

Survive Thrive and Alive: Understanding Traumatic Brain Injury

As featured on <http://www.BrainLine.org>

Courtesy of the Defense and Veterans Brain Injury Center, the TBI operational component of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury. Used with permission <http://www.dvbic.org>.

MS:Hello, I'm General Collin Powell. Our nation is currently being tested both at home and abroad. For our brave troops fighting overseas this test is bringing profound sacrifices. Many of our men and women serving overseas are returning with serious injuries including traumatic brain injuries or TBIs.

Sometimes these injuries are obvious and they're quickly treated, but often brain injuries are not immediately visible. This makes them no less real. A TBI can affect the injured and their families for the rest of their lives.

Not just those in uniform. Any of us can sustain a head injury whether from a car accident, a sports injury or a household fall. The good news is that we are learning more and more about the brain and its ability to heal.

With proper treatment and rehabilitation those with brain injuries can enjoy rich, full and productive lives and many are. That's why I encourage you to watch this documentary. Together we can increase awareness. We can foster understanding, and we can help welcome those who have survived a brain injury back into our families, our workplaces and our communities.

On behalf of the Defense and Veterans Brain Injury Center and the Survive, Thrive and Alive campaign I thank you for your interest.

(MUSIC)

MS: I don't remember the car accident at all.

MS: Car bomb blew up. It hit me in the face.

MS: I just heard screaming. I knew I'm hit.

FS: Each one of us is susceptible to a traumatic brain injury.

FS: The healthy brain weighs about three pounds and it has a hundred billion neurons.

MS: By the year 2020 brain injury will become the number one public health problem in the world.

MS: It's referred to as the silent epidemic.

MS: I'm lucky to be where I am at all. The fact remains I'm not how I used to be.

MS: People can look at me from the outside and say there's nothing wrong with him, he's not disabled. But they don't know what's going on inside my head.

MS: There never is really a point where you can't continue to recover.

FS: The most important thing is for these individuals to have hope.

MS: It's gonna get better. It's just a matter of time.

(MUSIC)

MS: I remember the explosion and waking up on the ground a couple feet from where I had just started just thinking I'm hit. I needed someone to come, come to my aid. Then I started thinking man I can't die because my fiancé's gonna kill me.

I'm Lance Corporal Grady, twenty years old, United States Marine.

FS: In December 2005 Grady was injured while stationed outside Filuja (ph.).

MS: Lance Corporal Grady unfortunately sustained pretty serious injuries over in Iraq. He was involved with an IED blast and as a result he lost consciousness for about five or ten minutes actually several times in a row.

FS: Now at the National Naval Medical Center in Bethesda, just outside of Washington, D.C., Grady's condition is stabilized and he has begun his recovery.

In addition to losing his right arm Grady is being treated for a moderate traumatic brain injury.

A traumatic brain injury or TBI is caused by an external physical force to the head like a blow or an explosion as opposed to an internal cause like stroke or aneurism. To think about how the brain works is to realize that the brain controls all of our emotions, our movements, our actions. It allows us to engage in conversation in our relationships with others, to think not only about what we're gonna do but about the future, to reflect on the past.

FS: Neurologist, Dr. Deborah Warden, is on staff at Walter Reed Army Medical Center in Washington, D.C. Like Bethesda it's one of the first stops in the U.S. for wounded soldiers.

FS: The brain can be affected by traumatic brain injury in several ways.

FS: The most obvious is a penetrating brain injury.

FS: With a penetrating brain injury the durra or the tough membrane that encases the brain inside the skull if that's been penetrated we call it a penetrating brain injury whether that penetration is by bone or by a fragment of a munition, gun, something like that.

FS: A penetrating wound creates a focal injury causing bruising and swelling to specific areas of the brain.

FS: Then you could consider closed brain injury which is separated as mild, moderate and severe.

FS: Close brain injuries like Grady's can be focal or generalized and are characterized by the length of time the patient loses consciousness and the severity of symptoms.

FS: There's also what's considered diffuse axonal injury.

FS: Like what happens in whiplash diffuse axonal is a form of closed brain injury that can twist or tear axons, long nerve fibers that connect cells within the brain leading to generalized swelling. Those who suffer from TBI can experience a range of cognitive and physical problems and difficulties with memory and emotions to basic motor functions.

