



**Alzheimer's Talks
with Dr. David Cifu
November 14, 2017**

Note: Transcript has been edited for content and clarity.

Shawn Taylor: Welcome to [Alzheimer's Talks](#), a free monthly teleconference presented by [UsAgainstAlzheimer's](#).

Hi. My name is Shawn Taylor, and I am a founding board member with UsAgainstAlzheimer's and president of the newly formed network, [VeteransAgainstAlzheimer's](#). I'm so glad that everyone listening on the call will be joining us today. We've timed this call to coincide with honoring our service members in honor of Veteran's Day.

Like many of you, I am committed to the fight to stop Alzheimer's because I have seen firsthand and have experienced personally the devastation of this disease. I come from a very small family. I idolized my mother ever since I can remember. She was smart and beautiful. She loved me unconditionally. She was a force to be reckoned with, a pioneer in the professional world—in a man's world, no less. My mother left her career in its prime to care for my grandparents when they started showing signs of senility. They moved into our home and little did I know that this would be the start of my long caregiving role. Both my grandmother and my grandfather (he was a retired Colonel and West Point Graduate) passed away from Alzheimer's. I was their only grandchild.

Fast forward fifteen years. My mother began showing signs of this disease—her greatest fear after watching her parents. Now, my mom is in the late stages of this disease and doesn't even know her three granddaughters and doesn't recognize me, just my voice. And incredibly, my daddy, a retired Lieutenant Colonel and Purple Heart recipient was diagnosed with Alzheimer's last fall.

I share this background with you so that you truly understand how and why this initiative became so personal to me. I am my mother's only child. I understand the intense caregiving needs, and I realized I just had to do more.

I became aware of the unique risk factors to our service members as a direct result of their military service indicating that there is a higher incidence of Alzheimer's for our veterans. I'm so proud to be leading this new network, which just launched at the UsAgainstAlzheimer's summit last month. At the time, we also released a report, [Veterans and Alzheimer's: Meeting the Crisis Head On](#), which is now available on our website. Our goal with this veteran-focused network is to shine a light on the

Alzheimer's crisis in the Veterans' community. How? By increasing awareness and education of this disease, collaborating within the public/private communities that support our veterans, their families, and their caregivers, improving access to quality care, and increasing research for a cure.

So, with that, I am just so honored today to introduce you to Dr. David Cifu. He has spent over twenty-five years as a neuroscience researcher and clinician. Specifically, Dr. Cifu is Professor and Chairman of the Department of Physical Medicine and Rehabilitation at Virginia Commonwealth University School of Medicine, Senior TBI (Traumatic Brain Injury) Specialist at the U.S. Department of Veterans Affairs, and Principal Investigator of the Veterans Affairs and Department of Defense [Chronic Effects of Neurotrauma Consortium](#) (CENC).

He has published five books, co-authored more than twenty-five book chapters, and published more than 220 scientific journal articles. And I am so honored that with all that he is involved with, he has agreed to join forces and become a member of our Advisory Committee for VeteransAgainstAlzheimer's.

Before we get started, if you have a question during this call, please press *3 on your phone. By pressing *3 you will be placed into the question queue. Please have your question ready to share briefly with a member of our staff or if you are listening to us online you can type your question in the box, and we will get to as many questions as possible. Please note that Dr. Cifu, like all our guests, is not able to answer personal medical questions on this call.

So once again, thank you so much for joining us today, Dr. Cifu.

Dr. Cifu: Thank you, Shawn, I appreciate that. And I certainly appreciate being part of this discussion, this call, being able to help you all, and teaming up with VeteransAgainstAlzheimer's. Most importantly, I want to make sure I'm honoring all of America's heroes; our Veterans and active duty service members. They are the reason why I have the energy and enthusiasm to happily add this to my plate.

I'm going to give you a little bit of a flavor for how I got into this area and specifically, how I'm looking to really make an impact on America's Veterans, and then hopefully in general on America's elders, by bringing brain health and cognitive wellness to a population that's at high risk to get Alzheimer's and other types of dementia.

For the last twenty-five years, I've been a clinician who has cared for people with disabilities, mostly those with cognitively related disabilities from traumatic brain injuries, stroke, Parkinson's disease, and the like. That's what my career has been based on, but as part of that career, I recognized that while it's rewarding to be able to help people who have disabilities or dementias, to have better lives, to have a higher quality of life, to get more support from the community and their families, and to teach people about ways to do just that, what I found even more rewarding was to try to figure out how we can cure some of those difficulties. If not cure, then how can we improve some of the

difficulties these individuals face, so that they are not as dysfunctional, so that they're not living with more disability than necessary, and so they are able to be more active. This is why I became a neuroscience researcher in Parkinson's disease, stroke, spinal cord injury, brain injury and now in dementias; to try to figure out how we can impact individuals who may be at high risk for eventually developing some types of cognitive disability or dementia. Whether they are individuals that are going to likely get it, because perhaps of genetic predisposition or because of having so many health risk factors that it's going to be inevitable, or perhaps they've already demonstrated some early signs. They may have mild cognitive impairment, or MCI, or they're beginning to show the later term effects. Whatever the underlying causes, my goal is to figure out how do we better understand ways to slow down, to halt, to eventually reverse some of those changes. This has become my passion and my drive as a neuroscientist.

