

# VA

## RESEARCH CURRENTS

Research News from the U.S. Department of Veterans Affairs

### Joint decision

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Dr. Said Ibrahim examines Lawrence Woodson at the Philadelphia VA Medical Center. Ibrahim's research has focused on why African American patients with osteoarthritis of the knee are less likely than white patients to consider joint replacement.

Photo by Tommy Leonardi



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U.S. Department of Veterans Affairs  
Veterans Health Administration  
Office of Research and Development



**A Marine sniper aims** at an insurgent during a firefight in Helmand province, Afghanistan, in 2010. VA psychologist Dr. Shira Maguen and colleagues are developing and testing a therapy that specifically addresses issues related to killing during war.

Photo by Sgt. Albert J. Carls

## For those who have killed in war—or think they have— psychologists develop new treatments

Soldiers have killed in war for thousands of years. But research on the emotional trauma of killing, says VA psychologist Shira Maguen, PhD, is “in its infancy.”

Maguen is a pioneer in the area. She and VA colleagues are developing new ways to help Veterans who struggle with the emotional trauma and burden of having killed others during their service.

“It’s a heavy thing to carry with you,” says Maguen.

Her group has developed a treatment module to be used along with established evidence-based psychological treatments such as cognitive processing therapy or exposure therapy. The module, called the “Impact of Killing,” consists of six to eight sessions and includes a manual for therapists.

“We know the evidence-based treatments work,” says Maguen. “This is something that can be done in addition, for those who can benefit from it.”

Results from an earlier pilot study, funded by the University of California, San Francisco, suggested the new therapy is feasible and effective.

Now, it is being tested in a clinical trial funded through VA’s Mental Health Quality Enhancement Research Initiative.

Among other questions, the current study will look at the ideal timing of the therapy as an adjunct to standard evidence-based treatments.

The approach is based on the clinical work of Maguen and others, and on findings from several studies that probed the thoughts, feelings, and experiences of combat Veterans from different eras, related to whether they had killed during war.

“As a clinician, I was finding that the issue of killing often didn’t come up until later in therapy,” shares Maguen. “I saw that people really were impaired and troubled by this. I

realized how important it would be to integrate this into the work we do with Veterans.”

She stresses that the extra dose of psychotherapy is not for everyone. “Obviously, not everyone has killed in war and struggled with this,” she says. “And some people know they killed, but they feel they did their duty, this is what they were trained to do, and they’re not troubled by it at all.”

### KILLING IN COMBAT: A COMPLICATED EQUATION

The question of killing in war is a thorny one, psychologically and otherwise. In the fog of war and the violent chaos of the battlefield, who exactly does the “killing” is often not black and white.

Maguen: “For some, it’s clear in their mind—they killed someone, they saw the person die. For others, it’s not as clear. Perhaps they were in a leadership position, and they ordered someone to kill. So they feel responsible for the death, even though they didn’t pull the trigger themselves.” She notes that any number of military jobs outside of actual combat can still put troops in situations where they feel they contributed to killing, directly or indirectly.

“Once we get into the therapy, we find that people can interpret having killed someone in many different ways. That’s understandable. The important thing is that on some level, they struggle with this issue.”

One emerging issue concerns military drone operators, who may be stationed in the U.S. but who play a direct hands-on role in targeted killings abroad. Maguen said she hopes to study this area in the near future. “There’s been some preliminary research showing that the stress is very high for these Service members. In interviews, many of them talk about doing this work and then having to go home to their family at the end of the shift. So it’s a very different and unique situation.”

### ‘MORAL INJURY’

For those Veterans affected by killing, a wide range of psychological issues may surface. Some have posttraumatic stress disorder, while others “have symptoms that are not at all in the area of PTSD,” says Maguen. Shame, guilt, grief, losing aspects of one’s own identity—these can all appear in the mix, and the picture varies from person to person.

“Everyone deals with it so differently,” says Maguen.

### STUDIES LINK COMBAT KILLING TO HIGHER MENTAL HEALTH RISKS

Dr. Shira Maguen and colleagues have studied how wartime killing—as a distinct part of the overall combat experience—affects Veterans’ mental health. Here are some of their findings:

- Survey data on 1,200 Vietnam Veterans showed that killing an enemy combatant, civilian, or prisoner of war was associated with PTSD symptoms, dissociation, functional impairment, and violent behaviors. (*Journal of Traumatic Stress*, October 2009)
- In post-deployment Army screenings of nearly 2,800 Iraq and Afghanistan Veterans, 4 in 10 soldiers reported killing or being responsible for killing during the deployment. Killing was an independent predictor of PTSD symptoms, alcohol abuse, anger, and relationship problems. (*Journal of Traumatic Stress*, February 2010)
- Based on a representative sample of Vietnam Veterans, the researchers found that those reporting the highest levels of “killing experiences” were twice as likely to have suicidal thoughts, compared with their peers who had lower or no killing experiences. (*Depression and Anxiety*, November 2012)

“One of the important things in designing this treatment was to leave flexibility, so it could be personalized for each individual.”

For some Veterans, spirituality plays a key role. Maguen says many military chaplains have expressed interest in her work, and she in turn has found that “involving spiritual communities” can be helpful as part of therapy for some Veterans.

A related theme that Maguen and colleagues have helped explore is “moral injury.” This occurs when people feel their actions—even if they had little choice—violated their own internal moral compass, their value system. “It can be very devastating to some people. They can feel very isolated.” She says putting a formal label on such feelings can often help

people understand they are not alone in the experience, and it frees them to talk about it.

Another issue is stigma. It often comes up, says Maguen, when Veterans return home. “There could be a greater understanding among other military families, among fellow Veterans, but it plays out when Veterans who are returning feel that the people they are in close contact with really don’t understand what they’ve been through. Then, the issue gets worse. They feel like they can’t talk about it, and they keep the experience to themselves.”

Despite differences in the overall societal reception for Veterans of different eras—say, between Vietnam and today—there are timeless similarities in how people are affected by wartime killing, and how they process the experience in their minds.

“Because of that internal experience,” says Maguen, “we’re finding that this treatment holds true for Veterans of all generations.” ★



**Dr. Eric Elbogen is a forensic psychologist** at the Durham VAMC. His recent research has focused on returning Veterans’ risk factors for criminal and violent behavior, homelessness, and other reintegration problems.

