

Q&A with Dean Winslow, MD, on Volunteering in Antarctica

Currently the only continent without confirmed cases of COVID-19 during COVID-19 Pandemic

MARY KORR
RIMJ MANAGING EDITOR

DEAN WINSLOW, MD, Professor of Medicine at the Stanford University Medical Center, served as lead physician for the U.S. Antarctic Program (USAP) at McMurdo Station from August 2019 until February 2020. His wife, **JULIE PARSONNET, MD**, Professor of Medicine and Health Research and Policy at Stanford, volunteered as well. Since their return, the COVID-19 pandemic has spread to every continent on Earth – except for Antarctica, where there are currently no known or identified cases, as of this writing, according to The National Science Foundation (NSF), which conducts the USAP.

In the following Q&A, Dr. Winslow shared his experiences with RIMJ about what it was like to work at McMurdo, a scientific research base on the edge of the Ross Ice Shelf, in one of the most desolate places on Earth, and, one could argue, perhaps the safest, now that winter has descended.

RIMJ: What drew you to work in Antarctica?

DR. WINSLOW: I had the privilege of serving as the USAF flight surgeon deployed to McMurdo Station to support Operation Deep Freeze for 6 weeks during the Austral summer of 2009. I was struck by many things then: The amazing beauty of the continent, its remoteness, the excellent science being conducted in Antarctica by the NSF, the amazing people (scientists and support staff), the important mission, and the fact that in the entire history of the planet, only a few thousand humans have ever set foot on the continent. I decided that if I ever had the chance (after our children were grown) to return to Antarctica as a civilian doctor for the entire season, I would love to do it. It was an added bonus that my wife, Julie, was willing to deploy with me. We applied to the UTMB Polar Medicine Program, were selected, and Stanford granted us an unpaid leave of absence for 6 months.



Julie Parsonnet, MD, and Dean Winslow, MD, on a promontory above McMurdo Station, where they served at McMurdo General Hospital (below). [PHOTOS COURTESY OF DEAN WINSLOW, MD, AND UTMB POLAR OPERATIONS]





A greeter on the former Pegasus landing field at McMurdo. The Adélie penguin is one of eight penguin species found on the continent.

RIMJ: What are the population demographics there that could potentially need medical services and what is the capacity for inpatient/outpatient care?

DR. WINSLOW: When we arrived in Antarctica in late August, the population of the “winter-over” personnel at McMurdo was about 175; however, when we departed for home in February, the population was about 1,300, including crews from the vessels arriving to replenish fuel and supplies and several dozen construction/contractor personnel.

Our patients ranged in age from about 20 to almost 80 years old. All individuals deploying to Antarctica must pass a physical exam, lab tests, EKG, and are expected to be compliant with adult immunizations and cancer screening. The screening criteria are somewhat more stringent for individuals “wintering over,” since it is very difficult to Medevac patients off the continent during the dark winter months. Our UTMB boss, **DR. JIM McKEITH** (UTMB Polar Medicine medical director) and his staff did a very thorough job reviewing these packets and following up on additional necessary studies/waivers. While individuals were carefully screened, with this large age range we certainly cared for a population of patients with the potential for developing medical emergencies typical of this age range in the US population. The Medical Facility (Bldg. 142) was a quaint older structure built by the US Navy in the early 1960s. While it was not optimally laid out by modern standards for patient care, we found it to be very functional. The main trauma

bay had two beds with room for a third in the event of a MASCAL. We had modern monitoring equipment, a very nice ultrasound, and all of the infusion sets, crystalloid IV fluids, and surgical instrument sets that you would expect to find in a busy ED in the US.

RIMJ: What is the spectrum of medical conditions, illnesses and injuries seen at the medical facility there? Any unique incidents relative to the Antarctic habitat that you treated, such as seal bites?

DR. WINSLOW: We did see a few cases of minor frostbite in scientists and support personnel and several cases of HAPE (high altitude pulmonary edema) in personnel at the South Pole Station. (South

Pole elevation is about 11,000' Mean Sea Level (MSL) but with low atmospheric pressure the “pressure altitude” is often closer to 13,000'.) No seal or penguin bites, since generally NSF researchers and staff are required to stay at least 25m from all wildlife unless directly involved with tagging or other pre-approved observations. However, we did see a few serious injuries related to the Antarctic environment, including extremity fractures from falls on the ice, compression fractures of the spine from riding in tactical vehicles, and lacerations from slipping on ice or gravel on steep trails. One of the researchers slipped on the ice while working on the Ross Ice Shelf, struck her face on a sled and sustained a through and through laceration of the lip, extending all the way up to the nostril, which required a careful multi-layer repair. Toward the end of the season one of the crewmen on the cargo vessel sustained a severe crush injury of his hand when a 1,000 lb. hatch cover slammed shut on his hand.

RIMJ: What are the diagnostic imaging capabilities at the hospital and what is the capability to respond to emergencies such as appendectomy or acute MI?

DR. WINSLOW: We had a very nice ultrasound machine, tabletop and portable modern digital X-ray machines,



The medical team at McMurdo General Hospital.