Let me just give you a flavor for the areas of research that the U.S. Departments of Veterans Affairs and Defense are heavily invested in on financial, emotional and institutional levels, so that we can a difference for these individuals, for America's finest.

As Shawn mentioned in her introduction, individuals who are in the military and individuals who are Veterans, have a disproportionately higher rate of developing dementias, specifically Alzheimer's type. There are a number of factors for that higher risk. The most obvious factor and one which we're not going to change is aging. Nearly half (50%) of all Veterans are aged sixty-five or older, as opposed to the general population which is less than twenty percent. By definition, if Veterans are predominantly over aged sixty-five, and age is the number one risk factor for dementias, there's going to be a higher number of Veterans who develop dementias. We're not going to change the aging process and while the VA is certainly recruiting more and more young Veterans (because of the influx of service members from Iraq and Afghanistan), we still have an aging population.

But what are some of the other factors and what are we studying? The one that's most commonly in the news and that folks are most aware of is combat-related brain injuries, or concussions, particularly those occurring as a result of military exposure from IEDs, from other types of blasts, and just being in the battlefield (where motor vehicle collisions and flying objects are quite common). We also hear about higher risk of concussions from athletics as well, in Pee Wee, high school, college and professional sports. Additionally, we are seeing an increasing number of individuals who are continue to drive, be active in athletics and just keeping mobile despite advancing age and they have a higher risk of having an injury, whether it be a fall or a motor vehicle collision, and these injuries are associated with traumatic brain injury.

It's not clear if these milder brain injuries, known as concussions, are sufficient on their own to begin a cascade that will increase your risk for dementias. We do know that moderate or severe brain injuries, the ones where you're hospitalized, where there's bleeding on the brain, where there's a longer period of alteration of awareness, definitely increase your risk of developing a dementia. The increased risk is still very small, but it's enough to encourage us to take measures to better protect the brain.

Whereas a single severe brain injury is enough to elevate the risk for dementia in Veterans, it may take more than a dozen or even hundreds of mild brain injuries to do so, and this is one of the areas we are studying in combat Veterans.

We're studying individuals from the Iraq and Afghan conflicts who have been in combat and had a military exposure to concussion. We've a large group of patients, almost 2,000 of them across a number of linked studies, that we're following closely over time, to see who will be most likely to develop the dementia. We're doing this to better understand the situation, so that we prevent or slow that down the process. We're also studying the aging pattern in relation to these brain injuries, to find out if there are ways to age in a more healthy way.

We're also studying the risk of post-traumatic stress disorder, or PTSD, in these same individuals, because from the Iraq and Afghanistan Wars we're seeing that about three quarters of individuals who have at least one concussion also have PTSD. We are studying the risks associated with these two things together. How does that increase or change the risk? What can we do to try to decrease those risks from having both of those problems, as opposed to just one or the other?

Other factors that we're looking at include depression, since individuals with brain injuries have about a fifty percent chance of having depression in the first year after the injury. Other related things that we're studying, are the overuse of alcohol, the overuse of tobacco products of any type, cardiovascular disease; obesity, diabetes and a number of related mental and physical health issues that will increase your risk of dementias, particularly when seen in combination.

So I've just listed five or six factors that we're studying in this large group of Veterans and service members over time. We're hoping to study them for ten, twenty, or more years, just as the famous Framingham Study studied populations with heart disease. Instead we're looking at brain disease. Some have had one concussion and some have had more than 100 concussions. Some of them have PTSD, some have depression, some have substance use issues. Some have cardiac disease or diabetes, which are things that are more commonly found in the older Veteran population. We're trying to tease apart all of these elements and figure out the associations between factors, the causative factors, the factors that accelerate brain degeneration, the factors that help to prevent it. Also, we're looking at what kind of special tests can be used to identify problems early, so that we can implement or treat earlier or more intensely. Can we use specialized X-rays of the brain, a type of MRI? Are there specialized computerized balance measures that can be used? Is early loss of balance something we see in dementia? Since we can see not just with a brain injury, but also in depression or PTSD; how do we differentiate one from the other? In addition to perhaps finding a problem that can be improved with rehabilitation, are worsening balance skills predictive of brain decline and perhaps dementia? We're also looking at specialized, computerized, eye tracking devices, some of which can even be worn in the battlefield or emergency department as a potential way of early diagnosis of concussion or PTSD. Can this be used to identify the person who is having persistent problems with their eye

