This presentation gives overview of locations for diving and hyperbaric medical literature and resources.

The format of the presentation is to show resources and give example files of free content that is available through these locations.

Photo of author hovering over a monoplace hyperbaric chamber in TRUK Lagoon 2008. Photo by Amanda Cotton.
"Get your facts first, then you can distort them as you please."
-Mark Twain

•The Human Genome Project has demonstrated that sharing information can enhance the success and growth of a research community. Those in the field of Hyperbaric Medicine and Research could benefit greatly from such collaboration. Unfortunately, many valuable resources that can be used to compare efforts or serve as a baseline are scattered across various repositories or are lost. In 2002, The Office of Naval Research tasked UHMS with performing a comprehensive analysis of the Navy's research and development program in Undersea Medicine (1). The panel found that 60% of the young researchers in the field left within less than ten (10) years. Additionally, it was discovered that many of the senior scientists in this arena would retire in the near future (52% retiring in less than 10 years and 96% retiring in less than twenty years). Further, the Navy had not trained any investigators in the previous ten (10) years. This turnover in researchers and the loss of senior scientists potentially signifies a great loss in human knowledge that can be transitioned to new researchers. It is therefore crucial that information management and access to resources be strengthened by providing effective and timely methods for retrieval of valuable documents.
• At the 2002 UHMS annual meeting, Dr. Garcia-Covarrubias and Dr. Van Meter published an abstract concluding that the UHMS abstract to publication rate is lower when compared with other medical fields (2). From their abstract, "the overall publication rate in MEDLINE indexed journals for 1996, 1997, and 1998 was 17.9% (26 of 145), 14.8% (27 of 182), and 18.7% (33 of 176) respectively". Their abstract identifies a real need to find data and publications that are available to enhance communication and collaboration. The most quoted literature searches include PubMed/MEDLINE and the Defense Technical Information Center (DTIC) databases. Much of the information regarding undersea research is scattered across numerous other databases throughout the world. Some of this information is not indexed and is therefore lost except to the few who know exactly what they are seeking.
Historically, Books and journals have been the most commonly referenced materials because of their well known and common accessibility.
• http://www.worldcat.org/

• WorldCat may only be available through a local library but covers books, workshops and other publications in collections worldwide.
Journal Articles in Hyperbaric Medicine and Physiology

- Journal of Applied Physiology
- European Journal of Applied Physiology
- Aviation Space and Environmental Medicine
  - Aerospace Medicine
- Undersea and Hyperbaric Medicine
  - Undersea Biomedical Research
  - Journal of Hyperbaric Medicine
  - Hyperbaric Oxygen Review
- South Pacific Underwater Medicine Society
- European Undersea Baromedical Society

• Top Journals we use for applied physiology publications.

• The Journal of Applied Physiology dates from 1948 to current.
• The European Journal of Applied Physiology dates from 1928 to current.
• Aviation, Space, and Environmental Medicine, formally published as Aerospace Medicine, ranges from 1959 to current.
• Undersea and Hyperbaric Medicine resulted from combining the Undersea Biomedical Research journal with the Journal of Hyperbaric Medicine (formerly published as Hyperbaric Oxygen Review). These Journals have been in publication since 1974.
• South Pacific Underwater Medicine Society (SPUMS) Journal is published quarterly and dates from 1970 to current.
• European Undersea Baromedical Society (EUBS) publishes abstracts and presentations from their annual meetings as well as various workshops and their newsletter. The first meeting was in 1973.
• http://www.pubmed.gov

• PubMed is a good first step but should not be the only Database searched when researching a specific topic.
Exercise-induced intrapulmonary shunting of venous gas emboli does not occur after open-sea diving

Željko Đojić,1 Ivan Palata,1 Ante Oboz,1 Đorđe Đupljević,2 Alf O. Renstrøm,3 and Zoran Velić3

1Department of Physiology and Biophysics, University of Split School of Medicine, Split, Croatia; and 2Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway

