



RESEARCH CURRENTS

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



Photo by Robert Williams

Medical innovations on display at VA research fair in nation's capital

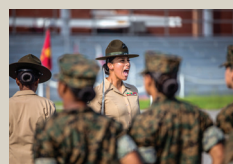
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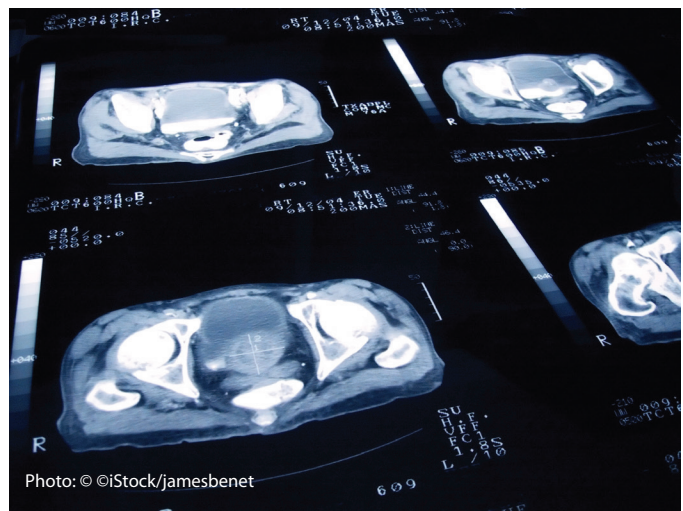
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Layout: Robert Williams

Any health information in this newsletter is strictly for informational purposes and is not intended as medical advice. It should not be used to diagnose or treat any condition.

Apalutamide could delay metastasis of prostate cancer

Patients with prostate cancer taking the drug apalutamide went longer without the cancer metastasizing than those taking placebo, in an international study including a researcher from the VA Portland Health Care System. Patients taking daily apalutamide went a median of 40.5 months before the cancer metastasized (spread to bone or other organs). Those in the placebo group had a median of 16.2 months before metastasis. Three percent more patients in the apalutamide group than in the placebo group had adverse events, such as rash, hypothyroidism, and fracture. Janssen Research and Development, the makers of apalutamide, funded the study and was involved in the research. ([New England Journal of Medicine](#), April 12, 2018)



VA



U.S. Department
of Veterans Affairs



Possible explanation for how melatonin promotes sleep

Researchers at the Harry S Truman Memorial VA Hospital have identified a possible mechanism that explains how melatonin promotes sleep. Melatonin, sold in supplement form, is widely prescribed nowadays as a sleep aid, but how exactly it works is unclear. Researchers studied how the brains of mice responded to melatonin. They found that orexin neurons in the brain expressed MT₁, a melatonin receptor protein. When the researchers infused melatonin into the brain, the mice

showed increased REM sleep and reduced wakefulness. Melatonin infusion inhibited orexin neurons. The results show that melatonin may act via the MT₁ receptors to inhibit orexin neurons and promote sleep. The researchers point out that while the finding helps explain an existing treatment, it also may lead to new ones. ([Journal of Pineal Research](#), April 14, 2018)

Probiotic reduces *S. aureus* infection odds in GI tract

Probiotics can reduce *Staphylococcus aureus* infection in the gastrointestinal tract, according to a William S. Middleton VA Medical Center study. Patients with *S. aureus* infection were given either the probiotic *Lactobacillus rhamnosus* HNO01 or a placebo for four weeks. Those taking the probiotic had 83 percent reduced odds of *S. aureus* presence in their GI tract after treatment, compared with the placebo group. However, those with *S. aureus* infection somewhere other than the GI tract only had 15 percent lower *S. aureus* colonization. The results show that oral *L. rhamnosus* could be a useful treatment for *S. aureus* infection in the GI tract. ([BMC Infectious Disease](#), March 14, 2018)





Up to nine months between doctor visits do not worsen viral load for HIV patients

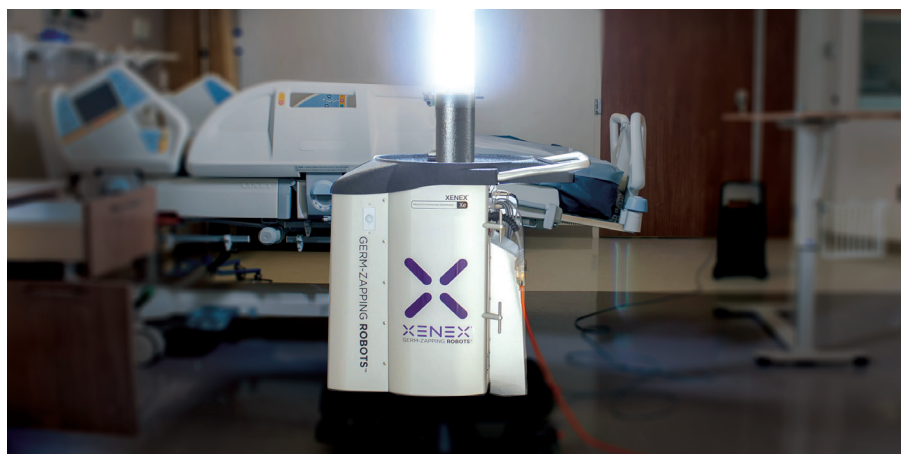
Gaps up to nine months between HIV primary care visits do not worsen viral load, found a study including a Michael E. DeBakey VA Medical Center researcher. Current guidelines say that HIV patients should visit their doctors every six months for viral monitoring. Looking at more than 6,000 patients with HIV, researchers found that patients who went up to nine months between doctor's visits did not have significant increases in

viral load. Patients with visit gaps greater than 12 months were much more likely to have lost viral suppression. The results show that primary care visit intervals between six and nine months may be appropriate for HIV patients, say the researchers. ([AIDS Patient Care and STDs](#), April 2018)

Pulsed xenon ultraviolet leads to better disinfection

Pulsed xenon ultraviolet devices disinfect more effectively than manual cleaning, found a study by researchers at multiple VA centers. The devices use bulbs that contain xenon, a gas, to emit short bursts of high-energy ultraviolet light. Researchers tested surfaces in two hospital rooms cleaned using pulsed xenon ultraviolet and two cleaned

with manual disinfection. *Staphylococcus aureus* counts were reduced by 75 percent in the UV rooms, compared with pre-cleaning counts. Aerobic bacteria colony counts were reduced by 84 percent in the UV rooms. Manual disinfection reduced bacteria counts only by 25 to 30 percent. The researchers recommend that this technology be integrated into daily hospital operations. ([American Journal of Infection Control](#), April 11, 2018)