tracking, that is with their ability to move their eyes as they're looking across the horizon or reading across a page. In addition to perhaps identifying a problem that could be treated with rehabilitation, is this also a person who is at higher risk to develop dementia? As an example, we've have several years of research at our VA in Richmond that this computerized eye tracking is a way to detect Parkinson's disease years before it ever is seen by clinicians or family. Parkinson's disease, like Alzheimer's disease, is a neurodegenerative condition that can be associated with brain injury or other military exposures.

Thus, the Chronic Effects of Neurotrauma Consortium, or CENC (Sen-see) is studying this entire scope of things. CENC is made up of more than 75 researchers in 20 states, from 15 VAs, 30 universities, 7 military treatment facilities, and 3 independent research institutes, all working together under a single research umbrella. I'm heading up this type of approach because there's no way a single researcher or a single center could study a problem as big as all this. It's not just Alzheimer's or dementia, it's not just concussions or brain injury, it's not just PTSD or depression; it's the linkages across each of these disorders or injuries, in a Veteran population that has specific risk factors of its own, taken across the entire United States. Something this complex needs a consortium of this size and diversity. I happen to be privileged to be leading it, but I'm only as good as the more than researchers we've got across the country, all working together to find the answers to these difficult problems of military service risks, brain injury risks, lifestyle risks and genetic risks as they relate to the development of Alzheimer's disease and related neurodegenerative conditions.

I'm going to just give you a glimpse of what we found early on in our research. We only started in 2013, but because the conflicts had started in the year 2000, we do have some research subjects that are as far as 17 years out from these injuries, and we've collected data on military exposures from nearly 2,000 Veterans and service members who served in Iraq and Afghanistan. We're really still early in this research activity; it will take us 10 or 20 years to really understand it more comprehensively. We aren't just trying to demonstrate that there's some kind of increased risk, we've already identified that. What we are searching for is what things increase and what things reduce risks, what things allow people to stay functional and cognitively intact longer, what things, potentially slow down if not reverse some of these changes in the brain. The CENC program is really in its infancy, but I will present the information we have so far. The good news is that fully two-thirds of the individuals that we're studying are doing extremely well at about seven years out from exposure to the military environment, including a brain injury, PTSD, depression, and the range of other risk factors. This large group is employed, is living a typical life with family, marriage, and children, they are socially active, they are earning a stable income and living independently. Fully two-thirds of the folks who had significant exposures in Iraq and Afghanistan—stress exposures, physical exposures, medical conditions, and the like - are doing quite well. We anticipate that this group is going to continue to do quite well, based on other large studies of individuals with brain injury who seem to remain stable or improving after their initial 3-5 years. While some of these individuals may actually have some symptoms, such as a persistence of headaches, some occasional dizziness, or even some

forgetfulness, they are functional, living, working and thriving; doing everything that you and I do well.

The flip side is, a third of the folks are struggling. They have a range of symptoms that limit their functioning. While many of us, including the two-thirds of the CENC population who are high functioning, have one or two symptoms off and on, this smaller group from CENC may have five, seven, or even as many as eleven symptoms to deal with. While not all of these symptoms can be directly linked to military service, many of them are either due to an injury or event during combat or as a secondary effect of one. As a result of this conglomeration of symptoms, they're having a hard time finding a job or staying at work, they're struggling with relationships, they're having a challenge with social integration, with their children, with their coworkers, with their friends. While almost all of these research subjects are regularly linked in with the VA system for clinical care, they're still having significant challenges.

Importantly, however, even though this one-third of the CENC research sample is having ongoing challenges at seven years or so from their most recent combat injury or event, our researchers haven't noted specific cognitive decline, early dementia, or even mild cognitive impairment, in this group. So, despite their struggles, we haven't yet seen evidence of neurodegeneration. These are folks that we're concerned about because they are likely at risk for dementias, but we are pleased that we're not seeing the early brain dysfunction that some have reported in professional athletes. We are not seeing neurodegeneration in this group. This bit of good news could be due to a range of factors; it may be too early, it may be they didn't get enough injuries, it may be they have other protective mechanisms. Perhaps they have a stronger resiliency and ability to recover because of their military training. Or, maybe the early battlefield or VA care help to slow down or prevent the development of neurodegeneration. We don't yet know exactly why, but we are going to continue monitoring as CENC progresses.

