

# Hyperbaric Oxygen Therapy Provides a wide number of benefits for Traumatic Brain Sufferers

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## Surviving Teen from Horrific Santa Fe Accident Regains Brain Function with HBOT

Santa Fe, NM (MMD Newswire) — Exactly one year ago, a drunken driver traveling in the wrong lane crashed into a car carrying five Santa Fe teenagers instantly killing four of them.

The fifth teen — 16-year-old Avree Koffman, who was driving — was airlifted to University Hospital in Albuquerque in critical condition. The crash occurred about 12:10 a.m. on Old Las Vegas Highway (6/29/09). Six months later, when it was clear to both Avree and father that her TBI left her severely impaired, she began receiving hyperbaric oxygen therapy in Santa Fe at New Mexico's only free-standing hyperbaric facility (hbotnm.com).

Avree was treated along with Iraqi vets, such as Eric Schei, a woman hit by lightning and another teenager with Gardasil vaccine induced encephalitis. Avree received a neurocognitive test before and after her treatments. Her verbal memory improved 13%; visual memory improved 33 %; visual motor speed improved by 41%. What these remarkable improvements don't reveal is that the now 17 year old Avree has her life back. She is preparing to attend college and her depression has lifted.

This protocol used to treat Avree is the exact protocol the International Hyperbaric Medical Association began sharing with DoD in 2001 and testified to Congress about in 2002 and twice in 2004. This effort is called the National Brain Injury Rescue & Rehabilitation Project (NBIRR). NBIRR will directly impact the greatest public health crisis of our age, untreated brain insults including traumatic brain injury. Federal, state and local budgets are paying for the consequences of modern medicine failing to treat brain insults with protocols that biologically repair brain damage. Lost performance and aberrant behavior of injured individuals costs billions and billions each and every year in entitlement, prison, education, and safety net programs, not to mention the challenges faced by current and past combat veterans.

Hyperbaric Oxygen Therapy (HBOT) is FDA-cleared for many kinds of non-healing wounds and is the only FDA-approved non-hormonal treatment approved to repair and regenerate human tissue. It causes a biological repair to tissue damaged by a lack of oxygen or compromised circulation and signals DNA to begin the healing process. Tricare and VA reimburse for most hyperbaric indications, including non-healing wounds, but do not routinely pay for treatment for persons who recover or make significant improvement from their brain injuries after they have been treated with HBOT.

Prior to treatment, Avree would have had to go on full disability because of her brain injury symptoms. An anonymous donor provided \$3000 to get Avree treated and the Hyperbaric Medical Center of New Mexico provided the bulk of her treatments as a public service. Avree's recovery was a significant savings to New Mexico and the Federal Government.

### Mild TBI Results in a Loss of Lifetime Income and Loss of Tax Revenue

It has been calculated that a High School graduate who experiences a mild TBI will lose \$1,081,243.00 (Present Value) in life-time earnings which translates to \$273,554.48 in lost tax revenue (FICA + 10% income tax) or \$6,838 for Enlisted member per year.

For those that have a Bachelor's degree or could have gotten a Bachelor's degree before injury, the loss of revenue from a mild TBI is \$1,873,413.00 over their life time, \$473,973.49 in taxes over their life time or \$11,849 per year.

Therefore, the estimated 600,000 war veterans that RAND corporation estimates have an untreated TBI (as reflected by symptoms of mTBI/PTSD/Depression), is conservatively estimated \$4.8 billion in lost tax revenue per year. This assumes all of them are gainfully employed at something.

Unfortunately, we know this not to be true, as many of them have already entered the criminal justice system (reports are up to 10% of county jail inmates), 154,000 of them are homeless, and recent reports listed 184,000 were unemployed.

An examination of the homeless veteran population gives us an idea of the magnitude of the problem, and how HBOT, biologically repairing these persons, could help the Treasury. Current programmatic costs from the stimulus package were for \$3 billion in distributed on a per-capita basis. The stimulus money plus \$2.4 billion in lost tax revenue is \$5.4 billion PER YEAR in revenue drain. If this group were treated with HBOT for a one-time cost of \$2.4 billion, and 80% of them were able to return to work or school, the savings would be \$4.3 billion per year in programmatic costs and increased tax revenue. Remember that most of these veterans are under 25.)

Many of those who are unemployed have experienced blast-related injuries, as outlined in the RAND report. Many of them, due to suffering a mild-TBI, are under-employed and would enjoy income gains if properly treated with a biological repair treatment like HBOT. This lost revenue and these programmatic costs are certainly a drain on the U.S. economy and the Treasury.

