

environment. The more we delve into the nature of small Antarctic groups arriving from temperate climates, the more questions arise. For example, what is the effect on the immune system of this geographic change? Is the observed immunosuppression and viral reactivation caused by psychological, hormonal or neuronal stressors? What triggers the changes in thermal physiology to cause acclimatisation?

The research programme also conducts psychosocial studies on small groups and individuals in isolation, and their positive resilience factors and adaptation responses, both on Antarctic stations and back home. These studies may provide insights into optimal psychological support at selection and during an expedition. They may also assist re-integration of expeditioners on return to Australia. Application of the research findings to humanitarian, military, disaster and other challenging environments is possible.

There are many other questions. How can we operate more safely and improve the health and wellbeing of expeditioners, and mankind in general, in challenging environments? Are the observed changes impacting on the health of Antarctic expeditioners in the short or the long term? Are they reversible or irreversible? How can we apply these findings to other extreme environments; to frontiers of industry and ultimately, space travel?

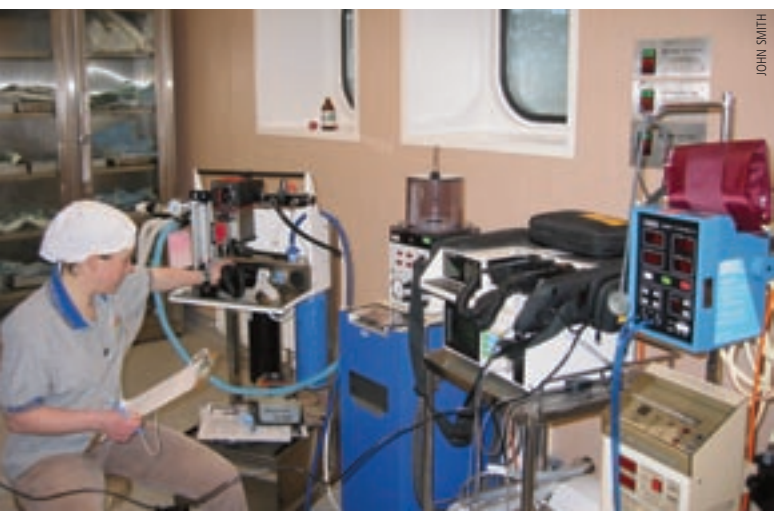
In the International Polar Year (2007–08), the Scientific Committee on Antarctic Research Expert Group on Human Biology and Medicine has proposed a multidisciplinary Arctic-Antarctic health research project. The project will provide an extraordinary opportunity for all polar researchers to study physiological, public and occupational health in polar regions, and to scale up studies of small populations in both the Antarctic and Arctic. The study will provide a legacy of ongoing databases, education and outreach, and will answer significant research questions on many facets of polar human biology and medical research.

For further information on the IPY visit <<http://www.ipy.org>>. Further information on the IPY research proposal, *Taking the Antarctic Arctic Polar Pulse*, is available from the AAD Chief Medical Officer – jeff.ayton@aad.gov.au.

— JEFF AYTON

Chief Medical Officer, Polar Medicine Unit, AAD

Assistant anaesthetist Megan Tierney monitors anaesthesia equipment during a training session at Mawson Station. The equipment includes, from left to right: Ulco anaesthetic machine, manual suction apparatus (in case of electricity failure), Campbell anaesthetic patient ventilator (for artificial breathing) sitting atop an anaesthetic ventilator and medical gas compressor, Lifepak 10 defibrillator and heart monitor, Datex anaesthetic vital signs monitor, Critikon blood pressure monitor (blue box at right) and an ATS automatic tourniquet cuff system (to assist with bloodless limb surgery and regional anaesthesia).



JOHN SMITH



JOHN SMITH

Committing to work as a doctor in Antarctica can be a disruptive and challenging career move. Doctors may have to sell a practice or put unforgiving training schedules on hold. They are then sent to one of the most isolated regions on Earth where, if a medical emergency arises, their only assistance is from a small band of willing volunteers and experts at the other end of a satellite phone. With the right attitude and effective use of the time, opportunities and facilities available, doctors can gain great personal and professional benefits from a stint in Antarctica. Two doctors, recently returned from the ice continent, describe their experiences.

Dr John Smith's experience at Mawson Station in 2003 was professionally and personally rewarding.



JOHN SMITH

Dr Tanya Kelly medivacs a patient from Casey Station to the RSV *Aurora Australis* under the support and coordination of the Polar Medicine Unit.



