

NEUROLOGISTS SPEAK UP!

AN ANALYSIS OF VOICE RECOGNITION SOFTWARE

By Orly Avitzur, MD, MBA

Neurologists use a variety of techniques to create medical records. Most of us dictate into a recording device and have our notes typed by a medical transcriptionist – a cost that runs between \$15,000 and \$20,000 per year. Others keyboard or point and click into an electronic medical record. But an increasing number of neurologists are using voice recognition (VR) software for office and hospital charting.

Whereas the early VR products required users to speak artificially and add deliberate pauses, they now use continuous speech recognition – technology that responds to a normal speaking voice. To see how well this works, *Neurology Today* asked several AAN members experienced with these tools to share their opinions.

ready been using this system for over a year when he joined the group last year. "It works quite well and did not require much training; I did need to teach myself to avoid speech fillers such as 'um', but once I accomplished

this, it didn't take long." He saves time by using templates that he designed for new and follow-up visits. Printers are set up in each interview room, allowing notes to be created at the time of the visit.

USE IN MULTI-SPECIALTY CLINICS

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Dr. Orly Avitzur is a neurologist in private practice in Tarrytown, NY. She holds joint academic appointments at Yale University School of Medicine and New York Medical College.

DNS SOFTWARE

Kenneth A. Vatz, MD, a solo EMG practitioner in Arlington Heights, IL, has been using DragonNaturally Speaking (DNS) Professional Medical Edition for several years. He was looking for a way to save both time and money in his practice, and VR proved to be the ideal solution.

"After I upgraded from DNS Pro Medical 6.0 to 6.1, there was a striking improvement in accuracy and speed – and the program is now significantly better than both versions 6.0 and 4.0."

But even previous versions are being used by some successfully. Daryl R. Story, MD, a neurologist in a seven-person group practice in Norwalk, CT, is using DNS 5.0 with a neurology dictionary. His practice had al-

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MD, is a member of a five-person neurology department in a large multi-specialty group and has been in practice for 21 years. He used the medical version of DNS to complete outpatient consults and progress notes as part of a pilot project three to four years ago.

"It took me roughly twice as long to do a note using this program as it did to dictate over the phone, or about half as long as to type it," he said. "I think I wrote better notes because I could edit them more easily – without needing to rewind and listen to a tape. The notes could also be made available to referring physicians as soon as I was finished. On several occasions when the patient was to see a neurosurgeon on the same day, I printed the note and gave it to the patient."

In multi-specialty clinics, creating notes efficiently at the time of service is seen as a valuable advantage.

MEDICAL-LEGAL WORK

Jeffrey M. Wishik, MD, JD, a neurologist and an attorney with a solo practice in Providence, RI, uses DNS for most of his patient notes and many medical-legal reports; he likes his reports to be available immediately. He uses DNS 6.0 Pro Medical Edition and is very happy with it.

"I find that VR is best when I am dictating material with a lot of familiar phrases or doing work that does not require a lot of thought," Dr. Wishik said. "It is less useful when I am struggling to compose something."

He is currently working on a book on neurology for lawyers and finds that sometimes VR is not useful for that type of work. "When I write a piece from scratch, I often pause to think about wording or look at reference material. I think voice recognition is best when you have a steady rhythm."

TIME SAVERS

Dr. Wishik admits it takes him more time than traditional dictation. Most neurologists try to make up the time by incorporating macros – programs that automatically expand into paragraphs or commands – and templates – pre-designed blocks of text that allow the user to fill in fields. "For voice recognition to work well, both of these are necessary," Dr. Nye said.

D. Jim Coskun, MD, also likes to incorporate templates. He is a neurophysiology fellow at Rhode Island Hospital and has been using IBM's ViaVoice for the past three years. "If you see a headache patient and do a certain type of exam, you can enter your headache template and if there are any abnormalities, make rapid modifications afterwards." He turned to VR when he encountered problems with transcription.

He explained that his hospital dictation system is too slow; turnaround for returned dictations spans three to eight weeks. With VR, the dictation is completed without having to be reread later or having to wait, he said.

ACCURACY AND COST

Dr. Vatz paid \$750 for his set-up, but he believes it was well worth it. He estimates his accuracy to be approximately 97 to 99 percent, and for repetitive work such as EMG reports, it becomes greater than 99 percent. He explained that the DNS Pro Medical 6.1 uses an improved speech engine as compared with the much-less-expensive Preferred 6.0 version (Preferred 6.0 cannot be upgraded to 6.1), and has better macro capabilities along with the built-in medical vocabulary.

But not everyone spends as much for software. Dr. Coskun, who bought his

system as a neurology resident, said he purchased the cheapest one available for \$30. It had a basic dictionary but no medical vocabulary, and it took two to three months of consistent use to get it to 85 percent accuracy; it is now at 90 percent accuracy.

