

Orbiter

The Official Newsletter of the Aerospace Medicine
Student and Resident Organization



THE NEW ORBITER

Dear AMSRO members,

Welcome back to the new issue of *The Orbiter*. There have been many unique opportunities and experiences, and more to come in upcoming months. I urge all AMSRO members to send me an article of internships they have participated in, their current activities, or upcoming conferences they will be attending. All of this may be sent to the editor: laura.drudi@mail.mcgill.ca. Enjoy the issue and I look forward to your feedback and your articles!

Laura Marie Drudi
Orbiter Editor

UTMB SHORT COURSE

Introduction to Aerospace Medicine

By Jennifer Law, MD
UTMB/NASA Aerospace Medicine Resident

This summer, nine students participated in the annual Introduction to Aerospace Medicine Short Course at UTMB in Galveston, TX.

Four AMSRO members—Rebecca Blue, Benjamin Johansen, Jennifer Law, and Greg Stewart—were joined by a JAXA flight surgeon, several military flight surgeons/aerospace medicine residents, and a Norwegian physician working on his Ph.D. in decompression sickness. Highlights of the four-week course included: lectures on a variety of topics ranging from space physiology to commercial spaceflight to military aviation medicine; tours of Johnson Space Center, Neutral Buoyancy Laboratory, and Lone Star Flight Museum; altitude and hyperbaric training; and flight simulation at FlightSafety International. The participants also rubbed elbows with astronauts, current and retired NASA flight surgeons, and seven past AsMA presidents. The course culminated in a presentation and paper by each student. All in all, this course not only provided a great introduction to the field of aerospace medicine, but it also offered a rare opportunity to network with so many aerospace medicine specialists. Any student or resident thinking about pursuing aerospace medicine should take this course!

UTMB: Introduction to Aerospace Medicine Short Course 2010 - A Canadian Perspective

By: Gregory Stewart MD

As a foreign national to the United States, I had the privilege of attending the aerospace medicine short course at UTMB. It was an opportunity of a lifetime. Specifically, we were taught how the lessons learned from aviation and space exploration can be applied to prevent disease and improve the health of pilots and astronauts. Furthermore, as a rural family physician at The University of Western Ontario, the training will enhance quality of life and longevity for the patients in my practice. Personally, the course affirmed my desire to pursue a career in aerospace medicine and preventive health. For that, I would like to thank everyone at UTMB, Wyle and NASA for their generosity and for making this incredible experience possible. Merci Beacoups!

ORBITER 2010 Issue 2

In this issue:

- The New Orbiter
- UTMB Short course
- State of the 2010 JSC Aerospace medicine clerkship
- 2010 NASA Academy
- Upcoming conferences
- In Memoriam

Orbiter

The Official Newsletter of the Aerospace Medicine
Student and Resident Organization



STATE OF THE 2010 JSC AEROSPACE MEDICINE CLERKSHIP

By Natacha Chough, MD
R1, Stanford University
Emergency Medicine Residency



As a MSIV from the University of Michigan in October 2009 and aspiring NASA flight surgeon (the doctor caring for astronauts), I recently participated in JSC's aerospace medicine clerkship. I felt called to be a NASA flight surgeon ever since learning about it through the NASA Academy internship in college and was eager to finally get a taste of the flight surgeon role.

The aerospace medicine clerkship is a 4-week rotation at JSC for senior medical students, set up by Wyle. The clerkship not only offers an opportunity to learn about being a flight surgeon and network within the field, but is also a potential applicant pool from which Wyle may select future flight docs. Half the time is spent working on a research project with a mentor, one of the current flight surgeons. The rest is spent in lectures on space physiology,

medical selection requirements for crew, close calls and accidents, toxicology, radiation, etc., and on tours of facilities such as NBL, Ellington Field, Building 9, the neurovestibular lab, and flying the Space Shuttle Motion Simulator. All these experiences culminate in final presentations and by working through a number of case scenarios, real and hypothetical, clinical and ethical, with JD Polk, current chief of Space Medicine.

