OIF/OEF

Operation Iraqi Freedom/ Operation Enduring Freedom

BACKGROUND

The changing nature of warfare poses new challenges to VA's healthcare system. Due to improved body armor and battlefield medicine, many troops are surviving injuries that in the past may have been fatal. These soldiers, however, are returning home with complex, multiple injuries. These "polytrauma" cases often include brain and spinal cord injuries, vision and hearing loss, nerve damage, burns, amputations, musculoskeletal injuries, infections, and emotional adjustment problems.

WHAT VA IS DOING

VA researchers are exploring many avenues to address the needs of our newest veterans, especially those with combat-related injuries. Highlights from recent or ongoing research include the following:

- **Protecting against brain trauma**—VA investigators demonstrated that intravenous infusion of adult-derived bone-marrow stem cells can protect against brain trauma. The findings may lead to the development of early, cell-based interventions to limit the damage from traumatic injuries to the brain or spinal cord.

- **Developing "biohybrid" limbs**—Scientists at the Providence VA medical center, in collaboration with colleagues at Brown University and the Massachusetts Institute of Technology, are working to develop "biohybrid" limbs that mesh body, mind and machine and function almost like natural limbs. The technology aims to incorporate techniques such as tissue regeneration, residual-bone lengthening, and micro-sensors and decoders that will read brain signals and translate them into commands for electronic or robotic devices. The end result will be increased independence for amputees or those with spinal cord injury and other disabilities.

- **Understanding and treating PTSD**—VA researchers are using a variety of approaches to understand and treat posttraumatic stress disorder and restore veterans to maximum levels of activity and function. They are testing new drugs, psychotherapies, and novel interventions such as Internet- and telephone-based support systems; studying how to prevent PTSD, such as by identifying genes that may predispose combat-exposed troops to this brain disorder; and, in cooperation with the Department of Defense, gathering pre-deployment health data for troops and tracking the physical and mental effects of combat exposure and deployment in general.

For more information on VA research:
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