SPEED

Dr. Coskun is currently using ViaVoice 8.0, but said, "The 10.0 version comes with a USB headset microphone with a

digital signal processor for higher speech recognition accuracy. The transfer rate using the USB mike is substantially faster and the words appear quicker on screen."

"Training and dictionary building also help improve the accuracy of the programs."

DICTIONARY BUILDING

Training and dictionary building also help improve the accuracy of the programs. Dr. Coskun has noticed problems with possessives and contractions and advised that people with thick accents will require extra time to retrain the program, as it will not equate the pronunciation with the word.

Dr. Story noted that the program learns as it goes along; the more detailed the word, the easier it is, but he acknowledged that there were a few terms – *Lyme disease* and *B12*, for example, that he can't get it to learn.

Dr. Nye encountered errors as well. He said he needed to proofread the notes himself because there were no voice files available. Dr. Vatz also reviews his reports as he uses the program. This reduces the error rate and improves the program's "learning."

TRADITIONAL TRANSCRIPTION

Other neurologists prefer traditional transcription and simply dictate their notes. Michael H. Rivner, MD, a neurologist in academic practice at the Medical College of Georgia and facilitator of the neurology listserv, NeuroList, prefers

this method. He used a Sony digital recorder to record notes on a memory stick. The material was later transcribed into DNS from voice files. He has experimented with a variety of high and

low tech solutions for charting, including typing, writing, and voice.

Dr. Rivner initially chose VR to solve his frustrations with the large gaps of text hospital transcriptionists left in his notes. He used the Preferred Version of DNS 6.0 for two years, but ultimately gave it up earlier this year.

Dr. Rivner admits his records were much better, but he decided that he was spending too much of his free time on weekends reviewing and correcting notes. Dr. Rivner has returned to transcription and saves voice files in case he later encounters transcription voids.

Dr. Rivner said he has not yet come up with a solution that avoids extra time or duplication of effort. Although he is serving on his hospital's electronic medical records implementation committee, he also has reservations about how this technology will be integrated without adding to physician time.

HOW TO CHOOSE

David A. Stein, MD, a neurologist in San Diego, CA, has been using DNS 5.0 for two years. He is an active participant on several VR discussion boards and is an experienced programmer. He said "VR is not for everyone. It is finicky stuff, and unless a doctor likes to play with computers, I don't recommend it. But, for those who do, it definitely makes dictating fun!"

Dr. Vatz believes that a high end system is the key to successful VR. (See box, Guide to Purchasing VR Software.) "These are important for speed and accuracy because of the complex algorithms involved in the speech recognition process. Many problems people have experienced with VR are eliminated using these specifications and the latest software versions."

Dr. Nye believes in the future of VR technology, as well. He envisions that either speech recognition software will replace human transcriptionists or that neurologists will use template-generated notes as part of an EMR and bypass the traditional dictated note altogether. He stopped using VR after the transcriptionists pulled the plug on the project. He suspects that they viewed the technology as a threat. ★

GUIDE TO PURCHASING VR SOFTWARE

Before purchasing voice recognition software, Dr. Kenneth A. Vatz recommends that neurologists consider the following requirements and costs:

Standard Configuration:

- Dragon NaturallySpeaking Professional (Medical) 7.0
- Cost: About \$1,000
- Microphone-Recorder: \$149
- Headset: Included
- USB Sound card: \$80
- Knowbrainer Add-On (optional): \$100

www.scansoft.com/naturallyspeaking
www.knowbrainer.com

Minimum Hardware Requirements

- Intel® Pentium® II /400 MHz processor (or equivalent)
- 128 MB RAM; 300 MB free hard disk space
- Microsoft® Windows® XP, Millennium, 2000, 98, 95C, or Windows NT® 4.0 (with SP-6 or greater)
- Sound card supporting 16-bit recording
- ScanSoft-approved noise-canceling headset microphone (included)

Alternative Configuration:

- Dragon NaturallySpeaking Preferred 7.0
- Cost: \$200
- Knowbrainer Add-On and Knowbrainer Medical Vocabulary: \$150
- Microphone-Recorder: \$149
- Headset: Included
- USB Sound card: \$80

www.scansoft.com/naturallyspeaking
www.knowbrainer.com

Realistic Hardware Requirements

- Intel® Pentium® 4 / 1-2 GHz processor (or equivalent)
- 768-1024 MB RAM; 5 GB free hard disk space
- Microsoft® Windows® XP or Windows 2000/Service Pack 2
- High quality sound card supporting 16-bit recording; USB sound card for laptops
- Noise-canceling headset and/or microphone

At press time, DNS released a new upgrade, version 7.0, with marked improvements.

For further information, e-mail oavitzur@earthlink.net.