Therapeutic horseback riding may reduce PTSD symptoms

A therapeutic horseback riding program reduced PTSD symptoms in a small study of 29 Veterans. The study team included a Harry S. Truman Memorial Veterans' Hospital researcher. Half the Veterans took a six-week horseback riding program, while the others were put on a wait-list. Those who rode had a 67 percent likelihood of a lower PTSD symptom score after three weeks. The likelihood increased to 88 percent after six weeks. Participants showed improvement in self-efficacy and emotion regulation. The results show that therapeutic horseback riding

may be an effective way to alleviate PTSD symptoms for some Veterans. ([Military Medical Research](#), Jan. 19, 2018)



Longer 'dwell time' linked to fewer PTSD symptoms

Longer time home between deployments, or "dwell time," is linked to fewer long-term PTSD symptoms in Veterans, found a Central Texas Veterans Health Care System study. Researchers looked at data for 278 Veterans of Iraq and Afghanistan three years after discharge. They found that those with time between deployments less than 12 months had the highest long-term PTSD symptoms. Consistent with other studies, combat exposure was linked to more PTSD symptoms. Average length of deployment

and number of deployments did not significantly affect long-term PTSD symptoms; intensity of combat exposure had a much bigger effect than either. The researchers conclude that "in addition to combat exposure, time between deployments warrants clinical attention as an important deployment characteristic for predicting long-term PTSD symptoms." ([Journal of Clinical Psychology](#), April 2018)



Dr. Rory Cooper (seated) demonstrates the MEBot wheelchair, which can climb curbs.

Photo by Robert Williams

Medical innovations on display at VA research fair in nation's capital

VA scientists descended on Capitol Hill to showcase medical research advances aimed at improving the lives of Veterans.

More than 20 scientists took part in a VA research fair on June 19, exhibiting a myriad of innovations in the foyer of the Rayburn House Office Building in Washington, D.C.

The exhibitions touched on topics that are critical to Veterans: the chronic effects of neurotrauma; VA's Million Veteran Program (genomics); pain and opioid research; PTSD; prosthetics; rehabilitation engineering; spinal cord injury; suicide prevention; technology transfer for VA discoveries; translating research into practice; traumatic brain injury (TBI); VA clinical trials; Vietnam Veterans' research; and female Veterans' research.

Then Acting VA Secretary Peter O'Rourke and then Veterans Health Administration Executive in Charge Dr. Carolyn Clancy, as well as congressional staff members and representatives from Veterans' organizations, were on hand to see the display of VA ingenuity.

"VA research is playing a key role in our efforts to transform health care for the Veterans we serve," Clancy said. "VA research drives the innovations that improve the lives of Veterans, like advanced prostheses, telehealth, and better treatments for mental health conditions and substance use disorders. This is a small sample of the entire population of VA researchers but carefully selected."



Photo by Robert Williams

A variety of new prosthetic devices were on display at the event.

Friends of VA Medical Care and Health Research hosted the event, which was organized by VA's Office of Research and Development. The Friends of VA is a nonprofit group that helps Veterans receive high-quality health care, hosts events that highlight VA's research successes.

VA chief research and development officer Dr. Rachel Ramoni introduced the accomplished group of researchers.

One of the researchers was Dr. Joanne Kirchner. She's a psychiatrist at the Central Arkansas Veterans Healthcare System who is involved with the Quality Enhancement Research Initiative, a team-based behavioral health care program.

"This is a very good way to convey the story of what we do as VA researchers," Kirchner said. "This is a better way to answer the questions of the people who are concerned with what's going on with Veterans."

At least three disabled Veterans attended the event to discuss technologies or forms of therapy that they are involved with through VA research.

Navy Veteran Joseph Bailey Jr., demonstrated use of a powered walking assistance device called the Keeogo. The device can only be used by people with some walking ability. Bailey, who has spinal stenosis, said he can walk up and down inclines and run in short steps while using he Keeogo.

Army Veteran Millard Landis spoke about his participation in a VA study that examines whether

a mindfulness training program provided as part of routine diabetes care helps to alleviate anxiety and improve diabetes outcomes. Landis, who has Type 2 diabetes, said the program has helped keep his blood sugar level down by eliminating stress. He described it as a form of meditation.

Landis takes part in the mindfulness program at the VA Pittsburgh Healthcare System. He praised the VA for what it has to offer.

"I'm proud of the treatment that I've gotten at the Pittsburgh VA hospital," Landis told the crowd. "I don't think anything needs to be fixed in the VA system. I think people should just continue to pay attention to it and believe in it."



Photo by Robert Turtill

Dr. Andrew Hansen (right) is a prosthetics researcher at the Minneapolis VA Health Care System.



Dr. Lynne McFarland, a research health scientist at the VA Puget Sound Health Care System, has studied which specific probiotic supplements are good for which specific conditions.

Researchers urge consumers to do their homework when buying popular supplement probiotics

VA researchers say there's no one-size-fits-all solution when it comes to probiotics. They point to strong evidence that probiotic products must be chosen with a specific strain in mind, well-matched to the health condition being treated.

Experiencing stomach discomfort, you go to a drug store in search of a dietary supplement known as probiotics. They are “healthy” bacteria that are important for the gut and can lead to better digestion and immune function, among other benefits.

You make the purchase, thinking you've found the probiotic that will ease your constipation and diarrhea symptoms. But have you?

A new study finds there's no one-size-fits-all solution when it comes to probiotics, a hot item today on the over-the-counter market. The researchers cite strong evidence that the ability of probiotics to be effective is both “strain-specific,” which means pinpointing a strain of a specific bacterium, and “disease-specific,” whereby it's critical to match that strain to the right health condition.

But those two factors are often ignored when choosing the right probiotic, the researchers say. They add that reviews and meta-analyses often combine different types of probiotics, resulting in misleading conclusions of effectiveness.

Dr. Lynne McFarland, a research health scientist at the VA Puget Sound Health Care System in Seattle, led the study, which appeared in the online journal *Frontiers in Medicine* in May 2018. She's also an associate professor at the University of Washington and gives lectures around the world on how to correctly use probiotics.

Most probiotics are sold as dietary supplements, which don't require approval from the U.S. Food and Drug Administration (FDA). Thus, drug makers are not required to scientifically support their claims on labels.

McFarland urges customers to do their homework before making a purchase.