We're just year three and a half into the grant, which we hope to continue for decades, but our subjects are on average about 7 seven years from their most recent and significant combat exposure and early on, we're very hopeful that fully two-thirds are doing quite well, and the remaining one-third are struggling but not showing signs of early dementia. The research continues. Our next step is to continue to grow this group Veterans and expand our research activities related to them. If anybody would like to be part of this study, just go onto the website at CENC.rti.org and find out which study might be near your home. We'd love to have you be part of it. You don't necessarily have to have had a brain injury, but you have to have been in the Iraq or Afghan conflicts.

The last topic before opening up for questions is Brain Health and Cognitive Wellness. Clearly, there are some factors associated with cognitive decline and Alzheimer's disease that we can't change. We are all aging, roughly at the same rate. We do have specific places that we were born in, there may be inherent risks, environmental, in those places. We all have our genetic code and while stem cells and genetic interventions may be in the near future, we don't have them currently. Thus, when it

comes to aging, environmental exposures, geographic predilections, and genetic/epigenetic factors that may be associated with dementias, I would advise you, please, don't stress on them. Stress itself, without the opportunity to grow and move past it, is not good for your brain. Instead, we should be turning our focus and efforts to those specific things that are related to our brain's health and wellness and that we can directly impact.

How do we really support our brain and support our body? We find is that many of my patients and folks we see in research seem more concerned with the wellness of their car's engine or their dog than they do their own body and brain. They don't do it on purpose, but they don't seem to realize that the fuel we put in our bodies, the way we take care of our interiors and our exteriors, and what we do for ourselves day in and day out directly impacts our risks for developing problems over time. How do we love our brains? What are the things that we can do to build brain resilience, to build the brain capacity, to build the functional reserves in all our bodies to withstand stressors, to prevent or slow down any of the dementing processes?

There's a great deal of good research across the fields of dementia that being physically active, mentally active, socially engaged, and overall taking care of your body, can slow down the course of the all diseases, including dementias. Overall wellness and brain-specific health may not cure dementias, but it will definitely slow it down. Let's highlight a couple of things that we should all be doing in a mindful way to optimize our Brain Health and Cognitive Wellness:

Number one: What we put in our car's engine, in our body, in our dog's body, in any machine, is vitally important to its overall operation. While it may be okay once in a while to eat less than perfectly or to excess, you need to always be thinking about the fuel you're putting in your body. Dietary restrictions are important. Calorie control is important - the average human actually needs about 1800 calories for normal life. Staying on the thinner side of life is the way to fully support your heart and brain. That's means that we should fill about half as much of the plate with food as we typically do. You need to eat very small amount or no meat at all, a full plant-based diet should be our goal. The amount of meat or fish you eat in a day should be less than the size of your fist. We need to eat more vegetables, more legumes, more nuts and more whole grains. There really is no vacation from a good diet – your brain receives 20% of all the nutrients and oxygen you take in; think about that every time you eat.

Number two: You need to exercise throughout the day and night, make it a regular part of your life and lifestyle. The exercise needs to be both physical and mental. Walking is an ideal exercise, so just do it. Skip the car or the elevator, walk anywhere and everywhere you can. Swimming is another great exercise that allows you to move your entire body. Tai chi chuan is probably the world's best exercise and it can be done from age 3 to 113. But the best exercise is *any* exercise! Just get off your chair, get out of your bed, get out of your car, and use your body. Don't take the elevator, walk up the stairs. You don't have to go to a special health club or buy Lululemons to be an exerciser. You can just walk. You can rake the leaves. You can mow the yard. Whether

it's in a park, in a mall, whether it's around a school running track, wherever it is, just do it.

You need to also be doing cognitive exercise. You need to read. A newspaper, a novel, a magazine. Put your brain through its paces several times a day, perhaps do the daily crossword or other puzzles. Part of that cognitive exercise is to use your brain productively; volunteer, work, a hobby. Don't just retire and play golf. Golf is not a physical exercise; it's fine to do for emotional release or to socialize, but it really doesn't give you aerobic exercise and it isn't cognitively stimulating. If you can work, then work. It can be part-time work, it can be volunteering, it can be as part of a hobby or a social activity. Regular game nights with friends or family are vital. Just the socialization of getting out, particularly with a circle of friends, is really important. It's great just to socialize in general, but actually having a core group of friends that you see on a regular basis, sometimes for years or decades, provides you cognitive and social stimulation as well as emotional supports, and has been shown repeatedly to enhance both overall life span and your healthy life span. The American way of health care has given us long chronological lives, which is it's great, but what our spans of healthy, active lives? There's a growing gap in the world now of folks who are living into their seventies, eighties and nineties, but their bodies or brains are beginning to fail during their sixties, so we have a growing gap of decades with limited wellness and poor life satisfaction. There are ways that we can act now to narrow that gap (see www.BlueZones.Com).