Flight docs often report having "the second-best job in the agency," in terms of mission operations. They participate in much, if not all, the same training as crewmembers and support three major areas: pre-flight crew selection and training, monitoring of on-orbit crew, and post-flight debrief/rehab. Some docs are also stationed with our Russian partners in supporting training, launch and landing ops in Star City and Baikonour. Flight docs assigned to a mission not only take care of the crew, but are also responsible for crew family members as a point of support and contact, especially during mission contingencies. While these docs work direct mission medical ops, other surgeons staff the JSC clinic, seeing active and retired astronauts, and still others work on research/advanced projects for the future.

Probably one of the most challenging aspects of being a flight surgeon is that you in effect must try and serve two masters—an impossible job. Not only is your patient your responsibility and you their advocate, as is good general medical practice, but your patient is a civil servant in which NASA and US taxpayers have invested millions of dollars worth of training. But most importantly, your patient is a person, colleague, and friend, with a family on the ground. Therefore, a major medical event can disrupt work timelines, jeopardize missions, cause political strain between international partners, and create incredible family stress on Earth, all at once. This places the surgeon in a critical role of often rapid decision-making, sometimes with limited information, that must be appropriately justified to management, all while trying to keep the best interests of patient, agency and family in mind. No easy task.

All told, a good day for a flight surgeon is a boring one, especially on-console. They conduct regular private medical conferences with the crew in addition to addressing any current medical concerns. Three on-orbit events in particular send a surgeon's heart rate skyrocketing: toxic exposure, rapid cabin depressurization, and fire/smoke

Orbiter

The Official Newsletter of the Aerospace Medicine
Student and Resident Organization



inhalation. The surgeon on-console works in conjunction with BME (biomedical engineer) and can consult any medical specialist necessary for medical events such as these.

Separate from ops, constant good communication between medical and engineering/science personnel is also essential during hardware design and planning in order for the crew to do their jobs safely and efficiently. Flight docs often find themselves having to justify to engineers the medical reasons for certain design or schedule modifications or why a particular piece of hardware cannot be cut from the payload manifest despite its adding weight. In an engineering-dominated center such as JSC, the physician is often an outnumbered but necessary liaison between those who design the missions and those who ARE the mission.



Historically, flight surgeons were seen as “the bad guys,” the ones who held the authority of whether or not to ground crewmembers. But conscious efforts have been made to change this stereotype, and I believe this will continue to improve with longer duration spaceflight. Already, what I witnessed during the clerkship was a much more collegial relationship designed to support NASA family, with the patient-doctor relationship remaining sacred.

I knew being a flight surgeon was the right fit for me the day I realized it is not so much the nature of NASA’s work that fuels me as it is being able to support the people with whom I work. As it turns out, as a flight surgeon, that IS your job. The ability to care for NASA family in the role of physician is a pay-it-forward type of exchange: you keep crew performing to the best of their physical and mental abilities, and they in turn are able to explore on behalf of all of us. To quote a colleague particularly enamored with this task, “it’s like taking care of Lewis and Clark.” I look forward to that privilege.

2010 NASA ACADEMY AMES RESEARCH CENTER

*By Laura Marie Drudi
M.D., C.M. candidate 2012
McGill University*

The 2010 NASA Ames Academy for Space Exploration was held for 10 weeks from June – August 2010. It was a spectacular experience and I feel extremely privileged to be representing Canada, the CSA, and McGill University. It’s been one amazing adventure after another. NASA Academy was truly the best summer I have had so far. I certainly wouldn’t have had this remarkable experience without the support of the CSA. I had the privilege of working in the Space Life Sciences laboratories with McGill alumnus, Dr. Richard Boyle. For 10 weeks, I investigated the effects of spaceflight on immunosuppression. 7 mice were flown on STS-131 and their thymus glands were collected, processed and sent to NASA Ames. My role this summer was to perform histological techniques on the ground and flight mice in order to observe how thymus glands were altered in spaceflight.