"Probiotics is a developing field, and while many researchers and experts keep up with the latest research and clinical trial results, not everyone gets the news on how to best use probiotics," she says. "Consumers have to be their own advocate in finding good review articles that will help educate them on the type of probiotic that they need for their health condition."

She adds: "The general perception by the public and many health care providers is that if a product is labeled 'probiotic,' it can be safely used for almost any disease. However, research in the past five to 10 years has determined that only specific strains of bacteria or yeast have proof of efficacy. This efficacy is specific for only some strains or mixtures of strains."

'An unfortunate loophole in the regulations'

McFarland explains, for example, that not all strains of the bacterium *Lactobacillus rhamnosus*, or *L. rhamnosus*, are effective for some diseases. *L. rhamnosus* strain GG, one of the most widely used probiotic strains, has worked well in preventing pedi-

atric antibiotic-associated diarrhea (pediatric AAD). But other strains of *L. rhamnosus* have been ineffective in addressing that condition.

Conversely, she says, while *L. rhamnosus* strain GG may be effective for pediatric AAD, it has not worked well in clinical trials for other conditions, such as Crohn's disease and travelers' diarrhea. Both of those ailments affect the stomach and digestive system.

McFarland notes that although many types of probiotics are sold over-the-counter as "dietary supplements," the FDA limits advice on the label to only "structure-function claims." That means the label may say the supplement "improves gastrointestinal health" without mentioning the specific disease it is best-suited to target. Structure-function claims have long appeared on the labels of conventional foods, dietary supplements, and drugs.

"That is so general that it makes it impossible to know which diseases a particular probiotic is good for," she says. "It's an unfortunate loophole in the current regulations."

McFarland knows of cases in which patients consumed the wrong type of probiotic because the correct strain specificity and disease specificity weren't on the label. She isn't aware of situations in which this has significantly harmed the patient. But she notes that a lack of pertinent information can lead to negative consequences.

"The problem is that patients waste money on a probiotic product that may not work for them, and they continue to suffer symptoms when the wrong probiotic is used," she says. "Fortunately, the risks when using the wrong probiotic are low."

Researcher: Labels should include more precise information

McFarland's study comes as health-conscious consumers are hungry to find products that will

"The problem is that patients waste money on a probiotic product that may not work for them, and they continue to suffer symptoms when the wrong probiotic is used."

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McFarland notes that although many types of probiotics are sold over-the-counter as "dietary supplements," the FDA limits advice on the

Continued on next page

produce the greatest medical benefits.

Probiotics are live microorganisms that are proposed as a treatment or preventative measure for ailments mainly in the digestive tract, such as irritable bowel syndrome and inflammatory bowel disease. They are also used for dental infections, skin problems, and allergies.

They are widely consumed as dietary supplements or in nutritional foods, such as yogurt, and are a low-cost, well-tolerated, non-antibiotic treatment strategy. Studies have shown that probiotics can slow down the spread of pathogens, occupying an area of the body that excludes bacteria from living in the same spot.

Almost all probiotics are sold over-the-counter. Consumers can buy them at a health food store, a vitamin store, a drug store, or a grocery store, as well as online.

Dr. Nasia Safdar, an infectious disease specialist at the William S. Middleton Memorial Veterans Affairs Medical Center in Madison, Wisconsin, agrees that understanding strain-specificity and disease-specificity are a must when it comes to probiotics. Over the years, she's researched new ways to reduce health care infections through, for one, the use of probiotics.

She believes the FDA should require more details on the labels of probiotics.

"It depends on what the probiotic is being marketed for and what it's being used for," Safdar says. "But some of the claims that these probiotic manufacturers make are overarching vague things like improved gut health or improved overall sense of well-being. Those aren't anything that's measurable. How would you know if your gut health has improved? So in general, I think there needs to be more standardization of what's required without making it so burdensome that it can't be studied for its potential. Labels must include more

precise information of how the consumer will benefit."

Such ambiguity is also often evident when doctors prescribe probiotics, she notes.

"I think doctors look at the literature, and the literature may be that the name of a certain probiotic is mentioned as being helpful," she says. "But that same probiotic doesn't necessarily have to say what the amount is or specify the exact strain of what's in the product. So we're limited by what's available. I may prescribe a probiotic if what I read seems promising, but I don't know if exactly what I'm prescribing is what the patient is getting."

Study shows clear strain, disease specificity for probiotics

The findings in McFarland's study were based on a review of medical journals from 1970 to 2017 to assess whether probiotics are strain-specific and disease-specific. The researchers singled out trials on probiotics that had one strain or a mixture of strains and that had at least two well-done randomized controlled trials for each type of disease indication.

The scientists spotted evidence of strain specificity and disease specificity for probiotic strains in 228 trials. They found strong evidence for seven types of strains to prevent one of four conditions: adult or pediatric AAD; *Clostridium difficile* infection, or *C. diff*, which causes such symptoms as nausea and abdominal pain; nosocomial infections, which originate in a hospital; and travelers' diarrhea.

Strong evidence also existed for 11 probiotic strains or mixtures to treat five types of diseases: acute pediatric diarrhea; irritable bowel syndrome; inflammatory bowel disease; *C. diff*; and *Helicobacter pylori*, or *H. pylori*. The latter condition causes inflammation and infection in the stomach.

Read more at www.research.va.gov/currents ★

Study: Demanding, fast-paced military lifestyle may cause women to adopt poor eating habits

The military is no picnic when it comes to consuming food. Eating fast and at unusual times is a way of life for many in the armed forces, particularly in boot camp and combat settings.

Researchers sought to learn how such demands affected a group of 20 female Veterans who reported changing their eating habits in response to stress in the military. They had entered the military with varied eating habits but little disordered eating.

Disordered eating refers to a wide range of abnormal eating behaviors but doesn't meet the criteria for an eating disorder diagnosis, which is more serious.

In a VA-funded study published in November 2017 in the journal *Appetite*, the women described ways the military environment affected their eating. The findings suggest that the military may promote fast, irregular, binge-like eating, and that it could disrupt the reward value of food. The researchers caution that the finding may not apply to all women in the military, but only to those with certain risk factors. They hope to do larger-scale research to further explore the problem.

The women in the current study said military stressors, often related to gender, affected their eating habits. Those issues included military sexual trauma—which refers, in part, to repeated threatening sexual harassment that someone experiences during military service—and the need to meet weight requirements in general and after giving birth.

The participants also reported that poor eating habits continued after military service, often because they remained under stress.