Number three: Stress management and relaxation training are vital. Stress management techniques can include; one-on-one counseling, group meditation programs, self-training in the art of mindfulness, directed meditation, and a range of other options. Applying mindfulness to reflect on what your life is about and to understand what's going on in your mind and body is a key skill. It's vitally important that we use stress management, relaxation techniques and sleep hygiene principles to get full night's restorative sleep. While how much sleep and rest you need will vary with your age, activity level and health, restorative sleep is vitally important for Brain Health and Cognitive Wellness.

Key Principles; stress reduction, restorative sleep, healthy diet, regular physical and cognitive exercise, friendship circles, a purpose-driven life filled with work and volunteer activities, receiving counseling and other care for mental health difficulties, not smoking or using tobacco products, limited alcohol use and preventing traumatic damage to our brain are all key techniques to optimize our brain's functioning and reduce our risks for Alzheimer's disease and other neurodegenerative disorders. Protecting our brain from physical harms is a big area of focus these days and preventing concussions and brain injuries is important. If you're older, making sure you're doing physical activities that are within your functional capacity that don't put you at risk for a fall, for an accident or from intentional trauma. If you're young these things are also true, but since we can't always know our limits, wearing a helmet if you're riding a motorcycle—which I never recommend—or riding a bicycle. Obviously, you have to make sure you're driving a motor vehicle at the appropriate speed, that you are not distracted or texting, that you are wearing safety belts, or that it has air bags. If you have fully taken care of your brain

and your body then you'll find that even if you have some risk factors that aren't easily prevented, then you'll be able to forestall or deal with some of these dementing processes that much better. Hopefully, putting together a full suit of protective armor around your brain with all of these elements will be the first step to the cure from Alzheimer's disease.

So that's a lot of information about your brain; some of it scientific and cutting-edge research, some of it simple things that your grandparents probably told you and would still tell you. All of these things are vitally important to understand and apply. I appreciate the time to share them, and I look forward to some good discussion with questions. Back to you, Shawn.

Shawn Taylor: OK, terrific, thank you. Thank you, Dr. Cifu, for such a thorough overview of this issue. We have a question that's come in. As you mentioned, Dr. Cifu, older veterans who have suffered a traumatic brain injury are sixty percent more likely to develop dementia than veterans who have not suffered a TBI. We've discussed concussions and brain injury on previous Alzheimer's Talks in the context of athletes and sports-related injuries. How is the issue for veterans similar or different than for sports-related brain injury? I know you touched on this, but perhaps you could elaborate a little bit more?

Dr. Cifu: Yes, of course, Shawn, thank you, and this is probably the most common question I'm asked these days. Thank goodness for the movie *Concussion* and for the books that have come out, which really spark interest and, while some of the facts in a movie or a fictional book are going to be somewhat exaggerated, I think all of these media outlets for concussions, brain injuries and dementias are important and accurate enough. There are a lot of great organs in the body that are all important for healthy living, but your brain is the central organ. It's the one that is the most complex; more complex than any tool we've ever invented, including every computer. It is also the most sensitive to changes in the environment and being rattled around rapidly by a blast wave or car accident is a pretty big environmental change. Whether the injury is being rapidly rotated due to a car accident, is due to the brunt force of a sports contact, is the result of being blown up by a blast injury, or is simply being in a military setting and having something fall on you, all of these sudden start and stop forces are sufficient to transiently disrupt the function of the brain – what we call a concussion.

The brain doesn't necessarily know how it's been injured, it just recognizes that it has been moved rapidly back and forth. If it's a very severe injury, and you spend hours unconscious, then it's likely actually banged up against the skull and maybe the skull's even fractured. If it's the more common concussion or mild brain injury with a brief period of confusion or unconsciousness that occurs in eighty to ninety percent of injuries, then the brain has it's just been moved rapidly back and forth within its watery sac of cerebral spinal fluid without bleeding or banging up against the skull. Just that rapid movement alone was fast enough to disrupt some of the little blood vessels and some of the brain connections or axons inside the head. The disruptions in brain signaling that occur, along with the associated stretch injuries to muscles and soft

tissues of the neck, cause the problems we see after concussion. We may see some initial confusion and then problems with dizziness and headache for the first few days or weeks. Even the memory, behavior and sleep difficulties that can occur are usually relatively short-lived and self-contained in about ninety-five percent of folks. Only a relatively small, small percent of people have significant or persistent problems from a single concussion.

