GUEST EDITORIAL

Growing wilderness and expedition medicine education in southern Africa

'Look deep, deep into nature, and then you will understand everything better.' (Albert Einstein, 1951 – *A and E Television Biography*)

'One should not pursue goals that are easily achieved. One must develop an instinct for what one can just barely achieve through one's greatest efforts.' (Albert Einstein, 1915 – quote to Walter Daellenbach)

Albert Einstein's words give us pause to consider not only the means to understand the physical universe through the natural world, but also the nature of the inquisitive human soul. In our search for fundamental answers to the questions of both normal physiology and disease, we seek the phylogeny of our constitution: the myriad adaptations of life in all forms through the ages to survive under adversity, illness and injury. Looking deep into nature – be it the true depths of the ocean or the jungle, or the hypoxic heights of mountain peaks – has granted us an understanding of how humans can defeat pathogens, withstand thermal stressors and hypoxia, and endure extreme exertion.[1,2] It has also provided us with countless therapies for our ailments: analgesics, antibiotics, antivirals, anticoagulants, antihypertensives, haemostatics, and novel cancer treatments are all prime examples.[3] Furthermore, time spent immersing ourselves deep into nature – away from the increasing busyness and clamour of modern life – allows the reflective practitioner time for introspection on challenges and the core values of life.

Currently, medical research in the wilderness helps to expand our understanding of conditions as diverse as congenital heart disease, pulmonary hypertension, sepsis, critical illness, and diabetes.[1,4-9] Despite this, wilderness medicine has for many years been the domain of eclectic enthusiasts and adventurous amateurs. In hazardous environments, human physiology is stressed to its limits, and the health practitioner encounters both conventional and environmentally specific medical problems. Wilderness medicine incorporates medical response, limited resource capabilities, and substantial delays to definitive care due to remote healthcare facilities, necessitating improvisations to deliver care in the face of austerity.[10]

Internationally, the growth of wilderness, expedition, mountain and extreme medicine has been slow but steady. Historically, numerous international groups with experience in the field have provided commercial courses to address their educational needs,[11-14] which have only recently become available in South Africa (SA).[15] Development has reflected the originally segregated expertise in multiple fields, such as high-altitude and hyperbaric medicine, tropical health and hygiene, and sports medicine. Fortunately, increasing interest has led to an increase in formal structures, guidelines, and training opportunities. In recent years, amalgamated programmes have united under the auspices of groups such as the Wilderness Medical Society (WMS, www.wms.org), the International Society for Mountain Medicine (ISMM, www.ismm.org) and the Alpine Emergency Medical Commission (ICAR-MED, www.alpine-rescue.org). Great strides have been made in advanced medical research within the wilderness environment, and examples of unique insights into human physiology abound. Aspirant individual practitioners now have the option of numerous international training programmes in the field (Table 1). Examples include the holistic and largely self-directed Fellowship in Wilderness Medicine (FAMW) offered by the WMS Academy of Wilderness Medicine,[16,17] qualifications from postgraduate certificate to MSc level in expedition, wilderness and extreme medicine from institutions such as the Royal College of Physicians and Surgeons of Glasgow and the University of Exeter,[17,18] and the Diploma in Mountain Medicine (DiMM) offered under the auspices of the International Climbing and Mountaineering Federation (Union Internationale des Associations d'Alpinisme (UIAA), www.theuiaa.org) by multiple organisations worldwide. Other qualifications in tropical, aviation and hyperbaric medicine are well established.

While the FAWM and DiMM are well entrenched (and have been awarded to several SA candidates), the more formal International Diploma in Expedition and Wilderness Medicine (Royal College of Physicians and Surgeons of Glasgow[18]) and the MSc in Extreme Medicine (University of Exeter[17]) are novel programmes, and their ultimate success remains to be determined. There are two significant barriers to participation of candidates from southern Africa, i.e. the requirement to attend several contact sessions in Europe, and the cost of the tuition (between ZAR100 000 and ZAR150 000 per annum). Despite this, there is significant interest and demand from southern African medical practitioners for education in this exciting field. Clearly, a local need exists, and it requires African solutions!