USMC photo for illustrative purposes only, by Sgt. Dana Beesley.

Marine Corps Staff Sgt. Dalia Chavez, a drill instructor, gives a command at Parris Island in June 2018.

“For some women, military service can result in socialization to poor eating habits, which when combined with exposure to stressors can lead to disordered eating,” the researchers write.

Disordered eating is far more common than eating disorders, although the two are somewhat linked. Eating disorders relate to serious conditions such as anorexia, an obsessive desire to lose weight by refusing to eat; bulimia, when excess overeating is often followed by self-induced vomiting, purging, or fasting; and binge eating, which includes overeating without purging or other compensatory behaviors.

‘My family asks why I eat so fast’

Dr. Jessica Breland, an investigator with the Center for Innovation to Implementation at the VA Palo Alto Health Care System in California, led the study. Dr. Shira Maguen, a researcher at the San Francisco VA Health Care System, was the principal investigator.

Read more at www.research.va.gov/currents ★



Photo by Mackenzie Adams

VA researchers are studying whether tai chi, an ancient Chinese mind-body therapy, can help relieve the chronic pain, fatigue, and other symptoms experienced by many Gulf War Veterans.

Meditation in motion

The VA Boston Healthcare System is hosting a randomized trial to test the effectiveness of tai chi in the context of Gulf War illness (GWI).

Practiced for centuries, tai chi was first developed as a form of self-defense. It has since evolved into a graceful form of exercise that is known to improve balance and coordination skills, with a series of slow and deliberate balletic body movements. The movements combine flowing postures with breathing, meditation, and stretching. Sometimes, peaceful instrumental music is played in the background as one performs the exercise.

Tai chi is often referred to as “meditation in motion.”

Dr. Barbara Niles, a research psychologist at the National Center for PTSD at VA Boston, is leading the trial. She’s also an assistant professor of psychiatry at Boston University. Her research focuses on promoting health-enhancing behaviors, such as exercise and mindfulness meditation, in traumatized people.

One of her long-time colleagues at VA Boston, Dr. Deanna Mori, is the co-principal investigator on the study.

Use of tai chi as a therapy at VA facilities has been on the rise, part of VA’s larger whole health approach. That concept is based on helping Veterans take charge of their health and well-being, in part, by encouraging them to participate in tai chi, yoga, and other mind-body therapies. However, evidence to support Veteran use of those programs is lacking, Niles says.

“There are no published randomized trials of tai chi for Gulf War illness, which is why we are doing our study,” she says. “But there are also no randomized trials of tai chi for PTSD, a much more common Veteran ailment. We’re interested in research in this area to provide a better evidence base that can inform VA providers and policymakers on decisions about the treatments that should be given to Veterans.”

Past trial focused on PTSD was promising

Previously, Niles led a feasibility study that introduced tai chi to the VA Boston facility. The study included 17 Veterans who had reported major symptoms of PTSD. More than 90 percent said they were satisfied with the program.

The participants indicated that the tai chi sessions helped in managing their symptoms, such as intrusive thoughts and concentration difficulties, and in improving attention, alertness, and information processing. Every Vet who took part said he or she would like to participate in future tai chi programs and would recommend the exercise to a friend.

“I like the fluid movement of tai chi, it takes me out of my depression and my anxiety,” one Veteran said in an exit interview. “I feel great when I’m doing it, I feel better when I’m finished. [Tai chi] is helping me breathe better and concentrate better. I don’t get as distracted with my symptoms.”

Another participant remarked: “I’m not as jumpy as I used to be. My dreams have subsided, too. I think [tai chi] has given me hope. All Veterans, suffering from PTSD or not, could use [it].”

Now, Niles and her team are hoping tai chi will help relieve some of the debilitating symptoms of Veterans with Gulf War illness. The exercise has been shown to benefit patients experiencing other forms of chronic pain, such as fibromyalgia. That disorder produces symptoms similar to those of GWI: wide-

spread musculoskeletal discomfort accompanied by fatigue, mood, memory, and sleep issues.

An estimated 300,000 Veterans have GWI, a complicated condition that affects various organs, most notably the brain. Common symptoms include fatigue, rashes, serious body aches and joint swelling, gastrointestinal problems, memory loss, depression, anxiety, chronic headaches, mood and sleep problems, and attention difficulties.

Research has shown that few therapies substantially improve pain and fatigue for GWI symptoms without major undesirable side effects, including worsening cognitive symptoms. Most treatments for GWI have been pharmaceutical.

For the ongoing trial, Niles and her colleagues are recruiting 120 Gulf War Vets who are being randomized into two groups: tai chi and wellness education.

The latter is a skills-based class that focuses on exercise, surroundings, diet, sleep habits, relationships, spirituality, and relaxation. It corresponds with the VA Whole Health System, which supports physical, mental, emotional, spiritual, and environmental elements that work together to provide the best quality of life for Veterans.

Niles explains that the wellness class is more than a “simple control group.” It’s an “excellent group that will have a substantial impact on improving quality of life for the Veterans who participate in it,” she says.

“Tai chi encourages meditation, relaxation, and gentle movement simultaneously, and it impacts mental states, muscles, circulation, and breathing all at the same time,” she says. “Wellness also focuses on mind and body, although the approach is different. Education about wellness is a major component of the wellness group, along with mindfulness training and mutual support from other group members. It’s a little more like a class or workshop.”

“There are no published randomized trials of tai chi for Gulf War illness, which is why we are doing our study.”

Read more at www.research.va.gov/currents ★



Dr. Harold Koenig has become one of the top proponents in the research community for using religion as a therapy for Veterans with PTSD.

Man on a mission

Dr. Harold Koenig and colleagues are exploring whether counseling with a religious or spiritual component can be effective treatment for PTSD—particularly when feelings of moral injury are involved.

W Dr. Harold Koenig grew up in a home with devout Catholic parents, but he wasn't raised religious. Nor is he pious today. He's a non-denominational Protestant who attends church mainly because of his deeply religious wife.

"I probably would go fishing most of the time," he says. "I find a lot of connection with God in nature and hunting and fishing."

Yet, in sort of a paradox, Koenig has become one of the top proponents in the research community for using religion as a therapy for Veterans with PTSD. The head of the Center for Spirituality, Theology, and Health at Duke University in Durham, North Carolina, he's aligning this approach with Veterans who are experiencing moral injury, which is essentially a conflict with one's personal code of morality. For instance, a Veteran may feel guilt, shame, or self-condemnation for violating his or her moral beliefs in combat by killing someone, witnessing death, or failing to prevent the immoral acts of others.