Photo by Linnie Skidmore

## When reintegration goes awry: Unraveling the factors that put Veterans at risk for crime, violence, and homelessness

Earlier this year, when an Iraq Veteran who had been diagnosed with post-traumatic stress disorder shot and killed Chris Kyle, a former Navy SEAL who wrote the autobiography *American Sniper*, a slew of news reports focused on the PTSD angle.

*National Public Radio* aired a story titled “Shooting of ‘American Sniper’ Raises Questions about PTSD Treatment.” *ABC News* headlined its report, “Former Navy SEAL Chris Kyle’s Killing Puts Spotlight on PTSD.”

According to Eric Elbogen, PhD, the media—and people in general—often want to “explain acts of violence without going deep enough into the multiple causes. PTSD is related to violence, but so are lots of other factors.”

Elbogen is a forensic psychologist who studies the link between mental health and criminal behavior, particularly violent crime. In recent years, much of his work has focused on returning Veterans.

The researcher, based at the Durham VA Medical Center and the University of North Carolina–Chapel Hill School of Medicine, says one of his key messages is that PTSD is not the same for each Veteran. It’s different from one person to the



## 'You have to consider the non-PTSD risk factors.'

next. Some might have PTSD symptoms that, according to research, do predict violent behavior. Others might have a form of the disorder that is in no way linked to violence or aggression. (*See sidebar.*)

A related message Elbogen tries to convey is that “you have to go beyond PTSD.”

“You have to consider the non-PTSD risk factors,” he says. “These people may have served in a war, but they’re also human beings, civilians. You have to look at factors such as younger age, a history of violence before the military, financial instability, lack of emotional support network, substance abuse. Some of these factors are stronger than PTSD as predictors of criminal behavior.”

He acknowledges that some of the factors are intertwined in subtle ways, and there is much that even the experts don’t fully understand. But they all have to be considered to “avoid a kneejerk reaction” to a complex problem, he asserts.

“The PTSD diagnosis is relevant,” he says, “but it’s the tip of the iceberg. And people often stop there in terms of looking at why an incident may have happened.”

### HOW MANY RETURNING VETERANS COMMIT VIOLENCE?

During a recent talk, Elbogen asked attendees to estimate what percentage of returning Veterans had been involved in some form of violent behavior in a one-year span. The

### WHICH PTSD SYMPTOMS ARE LINKED TO VIOLENCE?

The latest diagnostic guidelines group PTSD symptoms into four clusters:

- **Re-experiencing**—These include, for example, flashbacks, bad dreams, and scary thoughts.
- **Hyperarousal**—Jumpiness, irritability, and anger; sleep problems; reckless, aggressive, or destructive behavior.
- **Avoidance and numbing**—Feeling emotionally numb; staying away from anything that might trigger traumatic memories.
- **Negative thoughts and mood or feelings**—Depression or guilt; problems with concentration or memory; social withdrawal.

Until this year, the second category, hyperarousal, had not explicitly included the violence-related symptoms. Prior research by Elbogen and others had in fact revealed a strong link between violence and aggression and the other hyperarousal symptoms—especially irritability. One study found

that Veterans with PTSD who were frequently irritable were twice as likely to get arrested, compared with others with PTSD but without that symptom.

Another more recent study by his group found that anger—part of hyperarousal—was related to family violence. The study also found, for the first time, that flashbacks—part of the “re-experiencing” cluster—were related to violence against strangers. Elbogen cautions, though, that the flashback linkage needs to be confirmed in further research.

Elbogen says it’s important for researchers to continue to tease out the different PTSD symptoms and understand which are predictive of violence or other dangerous behaviors, and which are not. “A clinician seeing a Veteran wants to know, what are the things I need to be attuned to, to know if this Veteran is at risk.”

## THE MONEY FACTOR

Elbogen says financial instability is an underappreciated risk factor for returning Veterans. He has conducted money-management workshops at the Durham VA Medical Center for the past six years, with funding from the Department of Education. “The Veterans love it,” he says. “It’s getting at everyday life, the decisions they make.”

Poor money-management skills, not surprisingly, can put Veterans at risk for a host of problems, including homelessness, he notes. That point was borne out by a study of Elbogen’s that will be published soon in the *American Journal of Public Health*. “The article should be an eye-opener for people,” he says. “On the one hand, as my statistician likes to say, it’s empirical data showing the glaringly obvious—that if you don’t manage your money well, you can become homeless. On the other hand, no one I’m aware of has published this finding yet—for Veterans or civilians.”

Elbogen says case managers who staff homelessness programs in VA often provide informal money management help for Veterans. But it’s not required or formalized. “This is a potential opportunity for VA,” says Elbogen.

guesses ranged from 5 to 80 percent. “The estimates were all over the map,” he says.

Elbogen shared with the audience study findings from a representative sample of Iraq and Afghanistan Veterans, VA and non-VA enrollees alike, from all branches of the military and all 50 states. He summarizes those results:

“We found that about 10 percent of Iraq and Afghanistan Veterans had reported severe violence—harming someone else, or inflicting potentially lethal harm—during a one-year period,” says Elbogen. “In total, 25 percent reported some type of physical aggression toward others in that time frame.”

Among those who had received a PTSD diagnosis, says Elbogen, the percentage of those who reported committing violence during the following year rose from 10 to 20

percent. However, notes Elbogen, “Among that 20 percent, there are those with a history of violence or criminal arrest before they joined the military. If you isolate only that group, the number jumps to 32 percent. But if you take them out, and look only at people with PTSD and without this prior history, the number goes down to 15 percent.”

“It’s tricky,” he says. “It depends how you ‘slice’ the data. But that’s what we know using this national data. That’s the scope of the problem.”

The bottom line, says Elbogen, is that while “violence remains a serious problem for a subset of Veterans ... the majority of Veterans, with or without PTSD, did not report violence, aggression, or criminal behavior.” ★

## QUICK STUDY

In a survey by Durham VA Medical Center researchers of nearly 1,400 Iraq and Afghanistan Veterans:

- 43 percent screened positive for posttraumatic stress disorder (PTSD), major depression, or alcohol misuse.
- Past-year psychiatric treatment was reported by 69 percent of the PTSD group, 67 percent of the depression group, and 45 percent of those with alcohol misuse.
- Most received care at VA facilities. Women were more likely than men to seek non-VA services.
- 18 percent saw a pastoral counselor in the past year.
- Veterans with mental health needs who did not access treatment were more likely to believe they had to solve problems themselves and that medications would not help. Those who had accessed treatment were more likely to express concern about being seen as weak by others.

