

Making earlier diagnoses when memories begin to fade

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Susan Harvell, who was diagnosed at Stanford with early onset Alzheimer's, says having a garden and a dog help her to cope with her condition. Credit: Norbert von der Groeben

Susan Harvell's daughter, Claire, can't list specific moments when her mother, a longtime human resources executive in her early 50s, seemed to be off her game. "It wasn't anything drastic," she said. "She could tell you a million stories about when I was 3 years old, but if I told her I was going to do something, she'd ask me five minutes later if I was going to do something."

Many of her friends' mothers were about the same age, she said, "and

they would tell me, 'My mom asked me the same thing 5,000 times.' That's why I didn't think anything was too different."

Harvell's husband, Dave Baker, became concerned when he saw that his highly intelligent wife wasn't just asking him the kind of computer questions that all non-technical folks ask; instead, she was posing questions about content. Her emotions around her work had altered, too. "She'd been a very confident, capable individual and she was becoming more anxious and upset and worried," he said. "It started to become obvious that something was changing."

Baker was like many people who notice such differences, and begin to look for answers, especially as advancing age begins to interfere with the dozens of daily tasks once youthfully taken for granted. In the United States, more than 40 million people are over 65 years old; another 80 million are ages 45-64. Of all the diseases related to age, [dementia](#) may be the most feared—a condition that attacks the core of all those qualities that distinguish one person from another and erodes those memories.

Dementia can take many forms; [Alzheimer's disease](#) is the most often diagnosed variety and its toll is rapidly rising. The Alzheimer's Association estimated that in 2011 5.4 million Americans—about one in eight of those 65 or older—were living with its [consequences](#). Researchers have yet to understand what triggers the imbalance in [brain chemistry](#) that degrades its normal function, shrinking its overall size, and depositing tangles and plaques that block the millions of daily neuronal interactions. Progress has been made, however, in diagnosing the disease. Until recently, physicians were left only autopsy for definitive diagnosis.

Now, at facilities like Stanford Hospital & Clinics' Center for Memory Disorders, where Harvell was advised to seek care, patients have new

options that, in combination with traditional tests, provide a much earlier sense of direction.

Looking for answers

"My job is to try and figure out first if there's anything we can fix right away," said Geoffrey Kerchner, MD, PhD, a Stanford behavioral neurologist who became Harvell's doctor. "When a patient comes to me with a complaint about memory, my approach is like that of any physician—I have to understand what medicines they're on, what surgeries they've had, what their thyroid function or vitamin B12 levels are—to try to discover what the cause could be."

Harvell's tests included an MRI to look for signs of a stroke or other brain injury. All came back with no obvious cause for her cognitive struggles. The next step, Kerchner said, was objective neuropsychological assessment, a set of tests that solve the dilemma for many who wonder if their memory lapses are something to worry about. The assessments focus on the cognitive and behavioral effects of conditions including head injury, cerebrovascular disease, multiple sclerosis, dementia, brain tumor, Parkinson's disease, epilepsy and attention deficit/hyperactivity.

"When we look at behavior and the brain, we find there's a complex inner relationship," said Stanford neuropsychologist Gayle Deutsch, PhD. "A lot of our behaviors become automatic over our lifetime, but when we break them apart, there is a great deal of complexity."

Deutsch began the process of ascertaining where Harvell's problems truly began. That territory includes intellectual and executive function, language skills, visual-spatial abilities, attention, memory, motor skills and mood. Deutsch begins with a set of tests to distinguish those changes that emerge with normal aging and those linked to neurodegenerative

conditions.

She will also engage a patient's family and friends for their observations. "Our tests are good at measuring conceptual reasoning and problem solving," Deutsch said, "but it's also important to look at everyday behavior. Are people showing social skills appropriate for their age? Sometimes people with different kinds of dementia may seem to be less careful about reading social cues. Or they may become apathetic and show no interest in activities. That can't always be measured in a standardized test."

From the data

While the tests Deutsch conducts allow very specific measurements of brain dysfunction, standard brain imaging doesn't show the atrophy classic to dementia until middle to late stages of the disease. But two new tests analyze levels of two proteins in the body associated with Alzheimer's disease—amyloid beta and tau. "The cerebral spinal fluid test is an example of a new test that actually looks for abnormalities that are caused by the disease itself," Kerchner said, "so it can provide positive evidence of the disease." A second test, just approved by the FDA, uses radioactive particles that seek out and mark amyloid plaques in the brain. Those two tests, he said, are so sensitive to Alzheimer's that, for select patients, they may reduce the need for other tests.

Finally came the moment when, as Harvell remembers it, Kerchner "got nose to nose with me," and told her that she had early onset Alzheimer's. She was 53. "I was upset at first," Harvell said. "I was surprised. I was in denial. I thought the whole party was over—work and everything. I can't work. I can't drive. It was like everything was going past me. It's hard."

Baker said, "We did a lot of crying and mourning and a lot of being upset. We've moved through that now and we're just looking for the

positive sides, for how we can help other people going through this disease, how Susan can help with research and how we can just enjoy ourselves in our day."

Finding peace

Being diagnosed with Alzheimer's "is a big hit," Kerchner said, "but by the time a patient has a physician tell them, 'I think you have Alzheimer's disease,' it's not a mystery to them that something's going on with their brain. They know it and they're worried. Having an answer helps a patient understand more about their prognosis and what's likely to happen in the coming years. I think people achieve a lot of peace of mind in having a name on what they have and in being acknowledged by the medical community."

"Having a garden and a dog is really healthy if you're going through something like this," Harvell said. "I read. I paint. I have things to do. I have great friends. My job right now is to go to Stanford and do what I need to do with Dr. Kerchner, to be there for somebody, to have conversations. It's good to connect with someone else who's going through what you are so you don't just feel like, 'Oh, it's just me. I'm the purple goose going down the street.' I want to get it out and talk about it—to be a waving flag for Alzheimer's and for Stanford."

The garden in particular gives her a sense of purpose and reward. "I see the color every day and I'm like, 'Life is beautiful.'"

"I know there's a lot more in our future around this, too," Baker said. "Every day we just get up and do the best we can, and where we end up is in somebody else's hands." Baker was diagnosed with heart failure several years ago, and his condition has been stabilized.

"There were some advances in therapies and I'm still around," he said.

"We're really hoping the same thing can happen for Susan's disease—and that at least we can help get there for all the people who have Alzheimer's as well."

Provided by Stanford University Medical Center

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