The concept of moral injury is gaining recognition in VA. It's not a mental health condition like PTSD, but the symptoms—depression, anxiety, withdrawal, relationship problems, and an increased risk of suicide to name a few—are similar. Plus, many studies have shown that moral injury and PTSD are related.

“If you have less moral injury, you often have less severe PTSD,” Koenig says.

A psychotherapy for treating moral injury

To Koenig, the idea of moral injury seems to coalesce with his academic interests in religion.

“Part of that has to do,” he says, “with the whole notion of moral injury: people feeling guilty or ashamed or having trouble forgiving or having conflicts about their religious beliefs, feeling punished by God, deserted by God. All of these things seem to just really mesh together.”

He adds: “The whole concept of morality basically comes from religious beliefs and values. Certainly in this country, which has a very religious populace, our Veterans, our military personnel, our soldiers come from a religious culture that has an enormous influence on them regardless of what they are taught during training. In the military, you're trained for the mission. You've got to accomplish the mission. That's what you're after.”

Koenig is on a mission of his own.

The 66-year-old psychiatrist has written extensively about mental health, geriatrics, and religion, with hundreds of peer-reviewed publications and dozens of books in print, including the Handbook of Religion and Health. He's also appeared on many national and international news shows and has testified before Congress on the health benefits of religion and spirituality.

Lately, he's directed most of his research toward Veterans and active-duty military in the context of moral injury. He served in the Army for two months until a knee injury derailed his stint, and his father and father-in-law both fought in World War II.

He's led studies related to moral injury, including one in which more than 70 percent of a cohort of nearly 400 Vets said religion was “important or very important” in their lives. That study appeared in the *Journal of Nervous and Mental Disorder* in February 2018. Religion and spirituality weren't defined in the study, but Koenig says there's no difference in the meaning of the two for most Veterans.

Koenig has also created a scale that includes religious elements to assess the severity of moral injury in Veterans (see sidebar). He led a study on the scale that appeared in the *Journal of Religion and Health* in February 2018. In that study, nearly 90 percent of more than 400 Veterans and active-duty military gave a rating of 9 or 10 in severity for at least one moral injury symptom on a scale from 1 to 10, with 10 being the worst. Fifty percent gave the same rating for more than five symptoms.

Now, Koenig is zeroing in a spiritual form of psychotherapy for treating moral injury in Veterans and active-duty military with PTSD. No proven treatments exist for PTSD and moral injury that use a patient's spiritual resources, despite evidence that religious beliefs predict faster recovery from PTSD.

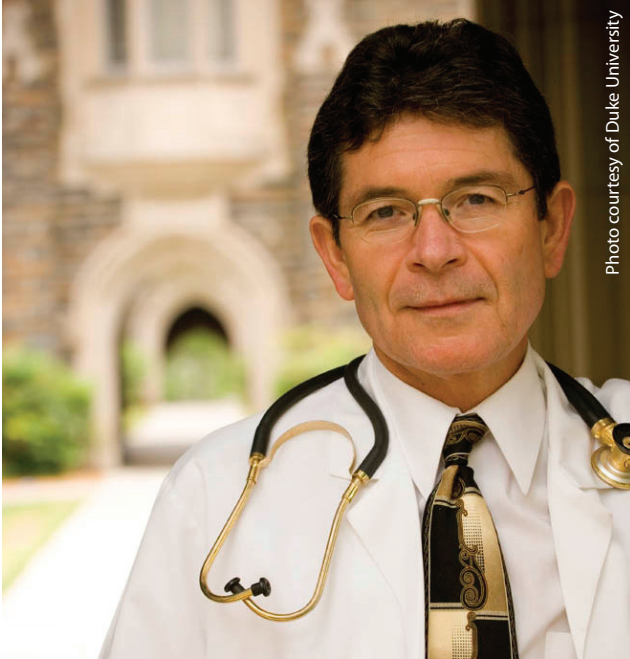
He's co-authoring the first randomized clinical trial to test that model (see sidebar).

'Barely holding on' through devotion to religion

Dr. Donna Ames, a psychiatrist at the VA Greater Los Angeles Healthcare System, is leading the trial. Given the epidemic of suicide in the Veteran community, in which about 20 people per day are taking their own lives, she welcomes Koenig's passion for using religion as a therapy for moral injury.

“We know that a lack of religion, or a sense of something greater than oneself, is a risk factor for suicide,” she says. “Dr. Koenig and others have published data suggesting the risk of suicide is five times greater in people with no religious practice than those who have a religious practice. In studies of happiness—positive psychology—people who are religious tend to be

Continued on next page



Dr. Harold Koenig heads the Center for Spirituality, Theology, and Health at Duke University.

happier than those who are not religious. There's good evidence that religion can bolster a person through hard times and prevent depression and suicide."

She notes that VA's whole health approach addresses, in part, a Veteran's religious and spiritual life in the recovery process from illness. The initiative is part of a shift by VA facilities from a health care system focused on treating disease to one based on healing relationships and partnerships.

Koenig says he's counseled patients who are on the verge of suicide and are "barely holding on through their devotion to religion." Currently, he devotes most of his time to research at Duke University and the Durham VA Health Care System, where he works as a non-paid employee. He sees patients a few hours a week in the geriatric clinic at Duke's hospital. Some of them, he says, are elderly former service members with "lots of complex problems." Others are younger non-Veterans with chronic pain.

"I'm not seeing that many patients, but literally what keeps some of them alive day-by-day is their reli-

gious faith," he says. "There's no question about that. If somebody is involved in a religious community, the likelihood of suicide goes down dramatically because they have that sense of support, that sense of meaning, which is crucial for keeping people from attempting or committing suicide."

In addition to his stateside affiliations, Koenig is an adjunct professor at King Abdulaziz University in Saudi Arabia and at Ningxia Medical University in China. He acts as a consultant at both schools, training faculty on how to conduct research in medicine, psychiatry, and oncology, which is the study and treatment of tumors, and in writing academic papers. He travels periodically to those countries to meet with faculty and other academicians.

Some of his work in Saudi Arabia and China, he says, relates to moral injury. Knowing that two indicators of moral injury are religious struggles and a loss of religious faith, he's looking at the impact of Islam on a range of mental and physical health outcomes. Interestingly, he says, Ningxia Medical University is in an area in northern China that's about one-third Muslim.

Concept of moral injury has existed for centuries

Koenig explains that religions of all types have dealt with moral injury for centuries, noting that many faiths evolved during a time of war and conflict.