But what if you have a lot of these concussions? What if you're repeatedly injuring your brain in the military theater? What if you also sustain PTSD or depression? What if you haven't been putting good fuel (food) into your body for a long time? What if you also have poor exercise and sleep habits? The highest number of concussions I've heard of from the Iraq and Afghanistan Wars is 151 concussions from a series of tours in Iraq and Afghanistan. On average, people that got any concussions got about 4 during their military tours. In comparison, people in professional sports, who have also completed 10 or more years of school and college sports, are reporting thousands of concussions over their careers. Many of these thousands of injuries go unreported and uncared for. So the difference is not so much the type of injury—blast, fall, airbag—but rather, how many, how often, how far apart, how treated, and how many other difficulties are affecting that concussed brain?

As an example, you get a cut on your hand and you have the choice of what to do. A single cut is likely to heal well regardless of what you do to it. Over time it will heal, however if you ignore it and then get repeated injuries, you're likely to get a significant scar. The tissue will be irritated. You will be more likely to bleed or have pain. If you also have an infection or some other skin disorder that scar will be even worse and more likely to cause widespread effects. Same thing is true of a brain injury of any type. It needs to be treated right away. It needs to be treated by a team of professionals who know what they're doing, not just anybody. You need to be mindful of how you are treating it and how you are doing. In the VA system, there are more than 108 teams across the U.S. that are specially trained in the care of brain injury and related combat injuries (www.Polytrauma.VA.Gov).

And the same thing is true of with dementia; if you notice that you're starting to have memory problems, attention problems, or forgetfulness, and you think, well maybe I've got Alzheimer's disease or some other problem, that's the time to tell your primary care doctor. That's when to begin the process of getting diagnosed and treated, not six months or a year later. We may want to wait and see if things get better by themselves, but early diagnoses and treatment for disorders or diseases, whether it be concussions or dementias are vital.

Shawn Taylor: Terrific. Well, thank you for that answer. We now have a call from Les Burger from Vancouver, Washington. So, Les, please go ahead and ask your question.

Caller: Thank you, Shawn. I am a veteran. Thank you both for what you're doing. My question is about the study you talked about, are PET scans being done to demonstrate presence or absence of beta amyloid?

Dr. Cifu: Wow, you clearly know what you're talking about. It's a great question. The question really is, do we have a way of identifying, early on, individuals who have a dementing process, whether it be Alzheimer's or chronic traumatic encephalopathy? Some of the ways people look at them would be a CT scan, an MRI, a PET or SPECT scan which is a way of looking at how much energy the brain is using, or other techniques.

The short answer is, we've looked at all the different types of scans, specific for individuals who are in the military and who are exposed combat-related injury. The one imaging test that has so far showed the best promise is the MRI or magnetic resonance imaging. SPECT and PET scans have a lot of sensitivity, they find a lot of things, but they're not very specific, so they tend to be "positive" a number of times when there's no actual brain injury. They are not as good for detecting and following concussions as MRI are. There's also radiation involved in using a SPECT scan, a small amount but there's some.

The ideal test right now, in our research and clinically is an MRI scan. Now, in older individuals who perhaps haven't had brain injuries or haven't even had a lot of military exposure, and we're trying to figure out, is there something going on that might account for the thinking problems, then a CT scan is the right first test. It will help us to look for problems like swelling in the brain or fluid collections, called hydrocephalus, a stroke or a brain tumor. The second line testing for older adults with new or worsening problems with brain functioning continues to be an MRI. SPECT and PET scans have some role for tumors, for monitoring tumors over time, but right now they are not useful for concussions, brain injuries or dementia. But thanks for your great question, it's really right on.

Shawn Taylor: OK. We have another question here. For veterans that are listening to this call who might have experienced in combat some of the items we've discussed such as blast-induced Neurotrauma or successive concussion syndrome, what would you recommend, Dr. Cifu, that they do now if they have not yet had any symptoms of dementia?

Dr. Cifu: That's a great question, Shawn, and we get that all the time. Just by talking about it, by having this session, by publishing a paper, by seeing a movie, people are going to naturally associate with some piece of it, and maybe that's one of the reasons folks do it, to raise that awareness. But now that you're aware that you have a potential risk, what do I do?

The first thing is, don't get stressed. The worst thing in the world is to suddenly believe that because I was exposed to an IED blast or had a fall in combat or sports, that I'm going to suddenly be at markedly higher risk. Or that the weird ringing in my ear that I never paid attention to before, or that mild dizziness I get when I stand up once in a while, that is suddenly the first sign that I'm having a worsening problem.