Dr. Michael Yokelson (ph.) directs the Brain Injury Care Unit at Bethesda.

MS: How are you today?

MS: Doing alright.

MS: Good. How'd you sleep last night?

MS: The bulk of what we see here at Bethesda is Marine Corps, and we're seeing a lot of blast type injuries.

MS: No, not too bad. Not—I mean originally when I first got here I had problems sleeping.

MS: When Lance Corporal Grady got here he was having difficulty with comprehension, with understanding things. Pretty much remember the whole thing and he'll talk to you about it. He does discuss it.

MS: At first I had problems like understanding things, watching a TV show, things like that. But...

FS: When he was down in ICU it was the worst.

FS: I read Joey a book down in ICU and he just said I just want to hear your voice so just read to me, just talk. He's like I just want you to do. So I was reading the book and I was about a chapter in and he's like stop. He's like I just can't comprehend it.

MS: I couldn't understand what she was reading to me. But now I'm a whole lot better.

MS: Okay. I think the attitude regarding brain injury is certainly changing in medicine as a whole. In fact this was the decade of the brain so there's been a lot more public awareness of it. I think also certainly in the medical community there's much more awareness and in particular in the military.

There are things that you want to keep an eye on for brain injury. He can have problems with personality changes, irritability. Sometimes that's something you're gonna notice more than the patient directly. Headaches, dizziness, fatigue, problems with concentration. A lot of that awareness is because we are seeing so much of it that we're making it very well known throughout the medical community particularly in the military.

So folks even still in Iraq are being better screened to insure that they're not being sent back to combat if they've had a head injury and potentially causing even more injury.

FS: The military coordinates care for those with brain injuries through the Defense the Veterans Brain Injury Center or DVBIC headquartered at Walter Reed.

FS: The Defense and Veterans Brain Injury Center is assuming an important role right now in this war in Afghanistan and in Iraq.

FS: Dr. Warden is the DVBIC's national director and helped start the program back in the early 90s.

FS: The emphasis has been in previous wars on penetrating brain injury which is very important and very serious but pretty readily identified.

FS: Today doctors are more aware of the effects of closed brain injuries and are striving to make sure TBIs are not overlooked when patients have other life threatening wounds. Even with modern body armor and helmets the widespread use of explosives has made TBI more frequent and it is now considered the signature injury of the wars in Iraq and Afghanistan.

The DVBIC network includes eight medical centers, a system throughout the country that insures continuity of care for active duty and veterans who have suffered TBIs.

FS: What's possible through this system with integration of military veterans and also community re-entry is that people can move through those various levels of care as needed.

FS: After about three weeks in Bethesda Grady has greatly improved both physically and mentally. Over the next few months he'll learn to use a prosthetic arm and doctors will also be on the lookout for any continuing problems from his brain injury.

(MUSIC)

FS: TBI awareness and education are key factors to a successful recovery and have proven to diminish symptoms and anxiety for

patients. Often the best advice comes from someone who has been there.

MS: I do remember walking and I was in that tent. Did I tell you that, I was in that tent. I remember walking out into the impact area.

MS: By trying to talk to youngsters it's sort of a different level. I'm not a psychiatrist. I'm not a chaplain. I don't talk about anything except I tell them about my frustration.

FS: Marine Lieutenant Colonel Tim Maxwell knows about the trials of injury and healing. Almost a year and a half ago he sustained a penetrating brain injury while stationed in Iraq.

MS: We Marines most sailors, soldiers, airmen not something you want to complain much about being wounded particularly when friends of yours were killed or you've seen multiple guys were wounded way worse than you.

FS: Still on active duty Maxwell now spends much of his time visiting wounded at military hospitals like Bethesda and McGuire Veterans Medical Center in Richmond where he spent much of his early recovery time. Today it's Maxwell who is getting advice from his friend, John Sharp, who helped him early on in his recovery.

MS: Seeing Colonel Maxwell when he was here as a patient and seeing him now I can see a big change and a big difference. Also looking at him right now I see myself how I was a year and a half after my accident as well.

FS: Sharp, now a leadership coordinator at McGuire, was also a patient here almost sixteen years ago after a car crash in 1990 left him with a severe TBI.

MS: When I was a patient here I had great therapy here. I had a great experience at this hospital. So much so that I vowed to come back one day and work here.

