



Mission: A newsletter for Individuals with Aphasia and for the community

Created by Individuals with Aphasia —

— Supported by the University of Washington Speech & Hearing Clinic

Stroke Questions

—by Bob Anderson, Stroke Survivor

Last week, my guiding star, Nancy, asked me a question, and, of course, she needed an answer from me:

"Bob, why do you have this passion to hear other people's stories about their strokes?"

I've got to . . . **GOT** to hear them because what I hear may help me to understand.

I need to find out what happened to me with a stroke and how and maybe why it happened -- so that I can **see** and make sense of what happened.

There's so much about my stroke – that's a problem that I was given.

And that's a challenge that I don't have the answer to.

I've been asked several times to tell the story of **my** stroke.

I **can't** tell the answer, because I only know pieces – confusing fragments of my story; incomplete parts of the full picture that I need to see.

Each story of a stroke survivor shows how their brain, their soul, their being was hurt – it must also show something about how strokes hit me and devastated me, so I **must** look for those stories and understand them.

I'm sure that each story tells part of what happened to me; it would help me by filling in more of the picture that I'm looking for. Like another piece of the cross puzzle – crossword – **not** crossword – the _____ puzzle. (What **kind** of puzzle **is** that?)

If I don't understand **my** story, if I can't **see** the picture, how can I know what to try to do. Can I recover what I've lost? And what must I do to solve my problem, or at

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To come: Chris' recipe

—and a great story!

Also, soon—How a Stroke Affected His Child and the Child's Story

. . . **And more!**

least to work around (or through) my problem and recover more from it.

I need to, because . . . (my brain lost the thought by darting off to something else for a moment. Oh, well, that's typical.)

Short stories of stroke survivors, like me, are significant if they describe the things that happened. AND they are meaningful if they tell the emotional impacts of the things that happened.

Other members of our Aphasia Support Group have been willing and able to tell their story (at least part of it). They have gone beyond people's normal reluctance and have shared their information and feelings with us, which helps me (and others) break through the personal mental walls caused by the damage and change and concerns that I have had.

It is immensely rewarding to me to hear what my friends have said about their strokes. I have read helpful stories by Jean and Doug, by Ted and Dennis and Bob H., even more especially by JR – all from previously published "**In Search Of . . .**" newsletters.

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Scanning the Brain: Neuro-Imaging of the Past and Present

by Catherine A. Off, MS, CCC-SLP

For thousands of years humans have sought to understand how the brain works. As long ago as 10,000 B.C., craniotomies (opening the skull) are known to have been performed. In the 1500s the very first anatomic drawings of the brain were published after an unprecedented dissection of



Catherine Off

the brain. In the 19th century, scientists began performing autopsies on a regular basis. As a result of such autopsies, Paul Broca identified the left frontal lobe as a major area for speech production and Carl Wernicke identified the left temporal lobe as

an area responsible for language comprehension. From the early 1990s to present day, technological advancements have allowed doctors and researchers to observe the brain **before** the patient passes away. These technologies are known as **neuro-imaging techniques** or **brain scans**.

Structural Neuro-Imaging

Structural neuro-imaging techniques are used to observe the anatomy or structure of the brain. They can identify where damage has occurred (from stroke, traumatic brain injury, degenerative disease, or tumor). The first structural imaging procedure, the x-ray, was invented in 1895. Unfortunately, the X-ray only allows the observation of the skull and not of the structures of the brain. It was not until 1973 that computed tomography (CT) and magnetic resonance imaging (MRI) were first introduced to the scientific community. CT and MRI are both structural neuro-imaging techniques – they cannot tell us

anything about how the brain works, only what areas are damaged. **Computed Tomography (CT)** uses X-rays to create a picture of the patient's brain. Clinically, CT is used to detect skull fractures, tumors, hemorrhages, edema (swelling), and calcification in the brain. Following a stroke, CT scans are the first step doctors use to determine the extent of damage. CT scans are used for both clinical and research purposes. **Magnetic Resonance Imaging (MRI)** capitalizes on the magnetic properties of hydrogen that is present in brain tissue to capture a picture of the brain. Because MRI involved electromagnetic energy, patients must remove any metallic objects they are wearing. Patients with pace makers or any other embedded metallic objects cannot enter the MRI scanner. Clinically, MRI is used for detecting cerebrovascular disease and can identify damage within six hours of a stroke. MRI is more sensitive than CT and often provides a better picture than CT. Unfortunately, it is also more expensive.

Functional Neuro-Imaging

Functional neuro-imaging procedures were first discovered in the early 1970s. Some functional neuro-imaging techniques include positron emission tomography (PET), single photon emission tomography (SPECT), functional magnetic imaging (fMRI), electroencephalography (ERP) and magnetoencephalography (MEG). These procedures measure blood flow in the brain, glucose metabolism in the brain or other physiological measures of brain activity while the patient performs a task (such as speaking, reading, writing, calculating, etc.). Functional neuro-imaging techniques allow researchers to observe **HOW** the brain is working in addition to observing the structure of the brain. Functional neuro-imaging research addresses questions such as: When does the recovery occur? Where does the recovery occur? What does the recovery look like? It can also identify "neural networks" that are active during

specific tasks (language, etc.) and they can tell us if the brain looks differently when it is "resting" from when it is "active". Most importantly, functional neuro-imaging gives us the opportunity to study the "living brain."