Submitted 30 December 2004; accepted in final form 14 April 2005

Dojić, Željko, Ivan Palata, Ante Oboz, Đorđe Đupljević, Alf O. Renstrøm, and Zoran Velić. Exercise-induced intrapulmonary shunting of venous gas emboli does not occur after open-sea diving. J Appl Physiol 99: 584-589, 2005. —Intraluminal instabilities of venous gas emboli can lead to neurological damage after diving with compressed air. Recently, significant exercise-induced intrapulmonary emboli have been reported in healthy humans, but their clinical impact and possible behavioral changes need further investigation. The aim of this study was to examine whether intrapulmonary shunts could be found following intense exercise after diving and, if so, whether exercise should be avoided during first period. Twenty healthy, military divers performed an open-circuit dive to 30 m in breathing air, remaining apneic for 30 min. During the bottom phase of the dive, the subjects performed mild exercise at ~80% of their maximal oxygen uptake. The ascent rate was 9 m/min. Each diver performed graded upright cycle ergometry up to 86% of the maximal oxygen uptake 40 min after the dive. Monitoring of venous gas emboli was performed by VGE; are carried away from the periphery to the pulmonary circulation, where they cause mechanical, hemodynamic, and biochemical effects. Although silent bubbles are asymptomatic, the occurrence of many bubbles is closely linked to a high risk of DCT (24).

Paradoxical air embolism, that is, a crossing of emboli from the venous to arterial side of the circulation, can occur due to: 1) intracardiac septal defects, 2) passage through the pulmonary microcirculation, or 3) large anatomical intrapulmonary (i-p) shunts. A patent foramen ovale (PFO) has been reported to be an important risk factor for cerebral embolic accidents through right-to-left crossover of VGE (23, 42), and precipitating factors for an increased pulmonary artery pressure (PAP; Refs. 32, 39) and any other conditions resulting in increased venous return to the right heart, such as coughing, performing Valsalva maneuver: creation of breathing against resistance, increased venous return from the abdomen, and increased Valsalva ratio (13, 14).

• Links to the Journal of Applied Physiology articles can be found in PubMed.
• Moving past these more globally accepted locations, we will “cut a little deeper” into the less common areas of interest. Less commonly searched databases and introduce finding aides…

• Photo of Operating Room table taken by Mike Barnette (AUE) in TRUK Lagoon 2008.
• Training in techniques available for searching are found on the DUMC Library main page.
• Also links to Databases and the DUMC Archive.
• Members of the UHMS have access to Duke holdings and collections. This is a major benefit for members of that organization that are not in academic medicine.
• Searching will give results for all Duke holdings, UHMS Members have access to Duke resources. http://www.uhms.org

• Can be a good tool for access to books and covers information about Duke holdings when WorldCat is unavailable.
•Finding aides for many donated personal collections that include articles, pictures, letters and other items of interest.
• Collection finding aides are currently available for:
  Albert R. Behnke
  Elizabeth Reeves
  Edward Lanphier
  David Yount
  David Desautels
  The work of Edward Thalmann is being processed at the moment.
• Each collection has a brief description of the person work belonged to.
• Use browser search or find function to look for article key words.
• The finding aides list titles and authors for the included works.
• The work from Dr. Behnke is held in 44 boxes.
• UHMS Members have access to the DUMC Library and Archives - http://www.uhms.org
• Location for South Pacific Underwater Medicine Society (SPUMS) article abstracts

• SPUMS is published quarterly and their articles are available for sale on disk. http://www.spums.org.au/

• SPUMS abstracts are also available through http://www.embase.com/ though the journal is listed as “inactive” in their journal list.

• This collection is also being indexed into the Rubicon Research Repository we will discuss later in this presentation.
Aerospace Medical Association (AMA)
http://www.ingentaconnect.com/content/asma/asem

• Electronic copies free after one year.
• Online content starts in 2003.
• The Aerospace Medical Association (AsMA) is finished with their
electronic archiving of their Journals Aerospace Medicine and
Aviation, Space and Environmental Medicine. The DVD of articles
published from 1930 to 2002 is available for $US50.00 to Members
and $US150.00 for non-members.
• There are 67 issues of this monthly journal currently available online.