FS: As a patient and a therapist Sharp has developed compensation techniques that help him negotiate daily activities that are second nature to most people.

MS: I fight battles on a daily basis. There's a lot of deficits that I have that people can't see on the outside. I've got a big problem with short term memory and I've got a big problem with time management.

I can't—if I start working on something I lose track of all time.

MS: I've learned to develop some techniques over the years to help overcome some of those deficits.

FS: He now passes on these techniques to other TBI patients like Maxwell.

MS: I think he's doing very well right now. He's still struggling a little bit with finding some of the words that he uses, saying he has a hard time with some of his vision. But hopefully today that'll give him some techniques and stuff that may help him deal with that problem that he has right now.

FS: As a career marine and officer used to leading others Maxwell now struggles with his new limitations.

MS: You never get 100% normal, and it's very difficult. People have a very hard time notifying that there's anything wrong with me. So I go to McDonalds and I want to order a cheeseburger. I can't remember the name cheeseburger and I the other day literally I could not remember how to say French fries.

FS: He has high expectations for himself and others, and that's been a big frustration because he's not—he doesn't feel like he's the Marine that he was although I see it every day when he goes and he talks to a younger marine who is wounded whether it's a brain

injury or a missing leg. He's able to connect with that person and motivate them and lead them.

FS: It really helped to meet Colonel Maxwell who was an inspiration for us. To see that they went through this actual trauma and they're returning more to a normal life it gave me hope. It was something that was really needed.

FS: Melissa's husband, Mark, has a craniotomy to relieve swelling in his brain after an Iraqi car bomb sent his vehicle off a bridge.

MS: I don't remember the accident. I've only been told bits and pieces of it. It was a vehicle-born IED went off. It blew up and we went off a bridge.

FS: For patients like Mark who require extended care the next step is often a veteran's hospital like McGuire.

MS: When First Sergeant Shaler (ph.) who was brought here he had fairly profound deficits that were consistent with right hemisphere brain injury.

FS: Neuro psychologist Dr. Trevin Pickett has been treating Shaler as an in-patient for about four weeks.

MS: Some of the deficits would include visual-spatial problems, non-verbal learning and memory problems, real difficulties with faces and names.

FS: Poly-trauma wards like the one at McGuire, are set up to treat brain injured patients who need both cognitive and physical rehabilitation. Re-learning basic living skills like cooking is part of Mark's therapy. On the menu today, brownies.

MS: They look at I think the safety aspect of it more than the taste.

MS: One of the things about Mark is that he's driven. He enjoys challenge and he has not let the consequences of this injury slow him down. So it's never been a problem to ready him for the effort of rehabilitation.

FS: Cognitive screenings help doctors assess how a patient is doing.

MS: I have to be conscious to raise my left leg when I walk to keep from walking with a limp or to have my left foot....

MS: One of the things that I noticed in the middle of the interview was that when I asked him about his memories before the

injury Mark very quickly became upset when he was talking about family members.

MS: I can remember my son's birthday. He thinks visiting friends in the hospital...

MS: We've done some education with him that his increased emotionality now is really a direct consequence of where his brain was injured.

FS: An integral part of the recovery process is the support of spouses and family.

MS: Mark and Melissa's relationship having such a strong bond between them it's critical in my view. It's one of the things that I see is such a protective factor for traumatic brain injury patients as they progress through rehabilitation and then they return to the community.

MS: (Unint.).

FS: Yep, no (unint.) tonight. Only if you're paying. Are you gonna pay?

MS: I'll pay.

FS: Will you pay?

MS: I'll pay.

MS: If you brought my checkbook.

FS: I did.

FS: For Mark and Melissa the next big step is a trip to Washington, D.C. for surgery to reconstruct Mark's skull almost seventeen weeks to the day of his injury.

MS: Today I check in. I will have surgery. I will have the part of my skull put back in.

FS: At the 3-D Application Center at Walter Reed a process called Rapid Prototyping helps doctors turn virtual images into prosthetics.

MS: In many cases as a result of trauma the bone that you remove you can't replace back. So the cranioplasty is the preparation of an implant that the surgeon then puts back in that area to seal the brain case and to provide the external contours that are necessary.