The chance that one or two concussions is going to put you suddenly at high risk or cause acute problems is essentially zero. That doesn't mean you should ignore it, which as I said earlier you shouldn't. What you should do is, if you're a Veteran, please come in to the VA system. Go to your local VA, and if they are one of the more than 100 that have one of these Centers of Excellence for Polytrauma, then they will be able to do some simple tests to figure out what's going on with you. Even if it turns out to be a minor, unrelated issues, you'll be entered into the OEF/OIF Brain Injury Register, and if anything is later learned that can help you, we can contact you. To date, we've registered 1.6 million Veterans in the registry, so please be evaluated.

There is a [map of the polytrauma sites](https://www.polytrauma.va.gov/), if you go to <https://www.polytrauma.va.gov/> you can see which one is closest to you or you can contact your local one and they can give you information. Obviously, if you don't go to the VA system or if you're not a Veteran, you can certainly see your primary care clinician and talk to them. VA is specially set up to really do the type of evaluation I've talked about and are very highly sensitized to it, particularly for service-related issues, and things that Veterans would specifically be at risk for, so if you are a Veteran please consider going to your local VA.

So, to help relieve your stress at what *could be*, *would be*, *should be*, please realize there are so many things that we can do to reduce your risk that you're probably not even doing now. We've discussed several and now that you've got an awareness of it, you can actually start to implement many of these things that may even make you better and at lower risk than if you hadn't. So spin your worries into a positive awareness of early interventions and preventative activities.

Shawn Taylor: That's really great advice, Dr. Cifu. Another question that has come in: the prevalence of dementia diagnosis is two times as high among veterans with post-traumatic stress. For those veterans who are currently suffering from PTSD and depression, what would you recommend? Is there any evidence that treating these symptoms will help reduce the risk for Alzheimer's?

Dr. Cifu: Thanks, Shawn, and again, that's something we certainly mentioned but need to highlight as well. Right now, there's a lot of press related to concussions and similarly for post-traumatic stress. PTSD occurs in about thirty percent of Veterans who have been in military combat. I mentioned before that of those that had a traumatic brain injury in combat had a seventy-five percent chance of also having PTSD. Thus, the average Veteran with military exposures has a one in three chance of developing prolonged stress issues and the Veteran with a combat-related brain injury has a three in four risk.

The good news is that there are very focused, simple and evidence-based treatments that get post-traumatic stress better. Many people are completely cured with these interventions, and even those who have some recurrence are able to control their symptoms, and return to function, get back into the world, get back into the things we talked about earlier—work, social life, exercise, and a healthy lifestyle. There are treatments that are specific for post-traumatic stress disorder and depression, as well as

a range of other problems seen in Veterans. Importantly, there is no simple cure-all. A single pill or two will never cure these problems. Medications may help along with the healing process, but true improvement almost always entails some degree of education, counseling, and human interaction. And that's a good thing! For the brain to heal without interaction would be quite surprising. That's also how we know that we're actually monitoring your improvement and that you're actually getting back to the level of performance that you're looking for.

A competent clinician is not looking to have you become expert at taking pills. We're looking for you to get into your health care system and engage with your primary care clinician, along with your therapist, psychologist, or counselor. That counselor may be able to help you with brain injury symptoms at the same time as the stress management, or may be able to plug you into an activity that will allow you to enhance your rate of going back to work or to socially engage, so that's a very positive message. We want social engagement, we want a therapeutic relationship between an educated clinician, someone who really is skilled at this. While medicines may play some complementary role, it is best to have a blend of counseling, education, cognitive behavioral therapy and good overall health care management (weight loss, healthy diet, sleep, blood pressure control, blood sugar control) to improve your symptoms and also to reduce your later risk of Alzheimer's or dementia. Treating depression, treating stress disorders, treating anxieties, and treating the symptoms of concussion will likely be found to also reduce the risk of or delay the onset of Alzheimer's disease.

Shawn Taylor: OK. So, in your experience, Dr. Cifu, in your knowledge of the VA, is the VA, in fact, ready for the number of vets with dementia that they are facing in coming years?

Dr. Cifu: That's a loaded question, but I'm going to answer it as politically appropriately and as honestly as I can, Shawn. As you know, there are probably well over three-quarters of a million Veterans currently who have Alzheimer's or other dementias. About half of those are enrolled in the VA system. Unfortunately, the VA only provides care for about half of all Veterans who are eligible for that care. Just before this call, I was on a 90-minute call with VA leaders in dementia and we had a wonderful discussion—there are already systems in place to provide care for Veterans with early dementia, with risks for dementia, with profound dementias, as well as brain injury and PTSD. Those resources exist. A key is getting all Veterans access to the highest quality of care.