These functional procedures are very new to the research world, and scientists are just beginning to understand what functional neuro-imaging can tell us about how the brain works. For the most part, research has focused on non-brain-damaged language production/comprehension. Scientists must first understand how the brain of non-brain-damaged individuals works before they start to study people with strokes, traumatic brain injury and other brain damage. Some research has been done using individuals with strokes, but there is so little data at this point that scientists are unable to make any major generalizations about recovery or rehabilitation. Because of their recent development and cost, functional imaging techniques are only used for research purposes.

Positron Emission Tomography (PET) and Single Photon Emission Computed Tomography (SPECT) are considered **nuclear medicine techniques**. The University of Iowa neuro-imaging website (www.pet.radiology.uiowa.edu) states that PET scans "measure metabolic, biochemical, and functional activity in living tissue". During a PET or SPECT scan, the patient will first have a radioactive isotope injected into their blood stream through an IV. About 20 minutes after the isotope is injected, the patient will get into the scanner and perform some sort of task (such as speaking, reading, listening) – the scientist can then follow the flow of the radioactive isotope in the brain to determine the processes involved during the task. As a result of exposure to radiation, patients can only be studied a small number of times using the PET/SPECT procedure. The total time needed to position the scanner and observe the effect of the radioactive isotope is approximately two hours. In general both the PET and SPECT

scans are capable of tracing a variety of physiological processes including blood flow, energy, and neurotransmitter or glucose metabolism. Not only do both PET and SPECT observe the brain at work, but they are often able to find deep brain structure damage missed by CT scans. They can also detect brain damage earlier than CT scans.

Functional Magnetic Resonance Imaging (fMRI) was first used as a research tool in 1991. The machinery for an fMRI is similar to a traditional MRI scanner. Instead of just looking at the structure of the brain, researchers are able to trace the blood flow of the patient while the patient is performing a task (such as reading or listening). One problem that has plagued fMRI research is that the picture is heavily distorted if the patient moves his/her head – for this reason it is difficult to measure the blood flow during speaking. Fortunately, scientists seem to be getting a handle on this problem. fMRI has many advantages over PET and SPECT. Most importantly, the patient is not exposed to any radiation. This makes fMRI much more likely to be used clinically, and it means that researchers can observe the same patient many times during the course of recovery.

Neuro-imaging has come a very long way in a very short amount of time. In less than 100 years we have gone from autopsy as the only way of looking at the brain to neuro-imaging procedures such as fMRI and PET. It is important to remember how youthful neuro-imaging is – as consumers of medical information we must keep in mind that although new technologies are available, many questions have yet to be answered. ◇◇◇◇

Editors Note: *Cathy is a doctoral student in the U.W. Dept of Speech & Hearing Sciences. This article covers complicated medical tests that our friends with aphasia may have undergone. These tests help the doctor to understand what has happened—and can be done to help the patient. This article helps the patient to understand **why** it's done.*

The Fourth National Conference
National Aphasia Association

Speaking Out! 2004

— Is meeting at the Hyatt Regency Tampa
Tampa, Florida
June 3-6, 2004

For Stroke Survivors, Families, Friends &
Professionals

How to Register for Speaking Out! 2004

To register for the conference you may download a form from the NAA website (www.aphasia.org) or contact Cheryl Paul by phone at (813) 974-8176, FAX (813) 974-0822 or email: ca-pau@chumai1.cas.usf.edu.

The registration fee is \$145 for people with aphasia and their caregivers (early bird registration fee is \$130 before April 30, 2004) and \$375 (early bird is \$360) for professionals and community advocates. Registration for students is \$180.

Speaking Out! Registrants may reserve guest rooms at Hyatt Regency Tampa City Center at the rate of \$99/single, \$119/double, \$129/triple and \$139/quad.

Reserve your rooms directly with the Hyatt through the hotel's Reservation Department at (813) 225-1234 or (800) 233-1234.

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to access past issues of the Writer's Guild periodic newsletter "In Search Of. . ." .

Publisher's Note

The goals of this newsletter include **to search**—and that's why our masthead "In Search Of . . ." was selected. Goals also include **to understand, to accept, and to achieve**.

We search for information that might help those with aphasia—or help communication partners or professionals who also **experience the impact of aphasia**. Our newsletter needs to be about aphasia—and **more**, because the difficulties experienced often have gone far beyond aphasia.

This issue includes one person's search for answers to Aphasia questions. It also speaks of how science & medicine impact people with Aphasia. And it points to a time in Florida where we may share the latest ideas.

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Each story has triggered something in me—more understanding about the author, and about myself.

I want and need to know more—more data and information that triggers my brain to work on understanding and improving.

And I'm eager to hear the story from Chris, and soon.

The following quote fits my feeling about trying to find my answers to the stroke question, though it's not as rarely used as I had presumed:

***We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.***

- T. S. Eliot, Four Quartets, 1942

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