One of the big problems with any type of head injury is not the external injury itself. It's the resultant swelling that causes as much trauma to the brain many times as the actual penetration. So when you go in to relieve that swelling and you make a large opening so that the brain can swell and not constrict and strangulate itself it leaves a large opening that then has to be repaired.

This is actually Mark Shaler. Here you can see the break in the bone at this point. Some below the eye here.

FS: Using information from Mark's CT scan Dr. Raust (ph.) is able to create a three dimensional image of Mark's skull including a sub-millimeter accurate measurement of the missing bone which will be used to create Mark's prosthetic.

MS: I'm not scared. I'm a little anxious I guess. I'm ready to have it and get rid of the stent.

FS: Moderate and mild head injuries or concussions make up the largest percentage of TBIs in the general public for both men and women. Sometimes referred to as the silent epidemic concussions are often hard to detect or dismissed as insignificant.

Most people are at risk for a TBI from a car accident, a fall and of course while playing sports.

(MUSIC AND SPORTS ARENA BACKGROUND)

FS: Dr. Jeffrey Barth of the University of Virginia has been studying concussion since the late 70s.

MS: We found that mild and moderate head injury is a significant problem. People that were in automobile accidents were having cognitive deficits associated with those injuries. Our problem became that we could not tell how well those people were functioning prior to their head injury so we couldn't determine what the head injury was actually costing them.

FS: To get a better understanding of the effects of concussion Barth and colleague Dr. Donna Brochek (ph.) study student athletes with a method called SLAM.

MS: The SLAM methodology stands for Sports As A Laboratory Assessment Model, and this is where we pre-test athletes before they begin the season to determine how well they're functioning neuron-cognitively.

FS: By using sports as a laboratory we get the baseline test and then we test people after concussion. We can track their recovery. It helps us understand what the recovery curve is like for milder injuries.

MS: The injuries that are experienced are generally of the acceleration/deceleration variety.

FS: The brains moves forward, accelerates, and then it moves backwards and then when the skull stops moving there's a very rapid and sudden deceleration. So the brain essentially slams into the back of the skull.

MS: The same thing happens in an automobile accident when a person drives and hits something. They move forward and stop quickly. On the battlefield this is very similar to the blast injury where there's a concussive blow near the person and that explosive force translates into what would be very similar to being tackled.

FS: Within sports they're findings have changed the way coaches and athletics trainers assess and treat players.

MS: At first what you did with a person that came off the field with a concussion was ask them a few neurologically-based questions: Do you have headaches: Do you have double vision,

nausea, that sort of thing. If you didn't and you wanted to go back in to play you were essentially told you were good to go and let's get back on it.

FS: Today standards are stricter in college, high school and even professional sports, standards that can be applied to all mild and moderate head injuries.

MS: I think that concussions are being taken much more seriously in athletics, and they're also being taken more seriously in our everyday lives and in our military.

(MUSIC)

FS: The final stage of recovery, coming home can be a trying experience for TBI patients and their families. Often the returning individual is very different from the one who left, mentally, physically and emotionally.

MS: Community re-entry is the goal of all programs of rehabilitation for everyone because everyone wants to return home. They want to return to their job, to their school or they want to return back to the military. They want to go back to active duty.

So community re-entry is a term that means we're going to get you back to functioning in the community.

FS: Lingered problems from TBI can hinder that transition leaving patients disconnected from family and community.

MS: We created Virginia Neuro Care as what I call real world therapy program and it has grown. It went from being a program that was serving on an out-patient basis to residential programs, and then eventually it became part of the Defense and Veterans Brain Injury Center where we are now serving active duty soldiers.

FS: This bookstore in the heart of Charlottesville's retail district is where much of the therapy takes place.

MS: One of the reasons we have a bookstore is think about the fact of how well a bookstore fits into developing memory strategies. So if I'm working at the bookstore and I have to put that book on a shelf I have to know what that book is all about, I have to know what the title is, but also I have to engage with customers that come in. I have to get myself up to that task.

FS: Doctors George Zitney (ph.) and Don Knightopher (ph.) are part of a team of therapists that design programs for individual

patients from exercises to improve memory and cognition to social skills and behavior modification.

Group therapy is an important component in the process.

MS: A lot of times it's very isolating to have a brain injury, and to be able to share between each other that yes hey I went through that as well makes them feel like they're not all that unusual or abnormal.