*From “Are Iraq and Afghanistan Veterans Using Mental Health Services? New Data from a National Random Sample Survey” (Psychiatric Services, February 2013)*

**A natural supplement called 7-Keto DHEA**, available in various brands at vitamin retailers, drug stores, and health food stores, is being tested at the Bay Pines (Fla.) VA Medical Center for its potential benefits for PTSD.

Photo: iStockphoto



## Natural supplement put to the test for PTSD

A clinical trial now under way at the Bay Pines (Fla.) VA Medical Center will see whether a natural supplement called 7-Keto can ease the symptoms of posttraumatic stress disorder.

The supplement is a derivative of a natural hormone called DHEA. DHEA interacts with another hormone, cortisol, to help control the body's reaction to stress.

Supplementation with DHEA itself has been found to help some patients cope with stress and boost energy and mood. But DHEA has to be taken under careful supervision, as it can alter levels of male and female sex hormones, such as androgen and estrogen.

The 7-Keto form is designed to not have that effect. It is touted as a weight-loss supplement, and some studies support that use, but its effects on low mood and other psychological problems are backed, so far, by only limited preliminary evidence.

Ronald Zenk, founder and director of Minneapolis-based Humanetics Pharmaceuticals, which makes 7-Keto, describes it as a “natural compound that has been shown in previous trials to block the negative effects of cortisol.” He

says there are case studies that “suggest that adding 7-Keto to existing treatment regimens may be beneficial in relieving some of the symptoms associated with PTSD.”

The VA study will include up to 120 Veterans with a diagnosis of PTSD. The study team, led by Carol O'Brien, PhD,

### The study will track 7-Keto's effects on PTSD-related symptoms such as depression, anxiety, and memory problems.

will measure participants' blood levels of DHEA and track PTSD-related symptoms, including depression, anxiety, and memory and attention problems.

Says O'Brien, “It is impossible to overstate the importance of exploring PTSD treatments for our Veterans and newly returning men and women in uniform.” ★

## Job journey

### *VA program helps Veterans with spinal cord injury re-enter the workforce*

Will Clark, now 29, went through a lot of tough adjustments after the 2011 motorcycle accident that left him partially paralyzed from the waist down. One challenge was figuring out what he would do for a job.

During his Navy days, Clark had been a master-at-arms and weapons instructor. After his discharge and before the injury, he had worked for the local sheriff's office and at a Pepperidge Farms bakery near his Tampa home. In short, he had always done physical work.

"After the accident, it felt like I was between a rock and a hard place," he recalls. "I had never done clerical jobs. With my injury, that seemed like the type of job I was going to end up doing, at least for the time being."

Today, he works full-time at the Tampa office of Esurance, an affiliate of Allstate, selling auto insurance. He thanks a VA-supported employment program for helping him transition to the new line of work—and giving him an expanded and more hopeful view of his options for the future.

"It's been hugely beneficial," says Clark. "It's opened up my eyes to different possibilities."



**Navy Veteran Will Clark** has benefited from a program at the Tampa VA Medical Center designed to help those with spinal cord injury return to the work force. The program is now being studied at seven VA sites.

Photo by Ryan K. Morris

### STUDY WILL INVOLVE MORE THAN 1,000 VETERANS

The program is called Individualized Placement and Support, or IPS. For more than a decade, VA has used it on a wide scale for Veterans with serious mental illness. More recently, the model was adapted for those with spinal cord injury. An initial study found it effective: IPS substantially increased these Veterans' chances for competitive

employment, compared with conventional employment services, such as referrals to state vocational rehabilitation (*see sidebar, page 11*).

Now, a larger study is under way at Tampa and six other VA sites. Veterans will be followed for two years. The study will include more than 1,000 spinal-cord-injured Veterans in all, more than 200 of whom will receive IPS. The researchers will track employment and



quality-of-life outcomes. They'll try to zero in on the precise factors that yield the best results.

"These are the first and only studies of effective vocational rehabilitation in spinal cord injury," says lead researcher Lisa Ottomanelli, PhD.

The goal is stable, long-term *competitive* employment—not jobs in sheltered workshops, but in the regular economy. Through extensive interviews, conversations, and formal assessments, vocational rehabilitation specialists learn about Veterans' interests, abilities, aspirations. They reach out to local employers, seeking good matches.

Specialist Rachel Ahumada says the approach involves a lot more than canvassing help-wanted ads. "We know that traditional job search methods are not likely to yield the results we want. In IPS, we focus on the preferences and strengths of the individual. What excites them about getting back to work? That's the driving force for the job search."

In some cases, as part of the job development process, specialists will take Veterans around the community to visit businesses in their fields of interest. "That often leads to finding an employer and carving out a job around an area of interest," says Ahumada.

### TEAMWORK IS CRUCIAL

The model relies heavily on teamwork. The specialists are part of the spinal cord injury interdisciplinary team. They learn about SCI and its challenges. They work closely with physicians, nurses, occupational therapists, physical therapists,



**Clark meets with** study and care team members (from left) Victor Jones, Dr. Kirsten Fisher, and Rachel Ahumada at the Tampa VA Medical Center.

Photo by Ryan K. Morris

kinesiologists, psychologists, social workers—all focused on the individual Veteran's needs.

The challenges to employment can be significant for Veterans with SCI. Besides partial or near-total paralysis, they will typically have secondary medical complications such as pain, spasticity, pressure ulcers, and bowel and bladder dysfunction. Getting to work is often a problem, though some clients—such as Clark—are able to drive on their own, thanks to modified controls on their vehicles.

Ottomanelli says while these issues do impact a person's ability to return to work, none of them are absolute barriers. She tells of a Veteran with tetraplegia—paralysis of all four limbs—who had been bedridden for years before he entered VA rehabilitation and subsequently enrolled in the study. "He had been socially isolated

and depressed," relates Ottomanelli, "and he had very limited hand function, due to contractures. Working with the vocational rehabilitation specialist and the interdisciplinary team, he found employment in the restaurant industry." Ottomanelli says the Veteran reported that his life was "200 percent better" with his new job: He had a sense of accomplishment, independence, social connection.

Unfortunately, he later had to leave the job because of medical and transportation problems. Ottomanelli stresses, however, that "in IPS, every job, no matter how long it lasts, is considered a success that provides information for future job development. Every job is a learning opportunity, essentially." She adds that the team hopes to help the Veteran re-enter the work force again when he is ready, with a renewed effort to address whatever



**Researchers are tracking** the employment outcomes of Veterans enrolled in the program.

Photo by Ryan K. Morris

## PSYCHOLOGISTS, SOCIAL WORKERS HELP WITH ADJUSTMENT

For many of the Veterans, especially men, adjusting to sedentary, office-based work—after years of physical, outdoor work—can be a challenge. In the IPS team model, psychologists and social workers offer counseling and guidance to help with the transition.