Now, if every Veteran, the fifty percent who don't use the VA, suddenly came in to it for care, then no we aren't prepared for that and we'd need to staff up. But these extra Veterans aren't yet counted in the group, I am hopeful we can get them all enrolled. VA is prepared for Veterans with dementia and is always looking to grow and enhance care. Is everything perfect in the VA for Alzheimer's care, for brain injury care, or for PTSD? No. Is everything perfect in the private world? No. Is everything perfect in the Academic health systems? No. But, VA is the largest, universal or managed health care system in the U.S., and one of the largest in the world. After having worked there for more than 15 years, I believe it's the best system of care available for brain injury,

PTSD, and dementias—the best *system* of care. And, it is poised to and will get better by partnering more and more on calls like this and with VeteransAgainstAlzheimer's, with the Alzheimer's Association, and other service organizations. So please everybody, join UsAgainstAlzheimer's and VeteransAgainstAlzheimer's. Get involved, get engaged.

If you're a Veteran and you're not using your VA, please do so. Please, if you need to use my name to get the care you need (hopefully in a loving way)! Use my name and say, "Dr Cifu says I need to be part of the VA, I have the right to receive care here," and you know what...You'll be received with open arms, with a warm embrace. If you're not, use my name in vain the next time. The answer, Shawn, is, VA is not ready to care for everyone who's ever had the disorder, but we stand committed to getting the resources, to partnering with the academic units, to partnering with the private world to make it happen. Certainly, VA's Secretary David Shulkin, MD is very open and is very focused on partnering with the private sector to grow what we don't have and to get better at it.

Shawn Taylor: Well, that is a perfect answer, because we do know that he's openly gone on record with that. And to your point about how you can get involved, for those that are willing, and would like [to join VeteransAgainstAlzheimer's, click here](#), and we will gladly add you to the email list and send you updates on this important work.

My last question to you, Dr. Cifu, is, for those listening who might be interested in participating in a clinical trial, what would you recommend? And I know that you mentioned CENC and to go directly to that website. Are there other alternatives, and/or, I should say, that one can do to participate in a clinical trial?

Dr. Cifu: Yes, Shawn, thanks. I'm certainly not here just to plug CENC, which is obviously is very close to my heart and what I'm focused on, but clearly you can certainly ask your local primary care provider or your Alzheimer's specialist: Are there specific trials they are aware of? The National Institutes of Health, NIH, has a website, which is called [clinicaltrials.gov](#) that has a comprehensive list of all of the federally funded, or NIH-funded research trials that are available in the U.S. You have to type in Alzheimer's or dementias into the search engine and there will be several pages of studies that are out there. The pages will tell you what the study is about, where they're located, if they open for enrollment, and what are the inclusion criteria. You may need a clinician to explain the study details to you but it will allow you to be a knowledgeable consumer when you go to see your primary care doctor. Always use your primary care clinician as your center point, whether you're in the VA system or in the private world. They know you best and should be your primary resource.

The CENC website has some linkages to it. VeteransAgainstAlzheimer's and UsAgainstAlzheimer's have specific resources and linkages. Internet search engines for "Alzheimer's research trial" may also be helpful. I will caution you however, against signing up for research trials that aren't specifically sanctioned by the federal government. They may be funded by a foundation, which is fine, but have someone help you to see if they are appropriately scientific – speak with your primary care

clinician. There are less-than-ideal treatments or studies that are set up in ways that really aren't going to be helpful to either the person volunteering or to the general public, and I really want to discourage that. your primary care doc.

Shawn Taylor: That is really, really great advice. I want to thank you so much for joining us today, for your clear explanation of the work that you are doing and for answering so many questions. We're so grateful that you've chosen to focus your work on veterans, and I thank you on behalf of our country as well.

There are some questions that we couldn't get to today and I apologize that we ran out of time. I hope that you'll be able to join our next [Alzheimer's Talks](#). It will be on Tuesday, December 5, at 3 p.m. Eastern, so be sure to mark your calendar. Our guest will be Lakelyn Hogan, gerontologist and caregiver advocate at Home Instead. She will share suggestions on how to make the holidays more enjoyable for someone with Alzheimer's Disease. She will discuss what to watch for when visiting older relatives and answer any and all of your questions. [If you would like to register for this call, please click here.](#)

If you have not already joined UsAgainstAlzheimer's, please go to our website at www.UsAgainstAlzheimers.org and sign up. We will send you a recap of this call, invitations to future calls, and important updates and simple ways that you can get involved. I hope that you will join us. Thank you to everyone on the phone or online who was participating in this Alzheimer's Talk. In a couple of weeks, we will have a copy of the recording and a transcript on our website for you to share with your friends. Please stay on the phone to leave us a message. We are particularly interested in your feedback on this call and ideas for upcoming calls. Thank you for joining us today and have a great afternoon.