The skier statue overlooking downtown McMurdo which is located on Ross Island on the shore of McMurdo Sound. McMurdo, the main U.S. station in Antarctica, is about 2,400 miles south of Christchurch, New Zealand, and 850 miles north of the South Pole.

point-of-care diagnostics, and a microscope. We were well-stocked with crystalloid IV fluids, infusion equipment, oral and injectable medications, but we did not stock blood or blood products. We did exercise our “walking blood bank” since all personnel have been typed, so we

could call in appropriate donors, confirm their blood type and that of the recipient and transfuse type specific or O+/- whole blood if necessary. We did not have the capability to cross match, however. We had one scientist with a perforated appendix whom we managed medically with IV

antibiotics for about 36 hours until we could Medevac the patient to New Zealand. We also cared for another patient with a posterior circulation stroke, but he was out of the window for tPA and we did not have CT to exclude a CNS bleed. Unlike my previous experience in Antarctica in 2009 where we cared for three patients with ACS, we did not have a patient with ACS this past season. We had one very tragic death of a young USAF NCO who was brought into Medical one morning by our paramedics with CPR in progress and was in PEA arrest. Cardiac ultrasound I performed during resuscitation revealed paradoxical motion of his septum and likely clot in the RV and autopsy conducted in NZ confirmed massive bilateral pulmonary embolism.

RIMJ: How far are you from full-service back-up and what is the protocol to Medevac a patient? And how challenging is that, especially in winter?

DR. WINSLOW: Amundsen-Scott Station (South Pole) is about a 3.5 hour flight by

University of Texas Medical Branch coordinates with National Science Foundation in Polar Medical Operations program

The University of Texas Medical Branch (UTMB Health) and the Center for Polar Medical Operations (CPMO) serve the National Science Foundation's US Antarctic Program (USAP), enabling vital scientific research from the most remote places on earth.

The CPMO is responsible for the medical screening of all USAP participants who travel to Antarctica each year, as well as providing the healthcare providers (physicians, mid-levels and various other clinical roles), resupplying the stations with medical supplies and medications, and real-time medical support via telemedicine and other assets.

UTMB Health has medical opportunities available at the South Pole, McMurdo and Palmer Stations in Antarctica, as well as summer field camps. These positions are seasonal and UTMB maintains a running list of interested candidates for future opportunities.

Due to the Pandemic, the organizations are monitoring and evolving isolation and testing protocols for the scientists, researchers, and volunteers who have historically traveled there seasonally and in summer field camps.

For more information on the program and future volunteer opportunities, visit: <https://www.utmb.edu/polar> and <https://www.usap.gov>

LC-130 to McMurdo Station. McMurdo Station is 6 hours by C-17 and 10 hours by LC-130 to Christchurch, NZ (our closest tertiary care center). The weather is generally flyable from McMurdo to Christchurch most days from September until end of February, but one can experience several days of blowing snow and bad visibility which make safe flight impossible. Similarly, the weather can be much worse at outlying field camps or the South Pole, so even in summer it was occasionally necessary to care for patients for a few days before we could get them to NZ for definitive care. During the winter it is dark most of the time and weather can be very bad, so there are normally no flights to or within Antarctica from early June until late August. An emergency Medevac in Antarctica during the winter is truly a heroic event associated with great risk to aircraft and crew and costs millions of dollars. One initiative I took during my time as lead physician was to develop (with the approval of the UTMB Medical Director) a rigorous

SOP and checklists/briefing guides for all Medevac and Casevac missions to bring these operations in line with the disciplined procedures we used successfully in Afghanistan and Iraq during my military deployments in those combat operations.

RIMJ: When did you do in your off time?

DR. WINSLOW: McMurdo Station is a very tight knit, yet eclectic community. Julie and I both greatly enjoyed sitting down with random personnel at meal-times, learned about their life journeys, interests, and their work. Since there is no wireless Internet, people do not carry a cell phone, so we sit and talk to each other a lot. There were also two bars and a coffee shop on base and we often had live music from classical to folk to rock & roll of all types in the evenings. There were also fantastic science lectures on Wednesday and Sunday nights every week given by NSF-funded scientists on topics as diverse as particle physics, penguin or seal biology, geology, oceanography, glaciology, and climate change.

RIMJ: What was the highlight of your tenure there?

DR. WINSLOW: I would say experiencing the natural beauty of this isolated continent, appreciating the beauty of the sunlight on the glaciers and the Ice Shelf and how it changed each day, watching the ice start to break up, seeing Weddell seals sleeping on the ice and giving birth, watching the magnificent penguins as they waddled across the ice (or through town) and seeing their grace as they entered the water. Julie (who had been a history major at Harvard) became a real expert on the heroic era of polar exploration (including Scott and Shackleton) and became certified as a docent to give tours to personnel at Scott's Discovery Hut (which is exactly the same – frozen in time – as it was in 1902–1904). It was also interesting to be a small part of the history of the continent and to support the science that has taken place in Antarctica since those first explorers arrived. We also made many lasting friendships with the people we met. ❖



Dean Winslow, MD, and Julie Parsonnet, MD, high above the Ice Shelf. The mean annual temperature is 0°F; temperatures may reach 46°F in summer and –58°F in winter.