Payment for this biological repair treatment for brain injury is the single largest obstacle to having it available in the medical system. One thousand HBOT centers are doing 10,000 treatments every workday across the nation. Most treatments are delivered to heal non-healing wounds.

Note that there is more evidence for HBOT than there was for angioplasty or tPA for acute stroke treatment, when both of these therapies were reimbursed by Medicare. The scientific studies were conducted later that showed these two therapies were clinically effective. It was deemed too great a risk to patients to withhold these “promising” treatments. That is the case with HBOT as well, because two years from now many of those leaving the service will have lost their families, be incarcerated, homeless, unemployed, on disability, or have committed suicide. Those are much more difficult concurrent problems to address than simply biologically repairing their brain injury.

HBOT is not new, it has simply been unrecognized

HBOT has been used for 80 years to heal neurological conditions, as well as problem or non-healing wounds. Much of its mechanisms of action have not been understood until the last 20 years, due to advances in molecular biological and neurological imaging. HBOT is the only FDA-approved non-hormonal treatment for biological repair of damaged tissue. HBOT for brain injury apparently repairs non-healing wounds in the brain, just as it does in other parts of the body, when the correct oxygen dose is used. Many consider it “off-label” or not one of the 13 FDA-cleared indications. HBOT for these neurological injuries actually fits under item number 6 on the FDA-approved indications list, “Arterial Insufficiency,” sharing that spot with other chronic non-healing wounds like diabetic foot wounds, hypoxic wounds, bed sores, etc. From the imaging and animal studies done to date, it is apparent that HBOT 1.5 is repairing non-healing wounds in the brain, just as it does diabetic foot wounds or radiation necrosis, or the other tissues in the body.

It is important to note that from a public health standpoint, the breakthrough that has been made on HBOT, will, long and short term, create the greatest single improvement to the entitlement spending budgets of federal, state and local governments since 1923 when the first federal safety-net milk subsidy program was established. Today it is well known that 50% of all IDEA children, 70-82% of all homeless persons (and nearly 100% of all homeless veterans), 50% of everyone in prison, in drug treatment programs, on welfare, or struggling through the vocational rehabilitation programs, have an untreated brain injury or brain insult.

Note that according to CDC, 1.2 million people per year experience a brain injury. Most TBI's happen between 1 and 4 and 15-19. Of the number that live (50,000 per year die as a result of their injuries), an estimated 30 million are working age in our society. The lost tax revenue alone from this many people, earning under their potential, is conservatively estimated at \$8,900 each or \$99 billion in tax revenue. Obviously if just the prison system population were able to be cut by 1/2 over the next ten years, the savings would be nearly \$26 billion per year.

#### Safety

HBOT 1.5 is noted by DoD in the official White Paper for the December 5-6, 2008 "Consensus Conference on HBOT for TBI" as follows: "Side effects from HBOT are uncommon, and severe or permanent complications are rare, especially at the doses of HBOT used "off-label" for TBI patients (approximately 1.5 atm abs for 60 minutes.), compared to HBOT for HHS covered indications (2 to 2.4 atm abs for 120 to 90 minutes.)"

For the mild traumatic brain injury patient, clinical experience demonstrates this treatment is far less risky to patients than leaving them untreated. It is far less costly to society to treat them than to lose earnings and tax revenue, pay for social safety net costs, prison costs, etc.

#### Conclusion

Helping solve untreated traumatic brain injury, brain insults, and PTSD will be a huge improvement in the lives of millions. The IHMA has already prepared and presented material to CMS so that they would pay for hyperbaric oxygen treatments for diabetic foot wounds. This treatment prevents 75% of all diabetic foot amputations. It is estimated that during the coming year about 13,500 amputations will be prevented, with a savings of an estimated \$298 million per year in Medicare spending. Savings started in 2003. Right now only about 11% of patients who could benefit from HBOT to prevent amputations are receiving that treatment. A far smaller percentage are receiving HBOT biological repair treatment for their brain injuries.

There is no patent possible on oxygen, so none of these treatment funds go to royalty payments. IHMA is not making any income from having gotten CMS to approve diabetic foot wounds, but Medicare beneficiaries and the treasury are both benefiting. It is good public policy to reduce the costs of the current health care system, while massively improving outcomes. That is what the IHMA and her sister organization, the International Hyperbaric Medical Foundation, are dedicated to.

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