospital and St. Joseph Health Services of RI. The center treats people with strokes, spinal cord and brain injuries, multiple trauma, hip fractures, amputations, and neurologic conditions such as MS, Parkinson's, and poly-neuropathies.

Disability is a struggle; I admire my patients, their families, and their medical caregivers as they contend with the challenges. One of the most common impairments is with mobility. In the US about a million people use wheelchairs.[2] The widespread use of mobility devices, and the economic implications, are evident in television advertisements that promise freedom of movement — with full coverage by insurance companies. Unfortunately, on occasion the profit motive overcomes the clinical needs of patients, as described in the article on wheelchair mobility by therapists Stacey Johnson and Colleen Fitzsimmons. Disabilities often lead to physical problems that require careful assessment in the context of the psychosocial situation and architectural barriers in the home and community. It is essential to perform a detailed assessment of musculoskeletal and neurologic function, skin integrity, posture, trunk control, sitting tolerance, mobility, and activities of daily living. Assessing previous equipment helps determine what special features are medically indicated, or not. Finally, the therapists order the equipment in coordination with physicians to ensure that there are no problems with insurance coverage. (People with disabilities often deal with financial issues; health care problems are the most common reason for declaring bankruptcy in America.) Only by evaluating these diverse factors, as these skilled therapists have done for many of my patients at SNERC, can one provide the optimal mobility equipment for people with disabilities.

As an occasional consultant and referring physician for Sargent Rehabilitation Center, I have observed and treated children as they received rehabilitation for traumatic brain injuries. One of my most tragic patients is Tori Andreozzi, a world class karate champion who was severely injured when a drunk driver crashed into her. Tori continues her odyssey of recovery, in spite of severe neurologic deficits. In 2006, almost 13,500 people were killed in alcohol-related traffic fatalities, accounting for one-third of all U.S. car collisions. Almost 1,800 children who were fourteen and younger were killed by motor vehicles, and 17% of these deaths were related to alcohol.[6] Tori was featured in Rhode Island newspapers and her mother, Cathy, is an advocate for the prevention of alcohol-related injuries. Her therapists at Sargent Rehabilitation Center continue their treatments. Marilyn Serra and Colleen McCarthy describe the center's impressive model for pediatric rehabilitation.

One of the consequences, as well as a major cause, of disabilities is falls. In the United States, there is one death and 183 emergency department visits for fall-related injuries among older adults every