“Adjustment to injury is an ongoing process,” notes Keleher. “People learn new ways to care for themselves, they learn to drive, to manage in modified environments, to accept help from others in areas where they previously didn’t need any. Employment is one more area that requires adjustments.”

She says IPS is a good framework in which to address these issues because it “builds on the individual’s interest and considers all feasible jobs within the realm of possibility. We have had people take on very hands-on jobs such as mechanic, computer repair, leather and woodworking, crafting, and medical supply delivery.”

Even when clients have little or no use of their arms and hands, the team still tries to identify meaningful job opportunities related to their interests and skills. Adaptive technology might enable someone with strong knowledge and interest related to the military, for example, to work on video games with a combat theme.

Ottomanelli tells of one study participant who “was able to combine his knowledge of aircraft with self-taught computer skills and, with the help of a vocational rehab specialist, translate these interests into part-time work as a graphic designer.” Likewise, she

barriers exist to his obtaining—and maintaining—employment.

Some disability-related challenges can be solved through adaptive technology. Occupational therapists, rehabilitation engineers, and other team members work to find creative solutions. The Veteran who had found work at a restaurant was fitted for a “standing” wheelchair that enabled him to work at a table or in a small space. He used it to do prep work in the restaurant’s kitchen.

Virginia Keleher, MSW, clinical coordinator for the new study, says, “We can often find relatively low-cost adaptations through collaborative problem-solving on the part of the vocational rehab specialist, the Veteran, and the employer, in consultation with other health care team members.”

Employer cooperation is key. Ahumada acknowledges that “there are some employers who fear expenses or liability, or who have a hard time seeing how ‘what they need to have

done’ can be accomplished by someone with a spinal cord injury.” She says the specialists are attuned to “unasked questions” employers may have. “This is where we become advocates for the Veteran. Good support planning is also important, so potential problems or barriers can be mitigated or removed, and the employer can be made aware of how this will happen.”

Some employers are very proactive and supportive, she notes. “They offer their own ideas about how they could make modifications to workspaces, or how they could partner another worker with the Veteran to help with certain tasks. They are glad to have an occupational therapist come in with the specialist to the workplace to evaluate what’s needed.”

In Clark’s case, he landed employment with a company that has a specific program “dedicated to supporting the needs of Veterans within the company,” according to the corporate website.

says, “Someone who used to love to ride a bicycle could potentially find meaningful work at a bike store or manufacturer, or an organization that advocates for public bike routes.”

Clark is able to work full-time, but for many IPS clients, part-time is all they want or can handle.

“There may be concerns about stamina, or a desire to slowly return to the workforce after having been out for a long period,” explains Ottomaneli. “Sometimes the Veteran will want to continue his or her current therapy routines at VA and at home. Also, transportation might be limited.”

She adds that in some cases, there may be a financial disincentive for Veterans to work full-time, as their Social Security disability income can be threatened.

In any case, she points out that reentering the work force is about more than money. Even a few hours a week can make a huge difference. “We’re talking about major changes in quality of life. Getting back into the workplace and the community can be very therapeutic all around.”

Says Clark: “Now that I’m back at work, I don’t feel as helpless. I don’t have to depend on anyone. Even with my physical disability, I’m still able to have fulltime gainful employment at a company. I’m able to put my best foot forward and excel.” ★

## RESEARCH ON EMPLOYMENT FOR VETERANS WITH SPINAL CORD INJURY

A VA study of the Individualized Placement and Support (IPS) model of supported employment for Veterans with spinal cord injuries was published in the *Archives of Physical Medicine and Rehabilitation* in May 2012. It included 201 Veterans and was, according to the authors, “the first and only controlled study of a specific vocational rehabilitation program to report improved employment outcomes for persons with SCI.” A new, larger study is now under way.

Among the findings of the first study:

- Veterans in the IPS group were more than twice as likely to obtain competitive employment compared with Veterans who received only standard vocational care—such as state or other VA services—but who were enrolled at study sites that offered IPS.
- Veterans who received IPS had at least a tenfold greater chance of finding competitive employment compared with usual-care participants at non-IPS sites.

Why is it that Veterans who didn’t personally receive IPS—but who received their overall care at sites that had IPS—seemed to benefit somewhat in terms of their employment outcomes? One theory of the study authors is that “the presence of [supported employment] in the treatment setting elevated the awareness and attention to vocational issues and outcomes in general” on the part of providers. They say this finding “supports the positive effects of having a vocational program in place within the setting where patients with SCI receive their care.”

### SCI, WORK, AND VETERANS: QUICK FACTS

- Spinal cord injuries (SCI) affect as many as 296,000 Americans, with 10,000 new injuries occurring each year.
- VA cares for some 225,000 Veterans with SCI, making it the world’s largest provider of SCI care.
- VA has 24 special SCI centers around the country. Veterans who do not live near a center use SCI primary care teams, located at VA medical centers nationwide.
- The average rate of any paid employment for people with spinal cord injury is 35 percent, compared with 79 percent for those without any disability.
- Only about 12 percent of people with spinal cord injury return to their pre-injury jobs.

Sources: [www.sci.va.gov](http://www.sci.va.gov); [www.research.va.gov](http://www.research.va.gov); *Archives of Physical Medicine and Rehabilitation*, May 2012



**Veteran Lawrence Woodson gets his blood pressure** checked by Charlene Baker at the Philadelphia VA Medical Center. Woodson is a patient of Dr. Ibrahim Said, who led a VA study designed to ease racial disparities in the use of joint replacements to treat osteoarthritis.

Photo by Tommy Leonardi

## Joint decision

### *Educational intervention targets racial gaps in use of knee replacements*

Joint-replacement surgery has been shown to be one of the most effective treatments for end-stage knee osteoarthritis. It relieves pain in more than 90 percent of patients. Most need no help walking once they recover. But African Americans are less likely than whites to consider it as an option. As a result, they are up to five times less likely to undergo the procedure. VA researcher Said Ibrahim, MD, MPH, calls it “one of the most marked disparities in health care.”

He and his colleagues aim to change that. Earlier this year, in the May 2013 issue of *Arthritis and Rheumatism*, they reported on an educational intervention that increased the rates at which African American patients with knee osteoarthritis engaged their providers in discussions about knee

replacements and received referrals for orthopedic consults.