In addition to our commitment to our research projects, we also had a variety of leadership development activities. The most memorable was the trip to *Kennedy Space Center*. Going to KSC, the visitor’s center, VAB and the launch pad was the best moment of the Academy for me. It was amazing to see all of my dreams converge on this very trip. I discovered who among our group was truly emotionally touched by this trip. I was moved to see others deeply emotionally invested in this dream for space exploration like I am. Other trips included Lake Tahoe, river rafting on the American River, NASA Dryden Flight Research Centre, Jet Propulsion Lab, Lick Observatory, Yosemite and the Desert Research Institute. An all-round amazing 10 weeks to say the least.

Orbiter

The Official Newsletter of the Aerospace Medicine
Student and Resident Organization



2010 INTERNATIONAL ASTRONAUTICAL CONGRESS

By Laura Marie Drudi
Medical Student, M.D., C.M. candidate 2012
McGill University

The 2010 International Astronautical Congress (IAC) in Prague, Czech Republic was held from September 27-October 1st, 2010. It was a privilege to be representing Canada as a Canadian Space Agency (CSA) student delegate at such a prestigious international conference.

The 2010 IAC was phenomenal. This was the first year I was presenting in a technical session and the feedback I received from the audience was exciting and stimulating. I presented my paper on the significance of fatigue in the operational space medical setting, stemming from my project with Dr. Gregg Bendrick at NASA Dryden Flight Research Centre.

There are no words to describe the bond that I had with the CSA-sponsored students and various students and young professionals from 53 countries. It is so invigorating to connect with individuals from across the world in similar areas of interest or with the same enthusiasm and passion about the space industry.

The 2011 IAC will be held in Cape Town, South Africa. I hope to present at two panels stemming from my experience at NASA Ames Research Center through NASA Academy as a CSA-sponsored student. I am privileged to have been one of the CSA sponsored students to attend the 2010 IAC. I am deeply humbled that the CSA has recognized me and supported my research to attend such an amazing conference, which has allowed me to learn extensively about space life sciences, grow as a medical student leader and become a student ambassador representing Canada and the Canadian Space Agency.

UPCOMING OPPORTUNITIES

2010 AEROSPACE MEDICAL ASSOCIATION ANNUAL SCIENTIFIC MEETING

2011 INTERNATIONAL ASTRONAUTICAL CONGRESS (IAC)

2011 SUMMER STUDIES PROGRAM, INTERNATIONAL SPACE UNIVERSITY (ISU)

IN MEMORIAM



Gregory Giancarlo Shaskan, MD, MPH.

Dr. Shaskan passed away on September 2, 2010 while supporting the U.S. space program at the Gagarin Cosmonaut Training Center in Star City, Russia.

Dr. Shaskan served as an Assistant Professor in the Departments of Preventive Medicine and Community Health and Family Medicine, and as a Flight Surgeon supporting the bioastronautics contract with the Wyle Integrated Science and Engineering Group of Houston. He was a Diplomate of the American Board of Family Medicine and held a certificate of added qualification in Sports Medicine.

Dr. Shaskan completed the Aerospace Medicine residency at UTMB and earned a Master of Public Health in the Graduate School of Biomedical Sciences. In 2009, he was awarded the William K. Douglas Scholarship from the UTMB Aerospace Medicine Residency, and was a member of the UTMB Team who won the 2009 and 2010 Residency in Aerospace Medicine (RAM) Bowl Championship during the Aerospace Medical Association Annual Scientific Meeting. While at UTMB he served in many areas of medical service including work with the Houston and Chicago marathons and Wings Over Houston air show. He is survived by his wife, Sharon, daughter Franchesca, and his extended family. Services were held in Chicago and a tree dedication memorial was held in Houston by UTMB, Wyle and NASA friends and colleagues. Greg's tree, planted in his honor, is in the Employee Grove across from the Astronaut Grove at the NASA Johnson Space Center. Friends and family gathered Friday, September 17 to say goodbye to a dear friend and colleague.

He will be dearly missed.

CONTACT INFORMATION

To all AMSRO members who would like to share a interesting academic, extracurricular, and summer opportunities with the Orbiter, please send your articles to the Orbiter Editor: laura.drudi@mail.mcgill.ca