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Duke researchers go diving for new decompression tables

The United States Navy has awarded a \$185,000 research contract to a Duke scientist to devise decompression tables for a new electronically controlled underwater breathing device.

The device, developed by BioMarine Industries, replaces traditional compressed air tanks with a backpack that recirculates the gas a diver breathes rather than releasing it into the water as bubbles.

Dr. Richard Vann, assistant medical research professor of anesthesiology, received the contract. He said the main advantage of the new equipment is that it will allow a free diver to remain underwater for as long as six hours regardless of depth.

Even scuba divers have to come up for air

"Compressed air scuba gear currently being used limits a diver to about an hour underwater at shallow depths," Vann explained. "And the deeper he goes, the faster he uses up his air supply."

Previously designed rebreathing gear has been limited to shallow water also, he said, because the oxygen it uses becomes increasingly toxic as pressure increases.

The new equipment is called the Mark I Swimmer Life Support System. A backpack contains two spherical tanks about the size of cantaloupes, a canister filled with soda lime that absorbs carbon dioxide from exhaled air and electronic

components that regulate the supply of fresh oxygen.

Because the system keeps oxygen at a constant partial pressure, Vann said toxicity is not a problem.

Rethinking decompression

"Special mixtures of gases are involved, and as a result, existing decompression tables are inappropriate," the scientist said. Decompression tables are schedules that show how quickly a diver can return to the surface without contracting the bends.

"We're also testing some of the fundamental theories of decompression sickness," he said. "There's a question as to whether bubbles that cause the bends start from small gas nuclei already in the body or whether they develop after a certain amount of supersaturation occurs in diving."

Vann and his colleagues will use ultrasonic scanners to monitor formation of gas bubbles in experimental animals. The scanners give cross-sectional pictures of living tissue by means of high-frequency sound waves.

Navy divers

A team of seven Navy divers from bases across the United States is already

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UNDERWATER WORK — A United States Navy diver prepares to enter a water filled chamber known as the "wet pot" in the hyperbaric chamber. He and six other divers from bases across the country are working with Duke scientists to devise decompression tables for new bubble-free scuba gear. (Photo by David Williamson)

They could go home sooner

Nearly one-half of all heart attack victims could shorten their hospital stays, saving money and reducing the chance of becoming "cardiac cripples."

That is the conclusion of three Duke physicians in a report published last week in the New England Journal of Medicine.

Drs. J. Frederick McNeere, Robert A. Rosati and Galen S. Wagner concluded that 45 per cent of the heart attack victims could be sent home in one week, reducing patient costs by an average of \$2,032.

Could save millions

The researchers estimated that reducing hospitalization for these patients could save the nation \$360 million in medical costs annually.

McNeer, an associate in cardiology, directed the study which was supported by grants and a contract from the Health

Resources Administration of the Department of Health, Education and Welfare.

Rosati and Wagner are associate professors of cardiology.

One week often sufficient

The researchers concluded that people who have had heart attacks can go home after about seven days if they have not suffered serious complications by their fourth day in the hospital.

Ordinarily, these patients stay in the hospital an average of 16 days.

Besides having smaller medical bills, the heart attack victims will be psychologically better able to resume their normal lives if they spend less time in hospitals, the study concluded.

According to a national survey, 394,000 Americans have heart attacks each year.

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AND THE GROUNDHOG SAW HIS SHADOW—Last Thursday's snow produced scenes around the medical center such as this view of the PDC entrance and Baker House from the hospital lobby. The groundhog came out and went back in, but a lot of people stayed out, as shown on page 2. (Photo by John Becton)