The intervention has two parts. One is a “decision aid” in the form of a 40-minute educational video about treatment options for knee osteoarthritis. The video is by the Foundation for Informed Medical Decision Making. The other part is a single session of counseling based on motivational interviewing. The counseling technique, shown effective in hundreds of studies, builds on patients’ own internal desire to make positive changes.

#### **INTERVENTION STUDIED AT THREE VA SITES**

The study included 639 African American patients at the Philadelphia, Pittsburgh, and Cleveland VA medical centers.

All the patients had moderate to severe osteoarthritis of the knee. They were randomly assigned to one of four groups. One group watched the video. A second watched the video and received counseling afterward. A third received only counseling. An additional group was given an educational booklet on osteoarthritis that did not specifically talk about joint replacement.

Patient willingness to consider joint replacement jumped from 67 to 75 percent, on average, at the one-month follow-up among those who had received any intervention. At one year, patients in the intervention groups were more likely than those in the control group to report that they

## African Americans are up to five times less likely than whites to consider joint replacement.

talked to their provider about knee pain (92 versus 85 percent), got a referral to an orthopedic surgeon (18 versus 13 percent), and, for those with referrals, attended an orthopedic consult (61 versus 50 percent).

Ibrahim is an investigator with VA's Center for Health Equity Research and Promotion. He is also associate chief of staff for research at the Philadelphia VA Medical Center. He says the intervention was based on earlier studies by his group that documented the gap between African Americans and whites in the use of joint replacement, and explored the underlying reasons.

Ibrahim: "We did surveys to identify the potential differentiating factors between African Americans and whites that could explain the disparities, and we found that one key factor was lack of knowledge among African Americans about the treatment itself. That's how we made the decision to use the video—it provides exactly the information we think African Americans need to feel comfortable with this treatment."

One of those early studies, from 2002, showed that African Americans were less likely than whites to be familiar with joint replacement and more likely to expect a longer hospital stay and pain and disability following surgery. Consequently, they were less willing to consider the therapy.

"Overall, we found that African American patients generally know little about the benefits and risks of joint

replacement," says Ibrahim. "We thought providing education in an evidence-based way would bring these patients up to par with other groups that are more likely to consider this treatment."

### COUNSELING HELPS ADDRESS CULTURAL GAPS

While the video itself is not geared to any particular ethnic group, the motivational interviewing—conducted by minority counselors—is intended to address any cultural gaps in the education. "The interviewing is intended to supplement any cultural differences in response to the video," says Ibrahim.

He stresses that the aim of the research is not to promote any one treatment. "The goal is not to 'sell' joint replacements, but to help patients focus on the issue at hand and move them from a position of ambivalence to one of action, where they feel more comfortable making a decision."

Ibrahim points out that as common as osteoarthritis is in the U.S.—it's the leading cause of disability—Veterans may be at increased risk, due to the joint trauma experienced by many during training or deployment.

He adds that the VA health care system, where access is not limited by insurance, is an ideal setting in which to study how preferences affect health care utilization—particularly when it comes to elective procedures such as joint replacement.

"This is an elective treatment," says Ibrahim. "Physicians don't look you in the eye and say, 'This is what you need to do.'" Patients have more latitude to exert their preference, and "we know that preference is very heavily influenced by culture and social background."

In light of the results of the trial, Ibrahim and colleagues write, "We now have a low-cost, noninvasive, patient-centered intervention that could potentially increase access to orthopedic care for minority patients who are candidates for joint replacement in the management of end-stage osteoarthritis."

The work was supported by VA's Health Services Research and Development Service and the National Institute of Arthritis and Musculoskeletal and Skin Diseases. ★



**Dr. Jennifer Loftis studies methamphetamine addiction** at the Portland VA Medical Center and Oregon Health and Science University.

Photo by Michael Moody

## Tackling meth addiction—through the immune system

Methamphetamine is one of the toughest addictions to break, say experts. Up to 6 in 10 people who go through treatment will use the drug again.

Part of the reason, says VA researcher Jennifer Loftis, PhD, may be the thinking and mood problems that linger long after someone stops using the drug.

“After they’ve managed to stop using the drug, they still don’t feel good,” says Loftis, with the Methamphetamine Abuse Research Center at the Portland VA Medical Center and Oregon Health and Science University. “Convincing them they should stay clean and sober, and they’ll eventually feel better, is hard to do, because it could be two years

later and they’re still not feeling better. That makes it more challenging to keep people in treatment.”

She and co-investigator Marilyn Huckans, PhD, have support from VA and the National Institutes of Health to develop a new approach to easing the mood, memory, and other thinking problems that wrack the brains of people who have been on meth.

While most drugs targeting addictions work on neurotransmitters—brain chemicals such as dopamine—Loftis’ lab is focused on the immune system. They’ve learned from animal experiments that changes in the immune system contribute to the memory problems linked to addiction. “People

who take meth have compromised immune systems,” she says. “They get sick more easily. In the brain, there may be inflammation and other immune responses. We’re trying to tone that down, but at the same time not hurt the body’s ability to fight infection.”

The field is known as psychoneuroimmunology—an intimidating term, even by medical-jargon standards. It focuses on how the immune system interacts with the central nervous system and affects the brain to cause psychiatric and neurological symptoms such as low mood and poor memory and attention.

Loftis and Huckans are now hot on the trail of a new drug—a type of immunotherapy—they believe will make a big difference in meth-induced brain symptoms. It’s called RTL551. It’s part of a family of compounds that researchers at the Portland VA and elsewhere are exploring for a range of immune conditions, such as multiple sclerosis and rheumatoid arthritis. The drug works by blocking the flow of inflammatory cells to the brain. In experiments with mice, it lowered the inflammatory response, and—importantly—also improved the animals’ thinking skills.

If RTL551 or a similar agent pans out in further animal studies, and eventually human clinical trials, Loftis says it could be a game changer for Veterans and others struggling with meth addiction.

