

Curriculum Statement for the Special Skills Post: Expedition Medicine



1 Acknowledgements

This Curriculum was written by the Expedition Medicine Steering Committee including Drs Jeff Ayton (Australian Antarctic Division), Geoff Couser (Royal Hobart Hospital), Michael Tooth (Sandy Bay Clinic), Edi Albert, Paul Scott (University of Tasmania) & Nick Cooling (GP Training Tasmania).

2 Rationale

General practitioners have opportunities to work in a diverse range of primary health care posts often in exciting and challenging environments. Many GPs now specialise part or full time in a primary care subspecialty. This often increases the interest, flexibility and attractiveness of general practice.

One emerging & innovative area of primary health care is expedition medicine. General practitioners have joined anaesthetists, emergency physicians and other specialists to determine how best to provide health care for people on expeditions.

Expedition medicine is part of a range of medical subspecialties which involve providing health care for people who are journeying/expeditioning, often in hostile and remote environments.

There is a spectrum of descriptors for this sort of medicine ranging from travel medicine to extreme medicine. Other terms include expedition medicine, remote medicine, mountain medicine and wilderness medicine.

For the GP registrar a 6-month Special Skills Post in expedition medicine provides an opportunity to be exposed to elements of most of these medical subspecialties with the exception of extreme medicine. The aim of this post is to provide participants with an understanding of:

- planning and preparation for activities in the wilderness environment, of field medicine, and of medical problems encountered in hostile environments;
- how to provide health care support and leadership to an expedition party in remote and/or hostile environments; and
- how to advise those health professionals intending to work or deliver health care in a remote setting and advise travelers planning to visit environmentally extreme places.

This will provide GP registrars with an opportunity to build on skills learnt as an undergraduate and prepare them for more formal and extensive training in more specialised areas such as polar medicine, diving medicine, & aviation medicine.

3 Learning Objectives

The learning objectives are ordered according to the RACGP 5 Domains of General Practice. Since expedition medicine is significantly different from urban or most rural general practice, these learning objectives seek to account for the difference experienced by the registrar in this environment.

Domain 1 - Communication Skills and the doctor- patient relationship

- Develop good listening skills and communicate empathetically with patients relatives and others, especially in the emergency situation
- Develop skills & knowledge in remote radio and telephone consultation
- Develop conflict resolution skills

Domain 2 - Applied Knowledge & Skills

- Manage common illnesses and injuries in remote and hostile environments
- Understand the environmental impact on human physiology in response to these hostile conditions
- Be confident in the techniques of advanced first aid
- Demonstrate confidence to make decisions and accept the outcomes of those decisions whilst working within their limitations

Domain 3 - Population health & the context of general practice

- Understand the limitations to resources in wilderness regions and manage emergency care at times through improvisation
- Understand the incidence of health problems occurring on expeditions and those likely to occur in specific environments

Domain 4 - Professional & ethical role

- Demonstrate an understanding of the particular need for, and difficulties in, maintaining confidentiality in expedition and tour parties
- Be able to demonstrate leadership, particularly in crisis situations
- Be able to critically appraise the literature in regards to expedition medicine and conduct a small research project

Domain 5 - Organisational & legal dimensions

- Clearly outline the consent procedures in emergency care
- Clearly outline the principles of triage and disaster management
- Understand the principles of retrieval medicine
- Be able to plan for the medical needs of expedition parties including planning for special hazards in a variety of extreme environments
- Demonstrate how to organise logistics and in-country management overseas- including dealing with staff, locals, embassies, supplies, visas, other countries agencies
- Be able to work in a team

4 Content

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/ prereq or elective	Information source
1. Expedition medicine – An introduction				
1.1 Definitions of wilderness, travel, remote, expedition, & extreme medicine	<ul style="list-style-type: none"> Describe the various definitions of the different outdoor medicine disciplines. 		C	SDL
1.2 Conceptual differences from urban medicine	<ul style="list-style-type: none"> Describe the differences between urban, rural, semi-remote and remote environments in terms of resources available, skills required, likely scenarios and environmental conditions. 		C	SDL
1.3 Epidemiology of expedition health problems	<ul style="list-style-type: none"> Describe the prevalence and incidence of health problems encountered on different types of expeditions in a variety of environments. 		C	SDL
1.4 Responsibility decision making, leadership & conflict resolution	<ul style="list-style-type: none"> Apply a range of leadership skills in an expedition context. 		C	SDL , FT
1.5 Philosophy of wilderness	<ul style="list-style-type: none"> Critique the different concepts of wilderness, and the different perspectives on its value. Describe why people venture to the wilderness and its impact on both society and wilderness areas. 	Many expeditions are to wilderness areas. What is wilderness?	C	
1.6 Research	<ul style="list-style-type: none"> Apply research skills and design and implement a small project related to expedition medicine. 	This is a generic skill	P	
1.7 Teaching	<ul style="list-style-type: none"> Apply teaching skills in a first aid/expedition medicine context. 	To use the <i>Teaching on the Run</i> approach	P	
2. Medicine in hostile environments				
2.1 Tropical	<ul style="list-style-type: none"> Physiological response to these hostile environments. The typical illnesses related to these hostile environments. Practical issues related to travel in these environments. 	<p>.</p> <p>The GP Registrar will choose 1-3 of these environments to study</p>	E	E
2.2 Cold				
2.3 Desert				
2.4 Space				
2.5 Altitude				
2.6 Subterranean				
2.7 Developing countries				
2.8 Marine (Diving)				
2.9 Air (Aviation)				