FS: Like many soldiers being treated here Private Demarcus Wilson was injured while stationed in Iraq.

MS: Really I don't remember anything, but I've been briefed on what happened. Basically one day I was on a mission and I was the gunner on the Humvee and a bomb blew up and it just hit me in the face.

MS: When he came here he basically was also tired of being in the system. He wanted to either be back with his unit in Iraq or he wanted to be sent home. I mean the last thing he really wanted was to participate in a rehab program that I'm not sure he felt the need that he really needed.

FS: Demarcus Field's ready to go back to work but concedes that his family notices a difference in him.

MS: My mom says I can't remember stuff. She says—she says I've changed. My reasoning is different.

MS: I think Demarcus again functions pretty well, but you put him in certain situations and the feedback that I'm getting is that he will—he can at times break down in terms of more complex tasks.

FS: Unlike Demarcus Seaman David Goodwin has no visible scars to show for his head injury but his symptoms are more profound.

MS: I don't remember the car accident at all or about the next eight days after that.

MS: Yes, David was injured in a rollover car accident in July of 2005. On the one side he actually presents very, very well. I think that he shows some frustration with some of the things that are going on and it's easy for him to be depressed.

FS: Davis also struggles with short term memory loss.

MS: The main events that have happened in my life I don't have too much of a problem with. But small events I really don't remember all that well at all.

FS: Both Demarcus and David are at the end of their stay at Virginia Neuro Care and must think about what comes next. One of the most important steps to reintegrating into the community is being able to find and hold down a job.

For active duty patients placements at the Judge Advocate General or JAG school provide a chance to be in a work environment while staying connected with the military.

Simple tasks like filing act as memory and organizational exercises and help them build confidence for future work situations. Back at the group house on Grove Street others in the program work on physical therapy. Residents here get used to life outside a hospital setting and re-learn how to get along in an extended family.

Darlene Pike is the house manager and surrogate mom for the group.

FS: I think the more we make it a family setting the better it is, and I think it does help in their recovery. I've seen a lot of

individuals leave Grove to go and live independently or go back to active duty, and it's a great feeling.

FS: For the young men at Grove House returning to their own families and communities is the ultimate goal.

MS: I got married over Christmastime to the most wonderful girl in the world. It was great. Pretty much all I really want to do is get back with my wife and move to Ohio and go to school.

FS: For Demarcus staying in the Army is the goal.

MS: The best thing is to stay positive. Negativity never cures anything. I chose to join the Army and I knew I'd be going to war. I don't blame anyone for getting hurt. Being hurt has taught me—I guess taught me a couple lessons and given me time to reflect on life and being in the military.

MS: When we think about war we have to recognize that injury is inevitable. But what we have to do is to plan to care for people once they are injured. We have to be prepared to intervene as early as possible on the battlefield. We have to be able to take that person to a rehabilitation hospital and we have to welcome that person back in the community.

FS: Stories of traumatic brain injury are as varied as those who suffer from it. For some it is a lifelong challenge. But not every TBI has a lasting effect. Many who suffer concussions or mild TBIs will recover quickly and completely.

Every day experts are learning more about the brain and its ability to heal.

FS: The potential for the brain to recover is being understood now in ways that it certainly wasn't being understood ten years ago.

FS: Awareness and education are key, and patients who know what to expect are much more likely to recover successfully and prevent further injury.

MS: Helping the patients and families to understand what is ahead of them I think is probably one of the best things that we can do for them.

FS: Joseph and Ashley Grady were married on Christmas Day in the hospital chapel just weeks after his injury but still plan on a traditional wedding with family and friends.

FS: We'll have our big wedding and then he's gonna decide whether or not he wants to stay in the Marine Corps.

FS: Tim Maxwell continues to work through his frustrations by reaching out to others.

FS: Tim thrives on visiting with the wounded marines. It's a huge part of who he is. It gives him a sense of purpose.

FS: Mark Shaler's cranioplasty was a success. For now he and Melissa are back in Virginia where he continues to improve with out-patient therapies.

FS: Not every day is easy. We just take it one day at a time until then. Just wake up smiling every day.
Lucky that we have another day together.

(MUSIC)

FS: For more information on traumatic brain injury and prevention visit the Defense and Veterans Brain Injury Center at dvbic.org.

(MUSIC)

(END OF TAPE)