“Our goal is to figure out a way to help these cognitive and mood symptoms get better during early withdrawal and recovery periods, so patients can stick with their treatment programs and regain a meaningful life.” ★

*Disclosure note: VA and OHSU own the RTL drug technology. One investigator involved in the research has stock options in Virogenomics/Artielle, a company that has licensed the technology. VA and OHSU, as well as Drs. Loftis, Huckans, and Vandembark, have rights to royalties from the licensing agreement with Artielle. These potential conflicts of interest have been reviewed and managed by the Portland VA Medical Center and OHSU.*

## FACTS ABOUT METH

- Methamphetamine—or meth—is a white, bitter, odorless powder that is a highly addictive stimulant drug.
- It can be eaten, snorted, smoked through a glass pipe, or mixed with liquid and injected. It is known in slang as crank, ice, crystal, glass, or chalk.
- The drug releases a wave of adrenaline and dopamine in the brain, thus increasing confidence, alertness, mood, energy, sex drive, and talkativeness. The high can last up to 16 hours.
- Negative mental effects from chronic use include confusion, memory loss, low mood, tiredness, paranoia, anger, and violent behavior. Physical effects include extreme weight loss, damaged immune function, severe tooth decay, and prematurely aged skin.
- Cognitive and mood problems can persist long-term even after a person stops using the drug, making rehabilitation more difficult. Relapse rates are up to 60 percent.

*Sources: Medline, National Institute on Drug Abuse*

## HOW MANY VETERANS ARE AFFECTED?

Methamphetamine is not as pervasive a problem as some other substances—such as alcohol—among Veterans, but there are still significant numbers of Veterans affected.

According to the federal Center for Behavioral Health Statistics and Quality, out of 17,641 Veterans, ages 21 to 39, who accessed substance abuse treatment at non-VA facilities in 2010, around 6 percent were primarily meth users. By comparison, 51 percent primarily used alcohol, 9 percent heroin, 12 percent marijuana, and 6 percent cocaine.

On a related note, in a 2008 survey of active duty troops by the Department of Defense, around 1 percent of respondents reported using meth in the past 12 months.

*Sources: SAMHSA Center for Behavioral Health Statistics and Quality; Data Spotlight, Nov. 8, 2012; 2008 DoD Survey of Health Related Behaviors Among Active Duty Military Personnel*



**Mice exposed to methamphetamine** display impaired memory.

Photo: Getty Images

### WHAT HAPPENS TO MICE ON METH?

Dr. Jennifer Loftis' research at the Methamphetamine Abuse Research Center involves animals and people. She describes MARC's "translational" approach: "We look at both animal models and humans who are actually using, to get at the underlying mechanisms in the brain, as well as learn how the things we discover in mice relate to people. By looking at both, we can figure out new drugs, or behavioral interventions."

Loftis, who has a doctorate in behavioral neuroscience, describes what her team has observed in lab experiments in which mice are exposed to the drug:

"Meth impairs their ability to remember. We put them in boxes where they are introduced to different objects, and they investigate them like all animals will. The next day we give them a new object to explore. A healthy animal will go right over to the new object in their environment to check it out. A mouse that's been exposed to meth won't do that. They can't remember what they've seen before and what they haven't."

She says her group is "looking at what's going on in the brains of these mice to cause them to have these memory problems."

## Research lab offers job training for wounded warriors

A joint research program between VA and the University of Pittsburgh that studies wheelchairs and related technology is now helping to train disabled Veterans for careers in machining.

The program is called Fabrication of Assistive Technology Program for Wounded Warriors. It's run by the Human Engineering Research Laboratories, a collaboration between the VA Pittsburgh Healthcare System and the University of Pittsburgh School of Health and Rehabilitation Sciences.

The program is being launched this fall with the help of a \$100,000 donation from Highmark Blue Cross Blue Shield.

Created by director Rory Cooper, PhD, and education and outreach project director Mary Goldberg at HERL, the program will prepare participants to pass a basic machining exam. The participants will also get on-the-job training at local companies, which could lead to permanent, full-time jobs.

To learn more about HERL, visit [www.herl.pitt.edu](http://www.herl.pitt.edu). ★

**1. Shop supervisor Garret Grindle** shows Veteran Keniel Martinez how to smooth the burrs on a stainless steel plate.

**2. Veterans** (from left) Keniel Martinez, Shawn O'Donnell, Artem Lazeckin, Gary Rethage, and Adam Benjamin Campbell listen to Garrett Grindle explain how to operate a drill press.

**3. Veterans Michael Malloy and Keniel Martinez** watch as Grindle demonstrates a task on the drill press.

Photos by Bill George





## Inexpensive generic drug shown effective for nightmares, other PTSD symptoms

Confirming the results of earlier trials, researchers with VA and the Department of Defense found that the drug prazosin was effective in reducing nightmares and other symptoms of posttraumatic stress disorder in combat troops and Veterans. The results appear in the September issue of the *American Journal of Psychiatry*.

Lead author Murray Raskind, MD, says the trial was the “first placebo-controlled trial of a medication for a mental health disorder ever done in an active-duty military population.”

Raskind, a psychiatrist at the VA Puget Sound Health Care System, pioneered the use of prazosin for PTSD starting in the late 1990s (*see sidebar, facing page*). Based on strong results from several smaller trials, the drug is already included in VA and Defense clinical guidelines, but researchers continue to explore its risks and benefits. The drug, used for decades to treat hypertension and enlarged prostate, is available as a low-cost generic.

The latest trial involved 65 active-duty troops and two Veterans, all of whom had served in Iraq or Afghanistan and struggled with poor sleep and combat nightmares as part of PTSD.

About half the study volunteers were given prazosin, with an average dose of about 20 milligrams per day, taken in the morning and before bedtime. The others received a placebo.

After 15 weeks, both groups showed improvements, but the gains were significantly greater in the prazosin group. The drug beat placebo on all three main outcomes: a measure of nightmares, one of overall sleep quality, and another of overall daily function. Prazosin also led to greater improvements on additional measures, such as overall PTSD symptoms—particularly hyperarousal, which has been compared to a chronic “fight or flight” state.

In an editorial accompanying the study, Matthew Friedman, MD, PhD, of VA’s National Center for PTSD,

points out that a 10-point drop on the Clinician-Administered PTSD Scale—a common measure of PTSD severity, and the one used in the study—is clinically significant. In the study, the prazosin group showed an average reduction of about 25 points on the measure, compared to 13 points for the placebo group. Friedman calls the results “an important advance.” He notes, also, that the use of prazosin is based on a sound theory about the role of the drug in the brain—what he calls “rational pharmacotherapy for PTSD.” He contrasts this with research in which drugs are tried because they seem to work for related conditions, but for which no clear mechanism exists that would explain their potential benefit in PTSD.

In the trial, prazosin had no impact on blood pressure, nor did it cause adverse side effects sometimes associated with other psychiatric medications, such as weight gain or sedation. In fact, the active-duty troops in the trial continued their full daily training regimen.