AAD

DOCTORS

Dr JOHN SMITH MBBS, DRACOG
Mawson 2003,
Ship's doctor (Oceanic Viking) 2004

"When I applied for a job in Antarctica I'd been doing general practice in the same place for 20 years. I was a country GP in Gawler in South Australia. I did a bit of everything there, including surgery and obstetrics. Obstetrics was an exciting part of the practice, but I'd given it up about five years before and was getting a little bored.

I was naïve about what Antarctica would be like. But what started as a bit of irrationality has ended up being a very positive move for me, professionally and personally.

The fact that you're on your own as a doctor down there could be a worry. But all the expeditioners made me feel comfortable about my role. They didn't have unrealistic expectations. They were also well dressed and well versed in protecting themselves from the cold and other potential injuries, so my medical skills weren't put to the test. That's the way it should be. Having said that, it was nice to be able to do the few things I did do well, and gain their confidence. If something did come up that I needed advice on, I was able to talk through the problem with doctors back in Australia via satellite phone. So even though you're the only doctor on site, you're not alone.

Continuing education is straight forward as Australia's Antarctic stations have internet access. There is also a comprehensive medical library at each station. And even if your medical skills aren't called upon for some time, they take a very long time to disappear – as I recently discovered! This was not as apparent to me prior to my southern experiences.

The medical facilities at Australia's Antarctic stations are probably the best on the continent. Over the years the Polar Medicine Unit has developed a good idea of the sorts of things that are commonly consumed and required, and they supply us with the latest drugs and equipment where appropriate.

Younger doctors may find going south a retrograde step if they are in their training years. Certainly I did not go south with the intention of gaining significant medical experience. However, as it turns out, the exercise was very beneficial for my career path. I've since been offered a job with the Royal Flying Doctors' Service. Ultimately though, I intend to finish my working years as a country locum. As a result of my Antarctic experience I feel well prepared and able to cope with medical problems I might face in remote and rural areas."

Dr TANYA KELLY MBBS, BMedSc
Casey 2004

"I was interested in becoming an anaesthetist and was working at the Prince of Wales Hospital as an anaesthetic resident when I applied to go to Antarctica. I had decided that it was a good time in my career to do something out of the hospitals, before commencing further study, and I was attracted to the opportunity to practice a broad range of medicine (and dentistry) in a remote location.

In the pre-departure training I was able to undertake (amongst other courses) an eight-day intensive dental course at the Royal Dental Hospital in Melbourne, intensive surgical training at the Austin Hospital in Melbourne, a radiography course in Launceston and a hyperbaric medicine course at the Royal Adelaide Hospital. There was also specific training at the Polar Medicine Unit in Antarctic medicine, cold injuries and hypothermia. Few mainstream doctors would have the opportunity or, more importantly, the time, to undertake such a wide variety of training. I also completed a fire fighting and fork lift driver course!

I encountered many and varied medical problems while in Antarctica, including several significant dental problems and eye injuries. Most of the work consisted of general GP work, counselling, physiotherapy and rehabilitation after musculoskeletal injuries. There were many opportunities to run preventative medicine initiatives and be involved with public health – such as testing the station water supply each month. Undertaking medical training for the volunteer theatre and anaesthetic assistants was also a highlight and helped me to maintain most of my skills.

Working so closely with such a small group has improved my interpersonal skills, especially in terms of understanding and tolerance. With no other professional medical staff available, such as nurses, physiotherapists and laboratory technicians, I certainly gained a greater appreciation of the enormous amount of effort and skill required to run a small hospital – to keep medication cabinets up-to-date; to maintain equipment; to clean and sterilise instruments; and to keep the resuscitation bay ready for any possible emergency.

Australian doctors in Antarctica are incredibly well supported by the Polar Medicine Unit and specialists from around the country, particularly Tasmania and Victoria. During my year in Antarctica

the doctors at the Polar Medicine Unit were available 24 hours a day, seven days a week, to advise and coordinate any assistance necessary. It was a great opportunity to participate in telemedicine over the phone and internet.

There were many resources available on the internet to assist with clinical decision-making and continuing medical education. I would suggest, however, that anyone considering studying for specific exams whilst in Antarctica, should take their own study materials and understand that (as hard as this is to believe) life and work in Antarctica is quite busy and free time can often be a rare commodity.

Some of my colleagues asked me if I was concerned about the effect of heading to Antarctica on my future career. On return from Antarctica however, I have received nothing but positive feedback from other doctors, who have asked questions about my year with great interest and enthusiasm. One of my senior colleagues said to me the other day, 'you will look back on your year in Antarctica as invaluable'. I believe the challenge of remaining approachable and available every minute of every day for expeditioners that are your patients, work-mates and friends, can only make you a better doctor in the long run and more valuable to the greater community."

Dr Tanya Kelly encountered many and varied medical problems in Antarctica.