"Look at Islam, look at the Prophet Muhammad," he says. "And certainly the Old Testament and the Torah. It was all during war and conflict. Those religions had in place rituals and practices to deal with moral injury that was in conflict with their beliefs. Those practices and rituals are relevant today. It just seemed to make logical sense to me given that religions that persisted for thousands of years address the issues of guilt and forgiveness. So why not take advantage of that and apply it to our Veteran population? It makes sense to me that we ought to rely on some of wisdom from the ages to address all of these things."

Read more at www.research.va.gov/currents ★

Some returning Vets are not breathing easy: Could war-zone dust mites be part of the problem?



Photo by Mitch Mirkin

Dr. Achsa Keegan (second from left) and colleagues Dr. Amit Golding, Molly Hritzo, and Dr. Hongjuan Gao are looking at how immune cells respond to house dust mites. The work could yield wider insight on respiratory problems among recent Veterans.

Don't let it disturb your sleep tonight, but in a study that got lots of press about seven years ago, British researchers found that the average pillow, after two years of use, is full of nasty microscopic stuff. At least a third of a pillow's weight, they showed, can consist of live and dead dust mites, their droppings, human skin cells, and bacteria.

The tiny spider-like creatures don't bite and don't spread disease. But they can trigger allergic reactions like a stuffy or runny nose, itchy or watery eyes, and sneezing. They have also been linked to asthma.

A VA research team in Baltimore is trying to get a handle on how exactly dust mites affect the immune system and set off respiratory problems. The study won't show the extent to which dust mites may have affected troops, but it may lead to solutions to help them going forward.

Past research, such as a 2010 study led by Dr. Anthony Szema, then with the Northport VA Medical Center in Long Island, suggested that dust mites could be one of several possible triggers—along with other indoor and outdoor risk factors—to help explain new-onset

asthma among Iraq and Afghanistan Veterans.

Lead researcher on the new Baltimore study is Dr. Achsa Keegan, a PhD scientist who specializes in immunology and microbiology. Her lab buys lab-grown house dust mites that are ground into a powder. The scientists compare that with environmental dust samples, collected by Army researchers with special air samplers, from Camp Victory in Iraq and from a U.S. site with a somewhat similar climate: Fort Irwin, in the Mojave Desert in California.

Keegan's main goal is to see how the various substances affect immune cells called macrophages, isolated from mice or from human blood samples.

What immune pathways are affected?

She already knows that proteins on the cells' surface called "pattern recognition receptors" get activated. This could lead to chronic inflammatory diseases, including asthma. Keegan's team is digging deeper, looking at additional chemical pathways, for more clues that might lead to new treatments.



Photo: ©Stock/selvanegra

Microscopic view of dust mites in a pillow.

Read more at www.research.va.gov/currents ★



Dr. Katherine Hall helps a Vet with his workout at the Durham VA Medical Center.

Photo by Jinnie Skidmore

Warrior wellness

Innovative research at the Durham VA is exploring the benefits of physical exercise for older Veterans with PTSD.

It's no secret that regular exercise is essential to maintaining a healthy lifestyle and is recommended for everyone, including elderly adults. For people with PTSD, research looking at exercise has shown benefits to quality of life and physical well-being.

But it's unclear whether working out impacts PTSD symptoms, specifically. And little research has focused directly on the benefits of exercise on older people with PTSD, including Veterans, according to Dr. Katherine Hall, a research health scientist at the Durham VA Health Care System in North Carolina.

Hall thus launched a pilot study to learn if increased physical activity among older Vets with PTSD will help ease their symptoms. Veterans with PTSD have been shown to have low rates of exercise, and many report that they don't work out at all.

The heart of the study is a supervised 12-week exercise plan called the "Warrior Wellness" program. It consists of activities focusing on strength, flexibility, balance, and endurance training.

Hall and her colleagues created Warrior Wellness to see if older Veterans with PTSD will participate in and benefit

from a moderate-to-vigorous workout routine. It differs from other programs because it tailors to Vets with PTSD symptoms, while including elements of peer support, exercise supervision, and repetition. Part of what makes the program special is its extensive exercise battery that can be adapted to individual musculoskeletal ailments.

“We know that PTSD is linked to adverse health outcomes,” says Hall, who is in the Geriatric Research, Education, and Clinical Center at the Durham VA. “And among older Veterans, some of whom have lived with this condition for decades, we see evidence of accelerated aging. The benefits of exercise on physical and emotional health are well-known. Yet, little research has been done on connecting Veterans with mental health conditions to health-promotion programs. When I spoke with Veterans, they stated this is something they wanted—to be offered programs that didn’t focus exclusively on their PTSD diagnosis and that emphasized wellness.”

Psychotherapies may present barriers for older adults

Hall is also an assistant professor of medicine at Duke University in Durham. She says evidence-based psychotherapies for PTSD, such as prolonged exposure and cognitive processing therapy, are effective. But there are sometimes barriers to undertaking and completing those types of treatments, especially among older adults, she says.

The barriers include stigmas relating to mental health services and skepticism about whether the psychotherapies will be effective.

“Lifestyle interventions like exercise may present an opportunity to meet patients where they are and aren’t contingent on mental health treatment,” Hall

says. “They also offer patients a chance to engage in activities that are familiar to them and that they enjoy. They promote physical and psychological well-being.”

Fifty-four Veterans with diagnosed cases of PTSD enrolled in the pilot study, which is expected to wrap up this summer. About two-thirds were randomized to the Warrior Wellness program. The rest are in the control group, in which the Vets are free to pursue existing VA health initiatives, such as the MOVE! Weight Management Program.