Despite the improvements seen from the drug, only 3 of the 32 prazosin patients achieved full remission. The majority continued to struggle with PTSD symptoms. The study authors propose that combining prazosin with effective psychotherapy—such as prolonged exposure therapy—could result in further improvements.

Overall, says Raskind, there are “great benefits to having a generic, low-cost medicine to treat PTSD that has a proven safety record—it’s been used for decades to treat high blood pressure, and to treat enlarged prostate in more than a million men.”

The study was supported by VA, the U.S. Army Medical Research and Materiel Command, and the National Institutes of Health.

Another trial of prazosin, funded by VA’s Cooperative Studies Program, is still in progress. That study involves more than 300 Veterans at 13 VA medical centers, and results are expected out sometime in 2014. ★



**VA's Dr. Murray Raskind** has pioneered the use of the inexpensive generic drug prazosin to treat trauma nightmares and other symptoms of PTSD in combat Veterans.

Raskind photo: Emerson Sanders; Marine photo: Sgt. Pete Thibodeau

## Seed money from Seattle VA-affiliated foundation led to PTSD breakthrough

The men would sleep only four or five hours a night. The bad dreams came with devastating regularity.

The Vietnam Veterans being seen by VA psychiatrist Murray Raskind, MD, in the late 1990s needed a treatment for their ongoing trauma nightmares. Nothing seemed to work. Many had turned to alcohol over the years—anything to help them fall asleep.

Raskind had a theory: If he could make their brains less responsive to norepinephrine, a hormone related to adrenaline, that would ease the nightmares.

“During my treatment work with these Veterans, it became clear to me that the nighttime PTSD symptoms, particularly the nightmares and sleep disturbances—which was the most prominent complaint they had decades after returning from their

deployment—seemed to be due to excessive brain responsiveness to norepinephrine. The same seemed to be true of the daytime symptoms such as hypervigilance and irritability.”

Scouring the literature, he learned of a particular class of hypertension drugs that worked by blocking norepinephrine. Only one, prazosin, was able to cross the blood-brain barrier. That drug became his focus.

“I simply started using prazosin clinically with Veterans who had treatment-resistant PTSD trauma nightmares and sleep disruption,” recalls Raskind. “It worked dramatically well, where nothing else had been helpful.”

Raskind knew he was on to something. “We thought we had something interesting, but we had to prove it in a well-controlled study.”

Pilot funding would come from

the Seattle Institute for Biomedical and Clinical Research, one of the 82 nonprofits that foster VA research nationwide.

Eileen Lennon, executive director of SIBCR, recalls: “We provided seed money, unrestricted dollars. It was only a small amount until Dr. Raskind was able to get outside funding.”

Says Raskind: “It was important in getting the ball rolling. Based on the results of the placebo-controlled pilot study, we were able to apply through SIBCR for larger grants and to perform larger and more definitive trials.”

Today, thanks to a series of studies supported by VA, the Department of Defense, and the National Institute of Mental Health, prazosin is part of clinical treatment guidelines for PTSD and traumatic brain injury. The drug, an inexpensive generic, is still being studied, says Raskind, to arrive at a “sharper definition of the range of symptoms that respond to it.” Given in small doses throughout the day, prazosin may also help daytime PTSD symptoms, notes Raskind. (*See article, facing page, on the latest trial results.*)

Raskind told the success story of his partnership with SIBCR at a recent annual meeting of VA nonprofits. SIBCR executive director Lennon was among those listening. “Everyone was thrilled,” she says. “It was an inspiring reminder of why we do what we do.” ★

## New research consortia will focus on PTSD and TBI

VA and the Department of Defense announced in August the formation of two jointly funded research consortia to study posttraumatic stress and mild traumatic brain injury. The agencies will spend \$107 million over five years to support the research, as part of a larger National Research Action Plan initiated by the Obama White House.

The **Consortium to Alleviate PTSD** (CAP) will coordinate teams of researchers at the University of Texas Health Science Center at San Antonio, San Antonio Military Medical Center, and VA Boston Healthcare System, as well as other sites. CAP will work to advance prevention, diagnosis, and treatment of PTSD by bringing together researchers with diverse approaches spanning neuroscience, genetics, psychology, and other fields. One aim will be to discover reliable biomarkers of PTSD, such as proteins in the blood or specific patterns that show up on brain scans. Such findings would be useful for diagnosis and possibly for identifying new treatments.

“Historically, PTSD has been considered ... a chronic, lifelong disorder that is difficult to treat, particularly in military combat Veterans,” said Alan Peterson, PhD, director of the consortium. “However, results of studies of PTSD in civilian populations demonstrate that a large percentage of patients have been able to [achieve] remission or recovery. Although the term ‘cure’ is rarely used in reference to PTSD, we believe it is possible.” Peterson, a retired U.S. Air Force lieutenant colonel, is a clinical psychologist and UT professor of psychiatry.

His co-director is Terence Keane, PhD, of the VA Boston Healthcare System, VA’s National Center for PTSD, and Boston University. Keane said CAP will address questions such as, “Is combat-related PTSD uniquely different and more difficult to treat [than civilian PTSD]? Would outcomes improve with early interventions delivered soon after trauma exposure? Can combat-related PTSD be cured?”

The **Chronic Effects of Neurotrauma Consortium** (CENC) involves Virginia Commonwealth University, the



**Marines patrol in Helmand province** in Afghanistan in 2010. New consortia funded by VA and the Department of Defense will ramp up research on two of the most pressing health issues affecting returning Veterans: PTSD and mild traumatic brain injury.

Photo by Cpl. Ned Johnson

Uniformed Services University of the Health Sciences, and the Richmond VA Medical Center.

CENC director David Cifu, MD, a polytrauma specialist at the Richmond VA, is also VA’s national director for physical medicine and rehabilitation. Speaking with the *Times Dispatch* in Richmond, he said, “This consortium is focused on concussions or mild brain injuries, particularly those sustained in combat, but we will also look at those in the civilian and sports sectors.” One area of study will be the link between brain injuries and neurodegenerative diseases such as Parkinson’s or Alzheimer’s.

Cifu said moderate to severe brain injuries—including those resulting in comas—have been studied extensively for more than 30 years, whereas mild brain injuries have received heavy attention from scientists only more recently, due to the wars in Iraq and Afghanistan and growing concern among professional and school athletes, especially football players.

He said the effort will involve seven VA medical centers, 10 universities, and six military hospitals. The consortium will also reach out to others—including academic centers, sports leagues, the pharmaceutical industry, and medical imaging companies—for additional expertise.