• *Aerospace Medicine* was the primary publication for many of the early decompression and diving physiology works. The name was changed to *Aviation, Space and Environmental Medicine* to reflect the strong influence from diving physiology that is still very present in the journal today.
Japanese Journal of Hyperbaric Medicine
http://Sciencelinks.jp/j-east/journal/J.php

- Online content starts in 1997.
- Abstracts only.
• This site exhibits the work of Dr. Lambertsen et.al.
• Some data is electronic but major feature is list of publications.
• This collection of literature will eventually go to the National Library of Medicine (NLM).
REPORT
RELATIONSHIPS OF DOPPLER VENOUS GAS EMBOLISM TO DECOMPRESSION SICKNESS

AUTHOR(S)
CJ Lambertsen, RY Nishi, EJ Hopkin

REPORT DATE
July 10, 1997
• We are starting to get a pretty clear picture that there is quite a bit of information available. It seems pretty straight forward and harmless but is there more? Technical reports…

• Photo of author hovering over depth charge in TRUK Lagoon 2008. Photo by Mike Barnette (AUE).
Defense Research and Development Canada (DRDC)
http://www.drdc-rddc.gc.ca
(formerly known as DCIEM)

• Nice information about Canadian Military publications.
• This information is also listed in Defense Technical Information Center (DTIC).
• There are DCIEM Technical Reports as well as publications from other journals and meetings available in the database.
• North Atlantic Treaty Organization, Research & Technology Agency (NATO RTA) has several publications that can be searched from the DRDC site.
North Atlantic Treaty Organization, Research & Technology Agency (NATO RTA) site is available for requests for their documents.
• The documents published by NATO may be available by request and do have a cost associated.
• Not much available but the database is growing.
• Older work is not listed.
• There are workshops as well as technical reports available through the HSE site.
British Sub Aqua Club (BSAC)
http://www.bsac.org/

• British Sub Aqua Club is recognized the world over as an authority on diving safety.
• Materials available on the BSAC site range from workshop materials to their annual reports on diving incidents.
Norwegian Underwater Intervention (NUI)
http://www.nui.no

- Mainly Commercial, North Sea
- Broad range of topics and reports are available for sale.
- Many reports are in the UHMS/ Duke Library holdings and can be checked out or possibly available for electronic delivery to UHMS members.
• Mainly scientific diving focus.
• Some Sea Grant content offers opinions and educational information.
• There are also workshops and technical reports available.
• The Smithsonian Scientific Diving Program site has many workshops available.
• Some workshops are also available in the Rubicon Research Repository.
• Many workshops in the collection are published by the American Academy of Underwater Sciences (AAUS).
  http://www.aaus.org/
• US Military as well as index of Canadian publications.
• Examples include NEDU, NMRI, DCIEM, USAF-SAM, etc.
• Also includes grant reports to funding sections such as ONR.
• Most current information from the research stations are available.
• Select frequently used older publications are included.
• This is my second most used database.
•US Naval Supervisor of Salvage and Diving maintains several Manuals and Guidelines as well as announcements and their Newsletter “Faceplate”.

• Technical Reports and Manuals
• Naval Submarine Medical Research Laboratory maintains a finding aide for their technical reports online.