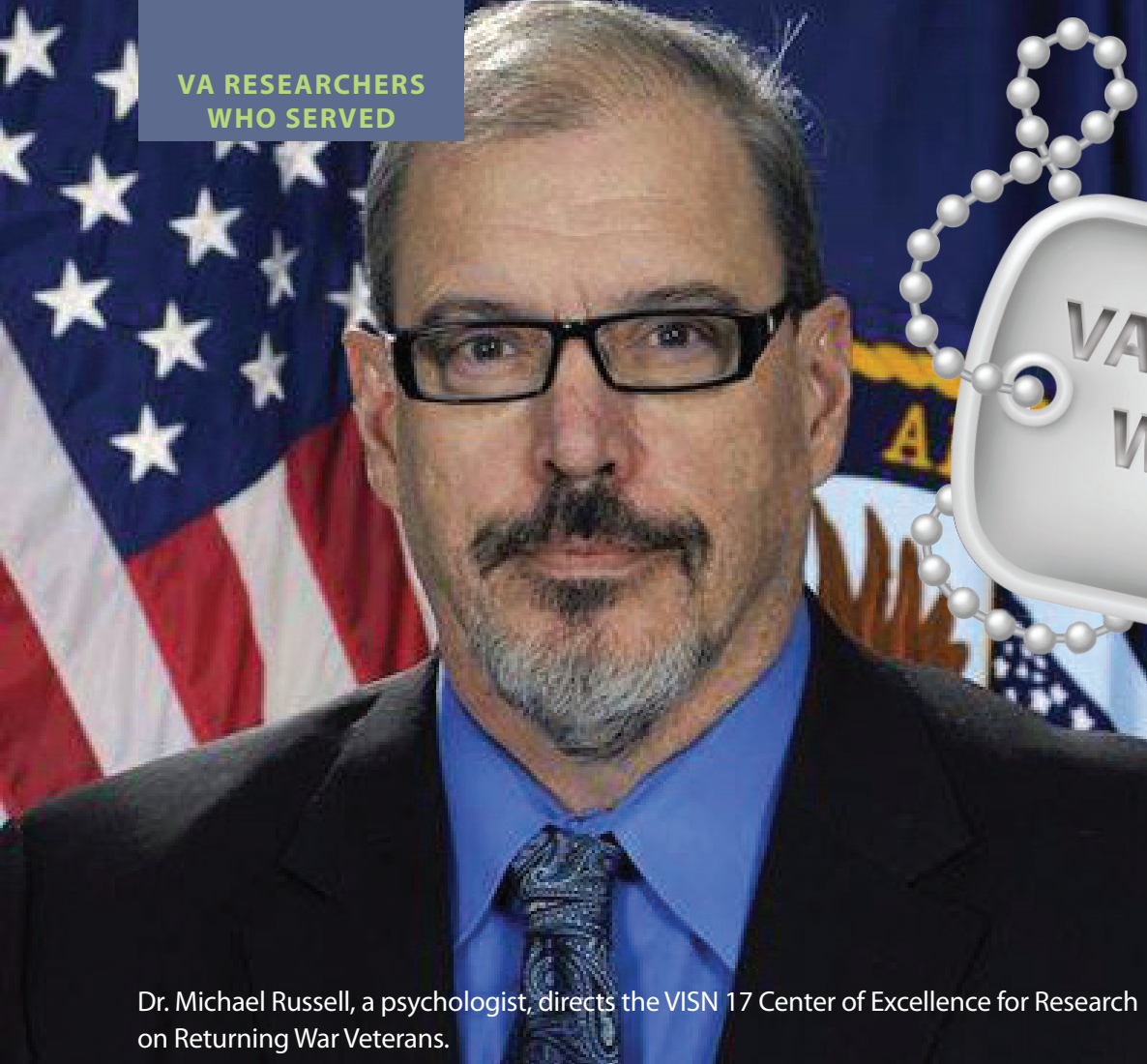
Participants in the study are at least 60 years old, and almost all of them are men. To be included, they had to use the Durham VA for their primary care.

Hall chose to study older Veterans with PTSD, instead of a younger Veteran cohort, because of their greater susceptibility to functional impairments and chronic health conditions.

“The average age of all Veterans is 58, and the 65-plus age group is the fastest-growing segment of the Veteran population,” she says. “When I first started down this path looking at PTSD and health, I was alarmed by reports showing a link between PTSD and early onset of chronic health conditions, biologic dysregulation, and poor self-care. If we acknowledge that for many of those who suffer PTSD it’s a chronic condition that people live with for decades, then we need to consider its impact in the context of aging. Older Veterans with PTSD are showing up on our door more deconditioned and more frail than older Veterans without PTSD, largely due to a lack of exercise. There are efforts targeting younger Veterans of more recent conflicts. But health promotion programs that address the physical and psychological needs of older Veterans continue to lag behind.”

“When I spoke with Veterans, they stated this is something they wanted—to be offered programs that didn’t focus exclusively on their PTSD diagnosis and that emphasized wellness.”

Read more at www.research.va.gov/currents ★



Dr. Michael Russell, a psychologist, directs the VISN 17 Center of Excellence for Research on Returning War Veterans.

VA Researchers Who Served: Dr. Michael Russell

Central Texas Veterans Health Care System

Dr. Michael Russell is a clinical psychologist and neuropsychologist at the Central Texas Veterans Health Care System in Waco, Texas. He directs the VISN (Veterans Integrated Service Network) 17 Center of Excellence for Research on Returning War Veterans. The program carries out extensive inquiries into the mental health impacts of combat exposure for military personnel who fought in Iraq and Afghanistan. A retired Army lieutenant colonel, he had a distinguished military career that spanned a quarter-century. He worked in medical support roles at U.S. bases and was deployed several times to Iraq, where he conducted research on mild traumatic brain injury. He many earned distinctions and medals for his service, including The Order of Military Medical Merit, Distinguished Member of the Regiment, the Legion of Merit, and the Meritorious Service Medal.

What motivated you to join the military?

I chose a military internship in psychology over other options because I felt it would better prepare me to be a forensic psychologist, which was my plan. Then, the Army offered me a post-doctoral fellowship in neuropsychology, before making me a fellowship director and a bunch of other things. Somehow, 24 years flew by, and I retired a lieutenant colonel in 2010.

What inspired your research career?

My doctoral program was research-based, and I published there. But it was one of my ancillary duties that first inspired me to get serious about being a researcher. I had to perform psychological autopsies on every soldier who committed suicide in my region, and soon I had a drawer full of psychological autopsies. I put the information together, and the answers I derived from my data differed from what we had been teaching. It turned out there were problems that needed solving. Without the right data, we weren't going to succeed. So I set out to be the Army's suicide expert.

Did you have mentors who inspired you in life, the military, or your research career?

Of course! We all have people who help us get where we are—no one succeeds alone. Dr. Alan Marlatt, the famous researcher on addictive behaviors, such as alcoholism, helped me get into graduate school at Washington State University. Then, my major professor, Dr. Herbert Cross, helped me get through grad school. In the Army, many senior officers, foremost among them Colonel Bruce Crow, helped me tackle rougher-than-average assignments. A wealth of friends and colleagues got me into my VA career.

When and where did you serve in the military? Describe your military experience.