Said Cifu, “Our charge is not to stick within the box.” ★

## ‘Loving-kindness’ meditation shows promise in pilot study

In a small pilot study, a form of meditation that involves repeating phrases of “positive intention” helped reduce symptoms of depression and posttraumatic stress disorder. The study took place at the VA Puget Sound Health Care System and involved 43 Veterans, almost half women.

The treatment stems from Buddhist tradition, but can be adapted for nonreligious practice. It is designed to boost feelings of kindness and compassion toward oneself and others.

The Veterans who took part attended up to 12 meditation classes,

in addition to their usual medical care. Three months after the classes ended, the researchers found improvements in PTSD and depression that appeared to be related to “enhanced self-compassion” on the part of the participants. The study volunteers also showed increased mindfulness. But the researchers say they can’t rule out that the improvements came about because of other treatments the Veterans were receiving.

First and foremost, the trial showed that the meditation classes are “safe and acceptable to Veterans with PTSD,” say the authors, led by David

Kearney, MD, a VA gastroenterologist and associate professor of medicine at the University of Washington. Kearney has studied various complementary and alternative treatments to address stress. The group hopes to conduct a larger, randomized, controlled study of loving-kindness meditation in the future.

The study was funded by the Seattle Institute for Biomedical and Clinical Research, a nonprofit foundation that helps fund research at the Puget Sound VA. ★

*(Journal of Traumatic Stress, August 2013)*

## Gender identity disorder tied to higher suicide risk

Gender identify disorder is about five times more prevalent among VA patients than among the general population, and the rate of suicidal behavior among Veterans with the disorder is 20-fold that of the general VA population, according to a new study.

The study, say the authors, is the “largest study of a transgender population to date in the United States.”

People with GID feel a strong identification with the opposite sex, and often experience discomfort with their actual anatomical gender. They may seek to alter their bodies—for example, through cosmetics, hormones, or

surgery—and may assume mannerisms, behavior, or dress characteristic of the opposite sex.

Recently, the official diagnostic term for the condition switched to “gender dysphoria.” Lead researcher John Blosnich, PhD, MPH, says future research will have to take into account the varying terms in Veterans’ and others’ medical records.

The condition is rare overall. Examining data for an 11-year period, from 2000 – 2011, the researchers found that GID affected about 23 in 100,000 VA patients, versus 4 in 100,000 people in the general U.S.

population. Across the 11-year period, there were 3,177 unique VA patients with a GID in their files. That translates into some 246 new cases per year.

Blosnich says the finding supports past studies suggesting higher rates of transgender individuals in the military, relative to the general population. Dating back to the 1980s, Air Force psychiatrist George Brown, MD—now chief of psychiatry at the Mountain Home (Tenn.) VA Medical Center, and director of health care outcomes for VA’s Office of Health Equity—advanced the idea that young men struggling with the condition may

join the military in an attempt to prove their masculinity. He called the theory “Flight into Hypermasculinity.”

Blosnich and colleagues found that the rate of suicidal behavior among VA patients with GID was more than 20 times that of the general VA patient population. Research on other transgender populations has also found higher suicide risk.

The VA study didn’t look at completed suicides—only information about suicide-related behaviors that was reported by the suicide prevention coordinators at VA medical centers nationwide.

The authors of the study concluded that “immediate attention may be needed to assess how current [Veterans Health Administration] suicide prevention and intervention strategies reach this population.”

The research was supported by VA’s Center of Excellence for Suicide Prevention in Canandaigua, N.Y., and by the National Institute of Mental Health. ★

*(American Journal of Public Health, October 2013)*

## MVP participants sound off

VA Research Currents asked a few Veterans who have enrolled in the Million Veteran Program ([www.research.va.gov/mvp](http://www.research.va.gov/mvp)) to tell us what motivated them to sign up. The study will enroll up to a million Veterans over the next few years, and is expected to result in one of the world’s largest databases of health, genetic, lifestyle, and military-exposure information. With strict privacy safeguards in place, the data will be used by authorized researchers for studies on various health conditions affecting Veterans. As of September 2013, MVP is active at more than 50 VA sites and is nearing the 200,000 mark, in terms of Veterans enrolled.



### Thomas Totoris

Corrales, N.M.  
Navy, 1971–1997

I work at the Raymond G. Murphy VA Medical Center in Albuquerque as a medical support assistant. I ride the bus to work, and an MVP research associate rides with me. She is an RN and told me about the program and asked if I would be interested in participating. The program was in its infancy, and so far only one person had signed up, so I became number two for the facility. I was happy to register and give my vile of blood. I know it will take years of study and analysis before the compiled data of thousands of Veterans may bear fruit. It probably won’t be completed in my lifetime, but the combined data of all those who participated will possibly spawn new treatments, procedures, and knowledge for future Veterans and society as a whole. I did it for the common good.



**Eddie King**

Creedmoor, N.C.

Air Force, 1997–2006; Air Force Reserves, 2010–2011;

Navy Reserves, 2011–current

I truly believe in being a model citizen, and my purpose for living is to do my part to make the world a little better before I pass away. Service in faith, to country, and to community is very important to me. I do not want the recognition, or fame. I just believe in doing my part when I am able to.



**Tammy LaMere**

Albuquerque, N.M.

Marine Corps, 1988–1992

Being a Veteran, I wanted to help other Veterans. I am proud to be a Veteran, and any chance I can help other Veterans, I will.



**Bob Bradbury**

San Diego, Calif.

Marine Corps, 1955–1961

MVP sounds like a good research project. It has the potential for finding some good information. If I can be helpful in that endeavor, I'm happy to do it.

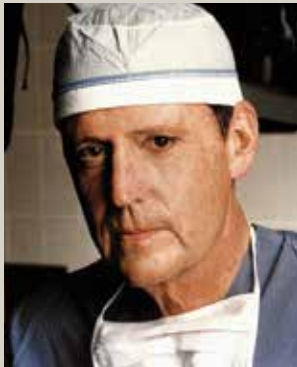
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# RESEARCH CURRENTS

Research News from the U.S. Department of Veterans Affairs



## DID YOU KNOW?

Often called the “father of human transplantation,” Dr. Thomas E. Starzl served nearly 50 years as a VA surgeon and researcher. A World War II Navy Veteran, he began his VA career in Chicago and then moved to Denver, where in 1962 he performed the first successful kidney transplant. Eventually, he would pioneer methods for both kidney and liver transplant that are still in use today. Starzl, who retired from the Pittsburgh VA in the late 1990s, won a prestigious Lasker Award—the seventh for a VA researcher—in 2012.

**VA**



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