



DAN@DEMA: Seminar Descriptions (Room #S230E)

A team of doctors, researchers and medical experts will discuss important research developments and identify critical elements in dive safety. Seminars are open to all and free to attend. Follow @DAN_America on Twitter for highlights and schedule reminders: #DAN13DEMA.

“Art and Science of Rebreather Diving: Deeper Access & Deeper Trouble”

Experience and available data indicate that rebreathers enable deeper and longer dives by virtue of lower gas supply requirements than would be possible or practical with open-circuit scuba. But these dives are also associated with a 5-10 times greater incidence of fatalities than for open-circuit scuba due to more hazardous depth-time profiles and greater equipment and operational complexity. A strong community focus on mastering these issues was indicated at the 2012 Rebreather Forum 3 (RF3). The key points presented at RF3 will be reviewed.

“Critical Thinking of Post-dive Symptoms”

Post-dive symptoms are often assumed to reflect a decompression injury, but they may indicate an array of health or environmental issues. This highly interactive session will present sample cases from the DAN Emergency Hotline, offering firsthand experience of the challenges faced in gathering and interpreting information reported from the field. Learn valuable frameworks of assessing and managing dive-related scenarios.

“Evaluating Information Related to Diving - Increasing Your Critical Thinking”

When it comes to diving, there is a staggering amount of information and speculation. It is often difficult to differentiate between scientifically-established fact, reasonable conjecture, expert opinion, amateurish opinion and incorrect assertions. This presentation will review current topics in diving safety and evaluate the foundations for the positions held to create a framework for critical evaluation of information.

“Evidence-Based Decompression”

Decompression sickness (DCS) is a significant problem in both diving and tunneling, and the lessons from each field are mutually supportive. DCS probability is a useful metric of safety where safety is determined by the probability judged acceptable. DCS probabilities are estimated from pressure-time profiles and DCS outcomes. Because environmental conditions influence bubble formation and inert gas exchange, probability estimates must be based on exposure data for the environment of interest. DCS probabilities are estimated with decompression models, exposure data and statistical methods that fit the models to data. Evaluation and selection of decompression schedules follows from this process.

“In-water Recompression: Pros and Cons”

The rationale of using pressure to treat DCS is relatively easy to understand, but does in-water treatment offer the same benefits as in a hyperbaric chamber? In-water recompression may be an appropriate option, particularly for remote diving operations, but the hazards must be considered. This lecture will consider the pros and cons of in-water recompression to help prepare those who may face this critical decision.

“Marine life toxicology: What the dive leader should know”

Observing marine life is one of the main reasons many people dive; it is also the reason some people are afraid to dive. Tropical marine reefs are one of the most complex and diverse ecosystems, offering a glimpse at nature’s beauty as well as its chemical and toxicological fury. This lecture will consider relevant toxicological aspects of marine life and strategies for marine injury management, focusing on an evidence-based approach to first aid.

“Measuring Decompression Stress”

The outcome for a given dive can simply be described as safe or unsafe, but the effects can actually be far more subtle. This presentation will consider how decompression stress can be evaluated, the major factors that influence it and practical strategies to control risk.

“Myths & ‘Facts’ in Diving Physiology”

Information shared as both “fact” and “myth” can often be a confusing mix. This presentation will discuss both scientifically proven physiology facts as well as unsubstantiated theories that have circulated around the diving community.

“Pathophysiology of Immersion”

Water can be a joy to swimmers and divers. The buoyancy water provides enables us to move in three dimensions with tremendous freedom. There is a toll, however, that comes with this dense milieu that we do not see in our normal air environment. This presentation will consider the effects of water immersion and the implications for swimmers and divers.

“PFO & Recreational Diving”

Is there a relationship between patent foramen ovale (PFO) and decompression illness (DCI)? This presentation will discuss the anatomy and physiology of PFO and its relevance to recreational scuba diving. Specifically, it will present the data regarding the increased incidence of DCI in divers with PFO and ways to mitigate this risk as well as an update on the ongoing DAN-sponsored study of PFO and DCI.

“Project Dive Exploration: 1995-2008”

The goals of Project Dive Exploration (PDE) were to measure the DCS incidence at selected recreational dive sites and investigate the primary risk factors. Results indicated a very low DCS incidence for basic recreational diving, a higher incidence for occupational exposures, and the highest incidence for advanced diving. Within each form of diving, a model of dive profile severity was highly predictive of DCS incidence. Nitrox diving gases in the vicinity of 32% oxygen were found to be used to dive deeper than air but with no higher DCS incidence.

“Routine Activities That May Increase Risk of DCS on a Dive Trip”

Daily activities can increase risk of DCS, but certain measures can be taken to decrease the risk during a dive trip. This seminar will cover the known statistics and general recommendations.

“What should be in your Emergency Action Plan”

An Emergency Action Plan (EAP) is a worthwhile element of dive preparedness, though many plans tend to be too simple or too broad in scope. The information these plans contain can make a true difference in an emergency situation. This presentation explores the essential information contained in an EAP and the reasons for being selective with what is added to the plan. In addition, first aid training as well as EAP rehearsal and implementation strategies are also discussed. With proper preparation, training and execution, the EAP can be indispensable in an emergency.