I served in the Army from 1986 to 2010. We have an Army saying: "Been there, done that, got the T-shirt." I have a lot of T-Shirts. I've been the division psychologist for an infantry division, I did a fellowship at Walter Reed National Military Medical Center, and I was a fellowship director at a neurological testing laboratory in Hawaii. I was also chief of psychology at Fort Bragg in North Carolina, Fort Bliss in Texas, and Fort Hood in Texas, and I was operations officer for the 62nd Medical Group and commander of the 47th Combat Support Hospital at Fort Lewis in Washington state. In addition, I served at Landstuhl Regional Medical Center in Germany; as a psychologist for a

mobile army surgical hospital, or MASH unit, during the Bosnia conflict; and in Baghdad, Balad, and Mosul on deployments to Iraq.

What kinds of research are you involved in? How does it potentially impact Veterans?

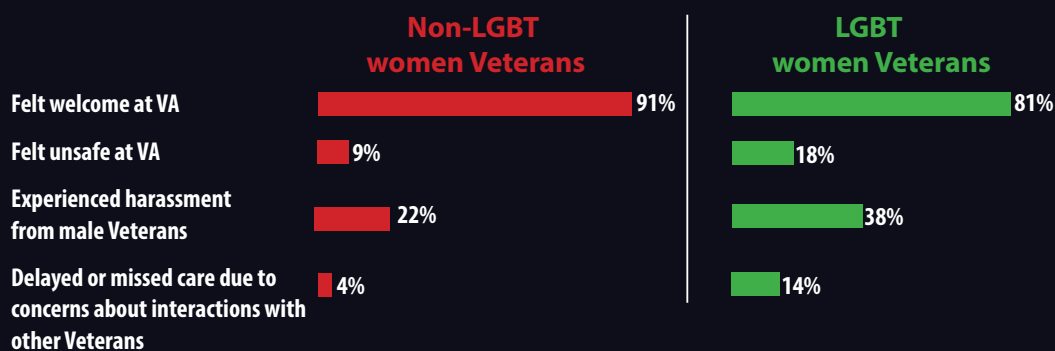
I'm a neuropsychologist and did the only controlled research on acute mild traumatic brain injury (TBI) during the Iraq war. I set up in the combat zone and followed people through recovery, something you could only do at the point of injury. I study the chronic effects of TBI and how it advances to the degenerative brain disease chronic traumatic encephalopathy, the same disease pro football players sometimes get. My center studies Gulf War Illness and a new concept, moral injury, which is a feeling of shame or guilt on the part of the Veteran. Our work on moral injury shows that this concept is a neglected area of treatment and may help Veterans who do not respond to standard PTSD treatments. Some Veterans may be better served with neurological care secondary to TBI and others need a different kind of care than VA is configured to offer. We need a better triage system and better prescriptive care. Being a Veteran, I'm very Veteran-focused and want to fill in the gaps I see in the care provided.

Read more at www.research.va.gov/currents ★



Russell (right) is pictured with Gen. David Petraeus, who commanded all coalition forces in Iraq in 2007 and 2008

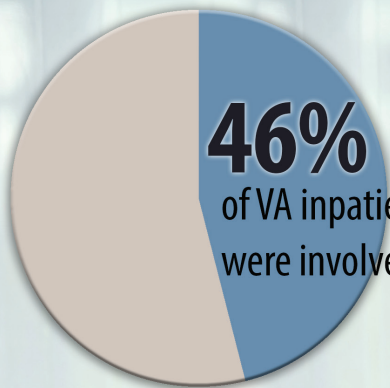
The experience of LGBT women Veterans in VA health care



Conclusion: “Compared with non-LGBT women, LGBT women were more likely to report harassment and feeling unwelcome at VHA. Some LGBT women reported delaying or missing needed care, primarily due to concerns about interacting with other veterans. Additional work is necessary to help LGBT women veterans feel safe and welcome at VHA facilities. ...”

Based on phone surveys with 1,391 women Veterans (1,201 identifying as non-LGBT, and 190 as LGBT) in 2015. From “[Experiences in the Veterans Health Administration and Impact on Healthcare Utilization: Comparisons Between LGBT and Non-LGBT Women Veterans](#),” *LGBT Health*, online July 1, 2018. Infographic by VA Research Communications, July 2018. Photo: © iStock/DanielBendjy

Impact of research on physician satisfaction

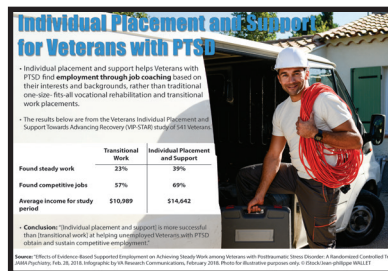
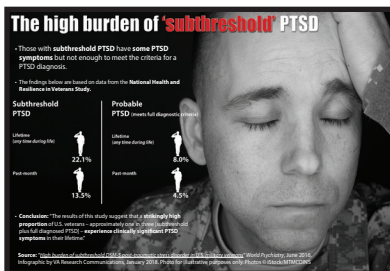


“Physicians’ ratings on **perceived quality of care and adequacy of physician staffing** were the **strongest predictors of overall job satisfaction**. ... Among the job tasks that physicians spent their time on, time spent on **research** was associated with **increased job satisfaction and decreased intent to leave**.”

Conclusion: “Expanding opportunities for physician involvement with research may lead to more positive work experiences, which could potentially reduce turnover and improve system performance.”

Based on 373 survey responses from inpatient physicians at 36 VA medical centers. “Factors associated with internal medicine physician job attitudes in the Veterans Health Administration,” *BMC Health Services Research*, April 5, 2018. Infographic by VA Research Communications, April 2018. Photo for illustrative purposes only. © iStock/Tinpixels

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RESEARCH CURRENTS

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

Gender-tailored alcohol screening improves detection among women

Gender-tailored binge-drinking screens may improve detection of women's unhealthy alcohol use, according to a study by researchers from several VA systems. Women and men have different patterns of alcohol consumption. But the usual screens for binge drinking are based on men's drinking patterns. Researchers adjusted the AUDIT-C assessment to specifically address women's drinking patterns. In a survey of more than 1,000 women Veterans, 6 percent screened positive for unhealthy alcohol use on the standard assessment. When a gender-tailored binge-drinking question was added (asking how often participants had four or more drinks on one occasion, as opposed to six or more on the unaltered AUDIT-C), 10 percent screened positive. Using gender-tailored screening could improve alcohol screening in women, say the researchers. (*American Journal of Addictions*, March 2018)



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