Local enthusiasts and experts have provided insights into the scope and diversity of wilderness medicine, high-altitude illnesses, cold exposure, and submersion injuries.[2,20-22] In this edition of *SAMJ*, we address the fundamental concepts of expedition medicine, from participant screening and selection of suitable medical supplies to the epidemiology, roles and psychological aspects encountered on expeditions. Continuing the human thread, human factors in the wilderness are addressed, including every human's capacity to make mistakes – some deliberate, but most inadvertently – and how awareness of that error capacity can help anticipate and prevent accidents. Finally, heat-exposure injury is discussed in the African context.[23-25] While far from a comprehensive review of wilderness and expedition medicine, it is the fervent hope of the authors that these topics provide a catalyst for awareness and a kernel for further discussion, interaction and development of the field in SA, and an emergence of the specialty on our continent.

As each new dawn draws the denizens of the bush to the waterhole, we have sought to create a gathering place for wilderness medicine enthusiasts in Africa. Although wilderness emergency

Fig. 1. Wilderness and Expedition Medicine Society of Southern Africa (www.wemssa.org).

Table 1. Examples of current wilderness, expedition, mountain and extreme medicine courses and qualifications in SA and abroad*

Programme/qualification	Organisation/institution
Short course examples	
Mountain Expedition Medicine, Winter Wilderness Medicine, Canyoneering Medicine, Wilderness Medicine monthly lecture series	WildMedix, Cape Town, South Africa (including open-access lectures streamed online)
Expedition and Wilderness Medicine, Polar Medicine, Mountain Medicine, Ocean Medicine, Prehospital Trauma Care, Jungle Medicine	World Extreme Medicine, UK
Mountain Medicine, Expedition Medicine and Field Skills, Expedition Medic	Wilderness Medical Training, UK
Mountain Medicine Avalanche Rescue	Mountain Medicine Institute and Silverton Avalanche School, Colorado, USA
Resident Physician Elective in Wilderness Medicine	McGill University and Wilderness MD Medical Solutions, Montreal, Quebec, Canada
Postgraduate certificate, diploma, fellowship and degree examples	
Diploma in Tropical Medicine and Hygiene, Diploma in Public Health in Rural Health, MPH in Disaster Management	University of the Witwatersrand, Johannesburg, SA
BSc Hons in Hyperbaric/Underwater Medicine, MSc in Baromedical Sciences	Stellenbosch University, Cape Town, SA
BSc Hons and MSc in Aerospace Medicine, Aviation Medical Examiners Course	University of Pretoria, SA
Fellowship of the Academy of Wilderness Medicine (FAWM)	Academy of Wilderness Medicine, Wilderness Medical Society, Utah, USA
Wilderness Medicine fellowships (1 - 3-year PG training programmes, aimed at graduates in emergency medicine)	Multiple institutions in the USA (see http://www.emra.org/match/wilderness-medicine-fellowships/)
Diploma in Mountain Medicine (DiMM)	Multiple organisations worldwide, under the auspices of the International Climbing and Mountaineering Federation/Union Internationale des Associations d'Alpinisme (UIAA), International Commission for Alpine Rescue (ICAR), and International Society for Mountain Medicine (ISMM)
International Diploma in Expedition and Wilderness Medicine (1-year PG certificate - 3-year MSc)	Royal College of Physicians and Surgeons of Glasgow, Scotland, UK
MSc in Extreme Medicine (1-year PG certificate - 3-year MSc)	University of Exeter, UK

SA = South Africa; PG = postgraduate.

*NB: This list is not intended to be exhaustive. Excellent repositories exist online.[19]

medicine training forms a component of many prehospital training programmes in SA, and several short courses exist, there is currently no formal postgraduate academic programme supported by a higher education institution. To this end, the Wilderness and Expedition Medicine Society of Southern Africa (WEMSSA, www.wemssa.org) was formally constituted in 2016, and is open to membership of practitioners from all disciplines (Fig. 1). A vibrant online discussion group, web portal, society blog and open-access wilderness medicine lecture series provide free resources and interaction throughout the region and beyond. Ultimately, the intention is to develop and offer a locally grown, internationally relevant postgraduate qualification in the field. In SA, this is of greater benefit than simply in the wilderness setting: practitioners capable of working in resource-limited difficult environments may be able to support a conventional health system with stringent resource restrictions.[26]

Clearly, however, the success of any such endeavour relies on the engagement of colleagues with mutual interests in altruistic goals. In the eyes of those who dream, Africa has the potential to become a world-class contributor in the field of wilderness medicine, although this will not be easy to achieve. In the words of Einstein, however, one should '… develop an instinct for what one can just barely achieve through one's greatest efforts', and pursue this goal. As with any great peak or destination deep in the wilderness, great efforts will be required to grow wilderness medicine in southern Africa. We have taken the first small steps, and invite you to join us on this expedition: '... a journey with a purpose'.

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