“What to Expect from Hyperbaric Treatment and How it Heals DCS”

Hyperbaric oxygen is the definitive treatment of DCS. This discussion will serve as an introduction to hyperbaric chambers, treatment tables, additional therapies as well as outcomes and statistics for DCS. This seminar will also cover basic physiology and mechanisms of hyperbaric oxygen.

DAN Speakers

Marty McCafferty, EMT-P, DMT-A

DAN Medical Information Specialist Marty McCafferty has been both a dive instructor and a paramedic since 1995. He has worked as a paramedic in the field, in an emergency room and as an emergency medical services supervisor at an Ohio theme park. McCafferty is a certified American Heart Association Basic Life Support and First Aid instructor. Marty is dedicated to enhancing diver education through dive medicine focused webinars, conferences, lectures and workshops.

Neal Pollock, PhD

Dr. Neal Pollock is a Research Director at DAN and a Research Associate in the Center for Hyperbaric Medicine and Environmental Physiology at Duke University Medical Center. His academic training is in zoology, exercise physiology and environmental physiology. His research interests focus on human health and safety in extreme environments. He is actively involved in projects of flying after diving, breath-hold safety, astronaut decompression and ultrasonic assessment of decompression-induced bubbles.

Matías Nochetto, MD

Dr. Matias Nochetto is the DAN Director of Outreach, chair of the DAN America Committee for the Recompression Chamber Assistance Program and a member of DAN's Institutional Review Board. An SSI dive instructor since 1999, Nochetto is also a National Oceanic and Atmospheric Administration's trained dive medical officer as well as an Undersea and Hyperbaric Medical Society and International Association of Diving Contractors certified dive medical examiner. His focus is to develop hyperbaric and dive medicine throughout Latin America.

Douglas Ebersole, MD

Dr. Douglas Ebersole is a cardiologist at Watson Clinic LLP in Lakeland, Fla., specializing in coronary and structural heart interventions. A cave and technical diver, he is a CCR Trimix instructor for International Association of Nitrox and Technical Divers and Technical Diving International. DAN is collaborating with Dr. Ebersole on a five-year study comparing the safety of divers who underwent PFO closure and those who continue diving without it as well as a two-year study using echocardiographic screening of divers for left ventricular hypertrophy and monitoring the rate and electrical activity of their hearts during diving.

Richard Vann, MD

Dr. Richard Vann was a Diving Engineer at Ocean Systems, Inc., Diving Officer for U.S. Navy Underwater Demolition Team 12, Director of Applied Research at the Duke Hyperbaric Center and Research Director at the Divers Alert Network. Dr. Vann is currently a consultant to DAN and an Assistant Professor Emeritus in the Anesthesia Department at Duke Medical Center. His interests include decompression sickness, diving fatalities, underwater breathing apparatus, oxygen toxicity, and space and mountain medicine with emphasis on the physiology, statistical modeling and operational practice of decompression.

Dario Gomez, MD

Born in Mexico City, Dr. Jorge Dario Gomez Castillo graduated from Anahuac University Mexico. He earned his advanced degree in Diving and Hyperbaric Medicine from the National University of Mexico. He completed a research fellowship in the hyperbaric unit at Prince of Wales Hospital in Sydney, Australia. He now serves as the DAN Medical Liaison for the Mexican Caribbean and the Director of the Hyperbaric Unit in the General Hospital of Cozumel, Mexico.

DAN@DEMA: Seminar Schedule

(Room #S230E)

Wednesday, November 6

- 9:00 a.m. Evaluating Information Related to Diving - Increasing Your Critical Thinking
Marty McCafferty, EMT-P, DMT-A
- 10:00 a.m. Art and Science of Rebreather Diving
Richard Vann, MD
- 11:00 a.m. PFO & Recreational Diving
Douglas Ebersole, MD
- 1:00 p.m. Pathophysiology of Immersion
Neal Pollock, PhD
- 2:00 p.m. Critical Thinking in Post-dive Symptoms
Matías Nochetto, MD
- 3:00 p.m. Project Dive Exploration: 1995-2008
Richard Vann, MD
- 4:00 p.m. Measuring Decompression Stress
Neal Pollock, PhD

Thursday, November 7

- 9:00 a.m. Marine life toxicology: What the dive leader should know
Matías Nochetto, MD
- 10:00 a.m. Measuring Decompression Stress
Neal Pollock, PhD
- 11:00 a.m. Evidence-Based Decompression
Richard Vann, MD
- 1:00 p.m. In-water Recompression: Pros and Cons
Matías Nochetto, MD
- 2:00 p.m. Myths & "Facts" in Diving Physiology
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Friday, November 8

- 9:00 a.m. Project Dive Exploration: 1995-2008
Richard Vann, MD
- 10:00 a.m. What to Expect from Hyperbaric Treatment and How it Heals DCS
Dario Gomez, MD
- 11:00 a.m. Marine life toxicology: What the dive leader should know
Matías Nochetto, M.D.
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Marty McCafferty, EMT-P, DMT-A
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- 3:00 p.m. Pathophysiology of Immersion
Neal Pollock, PhD
- 4:00 p.m. Routine Activities That May Increase DCS Risk on a Dive Trip
Dario Gomez, MD

Saturday, November 9

- 9:00 a.m. Myths & "Facts" in Diving Physiology
Neal Pollock, PhD
- 10:00 a.m. What should be in your Emergency Action Plan
Marty McCafferty, EMT-P, DMT-A
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