• http://www.nhrc.navy.mil/nsmrl/reports.htm

• Note: This page appears to have been taken down by the DoD but it can be located here: http://web.archive.org/web/*/http://www.nhrc.navy.mil/nsmrl/reports.htm
• Great way to find the information but the handle server does not always work for document retrieval.
• We have had better luck with downloads directly from JSC.
• Many aerospace topics covered.
• The Rubicon Foundation, Inc. is a 501(c)(3) non-profit organization undertaking projects that (1) contribute to the interdependent dynamic between research, exploration, science and education; (2) improve the available resources for students, professionals and the general public; and (3) preserve the valuable natural resources that are vital to future endeavors. Currently we are working on a research repository that will make available documents more accessible. This effort has been supported by Duke University Medical Center (DUMC), the Undersea and Hyperbaric Medical Society (UHMS), Global Underwater Explorers (GUE), and the Divers Alert Network (DAN).
Rubicon Foundation

- The information assembled in the Rubicon Research Repository covers a small part of the information available worldwide.

- To date we have scanned the Undersea Baromedical Research from 1974 to 1992 with support from GUE, Undersea and Hyperbaric Medicine from 1993 to present with support from GUE, UHMS Workshops with support from DAN, Underwater Medicine and Related Sciences supported by UHMS, Hyperbaric Oxygen Review from 1980 to 1985, and Journal of Hyperbaric Medicine from 1986 to 1992. The Board of Directors for UHMS voted at their annual meeting to include all journal articles we scanned in the UBR, UHM, and JHM collections in our repository. In November of 2008, Rubicon completed the indexing of all UHMS Annual Meeting abstracts from 1974 to 2008. With the assistance of Mr. Nishi, we secured permission from Defence R&D Canada (DRDC), formerly Defence and Civil Institute of Environmental Medicine (DCIEM) to include their non-classified technical reports. Dr. Pennefather assisted us by scanning the Royal Australian Navy Technical Reports. The American Academy of Underwater Sciences (AAUS) Board voted in March 2007 to include their workshops and proceedings from 1985 to present. The Professional Association of Diving Instructors (PADI) donated two symposia and two technical reports.

- In order to achieve optimal exposure as well as ensure preservation of this valuable work in the future, we have begun collaboration with the DUMC Archives and DTIC. The Duke and DTIC servers follow a security and back-up policy to prevent their corruption.
So, with all of this, are we making an impact? As you can see traffic to our database is continuing to increase and resources are increasingly being referenced in scientific articles submitted for publication. The large jump in traffic the second quarter of this year is due to our participation in the Wikipedia Project. Rubicon volunteers have been adding references to previously unreferenced articles in the encyclopedia.
“There are no facts, only interpretations.”
-Friedrich Nietzsche

• We have also archived many collections available through UHMS. These are listed here: http://rubicon-foundation.org/project.html#Archive

• Thus far, the work has been completed on a volunteer basis. While this has provided the project with support for the launch of the repository, we are rapidly becoming overwhelmed and require additional staff support. Due to the value of these documents, we are seeking additional financial support to ensure the timeline required for completion does not become detrimental to the overall goals of the project. This will be used for salary support to continue the scans, metadata harvesting, web site usability upgrades, and to import of this material into the online repository for the public to access.

• We received funding from the Office of Naval Research for three years to help with our project but more is needed. A very special thanks to the donors that have given their money to support our growth. We could not grow without you!

• Volunteers are also needed to help format data and donations as the arrive.
Special Thanks to:

Brian Armstrong, Ginger Carden,
Michelle Foss, Russell Koonts, Charlie Lackey, Ron Nishi, John Pennefather,
Diana Temple, Pat Thibodeau, Richard Vann, DAN, UHMS and the
US Office of Naval Research

http://rubicon-foundation.org

• Thank you for your interest and support in the archiving of historical literature!

• The Rubicon Foundation welcomes the use of our Rubicon Research Repository logo and links to our site.

• 1. Undersea and Hyperbaric Medical Society. An Assessment Of A National Naval Need For Undersea Research. Office of Naval Research, report in response to 5000 Ser 341/270 20 Feb 02.

Questions?

• Photo of beer and saki bottles in a Maru cargo hold by Mike Barnette (AUE) TRUK Lagoon 2008.

Contact:
Gene Hobbs, CHT
Gene@rubicon-foundation.org
919/880.6963 cell