

## **Transcranial Ultrasound in Medical Helicopters**

MedEvac Foundation International Grant Recipient to Present Interim Findings Regarding Use of Transcranial Ultrasound in Medical Helicopters as a Stroke Diagnostic, Therapeutic Device Research demonstrates efficacy of life-saving technology that can be administered in-transit Alexandria, Va. – A medical researcher who received a MedEvac Foundation International grant for a project that proposes the revolutionary use of transcranial ultrasound to initiate the early diagnosis and potential treatment of stroke symptoms during medical helicopter transport will present his research team's preliminary findings at a conference set for May 7, 2010, in Regensburg, Germany.

Dr. Thilo Hoelscher, M.D., from the Department of Radiology and Neuroscience, University of California, San Diego, and a principal study investigator, notes that microbubble administration during sonothrombolysis, utilizing portable transcranial ultrasound instrumentation for medical imaging to assess intracranial arteries – if introduced during medevac helicopter transport prior to hospitalization and the start of medical treatment – could dramatically reduce the incidence of death from stroke, a disease that remains the third leading cause of death worldwide and disables more than 800,000 Americans annually.

To prove this hypothesis, Dr. Hoelscher is working with Felix Schlachetzki, M.D., Ph.D., principal onsite study investigator, Department of Neuroscience, University of Regensburg, as well as HDM Air Rescue, Inc., Regensburg, for the project, titled "Prehospital Stroke Diagnosis and Treatment Using Contrast-Enhanced Transcranial Ultrasound."

According to Dr. Hoelscher, "The time delay between onset of stroke symptoms and initiation of a re-canalizing therapy after admission to a medical facility determines, in the majority of cases, the prognosis between life, death and major disability. Thus, the use of transcranial ultrasound could be a future landmark in stroke treatment because diagnosis and potential interventions could be provided at the earliest point possible – aboard the medical helicopter – without exclusion of other further diagnostic or therapeutic options, including lifesaving 'clot-busting' drugs.

"Moreover, this approach could become one of the few prehospital emergency care applications in which a potential treatment could already be provided prior to the patient's hospitalization and therefore could increase significantly the awareness and importance of air medical transport beyond its current status."

According to Dr. Kevin Hutton, MD, FACEP, chair of MedEvac Foundation International, Dr. Hoelscher's transcranial ultrasound research findings, if proven, would revolutionize stroke treatment in the United States.

"The brain is the most sensitive tissue in the body to oxygen deprivation, and the window of time to re-oxygenate brain tissue without death or disability resulting is quite small," said Dr. Hutton. "Thus, having the ability to diagnose a stroke and then reestablish blood flow temporarily through a blood clot has the potential to re-oxygenate the brain up to 90 minutes sooner than might otherwise occur."

Because transcranial ultrasound is not routinely used aboard medical helicopters in the United States, the medical team's research also focuses on operating at power and frequency levels used for diagnostic imaging and according to FDA safety guidelines, with the goal of gaining U.S. acceptance of such usage.

A previous pilot study conducted by the research team has since established that transcranial ultrasound to assess intracranial arteries can be done in helicopters and ambulance vehicles using a portable ultrasound device. The next step in the study will determine whether transcranial ultrasound can be conducted in medical helicopters on patients with stroke symptoms only, and in combination with intravenous administration of ultrasound contrast agent microbubbles

"If successful, the pattern of ultrasound application will then be changed from a purely diagnostic technique to one of potential therapeutic value, to be employed continuously until the patient is admitted to the emergency facility for further diagnosis and treatment," said Dr. Hoelscher.

"MedEvac Foundation International wholly supports the research of Dr. Hoelscher and his colleagues," said Dr. Hutton. "Transcranial ultrasound is safe, non-invasive, non-preclusive, does not require a CT Scan and can be deployed to the field via existing air medical transport – in most cases in less than 20 minutes. Moreover, it supports the modern concept of regionalized stroke centers by potentially providing patients with diagnosis, and treatment, while undergoing rapid air-medical transport, sometimes over great distances, to these currently underutilized facilities.

"Finally, these findings reinforce similar stroke research that was released earlier this year by the University of Pennsylvania," Dr. Hutton noted. "In that study, it was revealed that more than half of Americans live more than an hour away from lifesaving stroke centers but the researchers noted that air-medical transport could reduce that number by 50 percent – thus saving lives."

Dr. Hoelscher is the director of the Brain Ultrasound Research Laboratory at the University of California, San Diego (UCSD), and serves as assistant professor of Radiology and Neurosciences at UCSD and at the University of Regensburg in Regensburg, Germany.

For details regarding the Regensburg presentation and the ongoing transcranial ultrasound medical helicopter research project, contact Dr. Schlachetzki [atfelix.schlachetzki@klinik.uni-regensburg.de](mailto:atfelix.schlachetzki@klinik.uni-regensburg.de) . For details regarding this MedEvac Foundation grant, or to apply for or further fund this and other MedEvac Foundation grant projects, contact Amber Bullington at 703-836-8732 or [abullington@aams.org](mailto:abullington@aams.org) .

About MedEvac Foundation International – The MedEvac Foundation International is the first organization of its kind to engage, mobilize and empower people and organizations to make a difference in medical transport worldwide. Through research, education, outreach, and charitable services, we seek to improve the safety, quality and delivery of medical transportation for patients everywhere.

Ms. Maysoon A Abuhoul, Deputy Managing Director, Mediac Communications and Exhibitions LLC added "The response to the Dubai Helishow 2008 has been overwhelming and the show has seen a substantial growth overall from the previous editions. The launch of Dubai Air Medical & Rescue Show, Middle East Helicopter Association (MEHA) and International Helicopter Safety Symposium has made it all the more significant. Preparations for Dubai Helishow 2010 are already underway and Mediac plan to introduce a show comprising four sectors – Civil, Military, Aero Medical & Rescue and Avionics thus ensuring an even bigger turnout in the future". The dates for the next edition are 2nd – 4th November 2010.