Code:

C= Core, P= pre-requisite, E = elective

Information source : SDL= self directed learning (Workbook, references), FT= Field Trip

P= Placements (DEM, Travel Med Clinic)

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
3. First aid				
3.1 Accident & Illness protocol	<ul style="list-style-type: none"> Apply a recognised protocol for emergencies. 		C	SDL, FT
3.2 Primary survey: assessment	<ul style="list-style-type: none"> Perform a primary survey and hence assess & prioritise the medical problems. 		C	SDL FT
3.3 Secondary survey: diagnosis	<ul style="list-style-type: none"> Perform a secondary survey to assist with diagnosis including a) taking a medical history b) performing an examination and c) monitoring the vital signs. 		C	SDL, FT
3.4 Multiple patients-priorities	<ul style="list-style-type: none"> Describe the principles of triage and control a scene with multiple casualties. 		C	
3.5 Near drowning	<ul style="list-style-type: none"> Describe the pathophysiology of drowning, the role of the doctor in prevention of drowning, and the management of a near drowning. 		C	
3.6 Anaphylaxis	<ul style="list-style-type: none"> Diagnose and manage anaphylaxis in all age groups. 		P	
3.7 Bites, zoonosis, stings and toxicity of flora	<ul style="list-style-type: none"> Diagnose and manage bites and stings including those encountered in the wilderness e.g. snakes and jellyfish. 		C	SDL, FT
3.8 Thermal injury: Hypothermia, Frostbite & hyperthermia	<ul style="list-style-type: none"> Diagnose and manage slow and sudden onset hypothermia. Diagnose and manage freezing and non-freezing cold injury. Diagnose and manage heat stroke and heat exhaustion. 		C	SDL, FF
3.9 Dental	<ul style="list-style-type: none"> Diagnose and manage broken teeth, lost fillings & tooth abscesses. 		C	
3.10 Slings, bandages, preparation of stretchers	<ul style="list-style-type: none"> Apply an arm sling. Apply bandages for dressings and sprains. Design and make an improvised stretcher. 		C	
3.11 Adapting standard first aid to specific wilderness settings.	<ul style="list-style-type: none"> Apply clinical decision making, group leadership and improvisation skills to manage one or more casualties in a wilderness setting. 		C	FT
3.12 Eye disease & injury	<ul style="list-style-type: none"> Diagnose and manage conjunctivitis, styes, periorbital cellulitis, eye FBs, penetrating eye injury & snow blindness. 		P +/- C	
3.13 Sprains & Strains	<ul style="list-style-type: none"> Diagnose and manage common soft tissue injuries, including those commonly arising in outdoor pursuits. 		P +/- C	

Code:

C= Core, P= pre-requisite, E = elective

Information source : SDL= self directed learning (Workbook, references), FT= Field Trip

P= Placements (DEM, Travel Med Clinic)

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
3.14 Shock	<ul style="list-style-type: none"> Describe the aetiology of shock. Prevent, diagnose and manage shock. 		P	
3.15 Burns	<ul style="list-style-type: none"> Estimate the size of a burn. Manage burns including recognition of which burns require evacuation. 		P	
3.16 Head & Spinal injuries	<ul style="list-style-type: none"> Describe the symptoms and signs of head and spinal injuries. Manage suspected spinal injuries, fractured skull bones, concussion and raised ICP. Improvise a splint for a patient with suspected spinal injury. 		P	
3.17 Choking (airway blocked by foreign body)	<ul style="list-style-type: none"> Provide emergency treatment to a choking person. 		P	
3.18 Medical/surgical emergencies- chest pain, dyspnoea, abdominal pain	<ul style="list-style-type: none"> Diagnose and manage chest pain. Diagnose and manage common respiratory problems: asthma, acute bronchitis, CO poisoning, high altitude dry cough, influenza, pneumonia and pneumothorax. Diagnose and manage acute abdominal pain. Diagnose and manage seizures. 		P	
3.19 Pain management	<ul style="list-style-type: none"> Describe common analgesic preparations, their indications, pharmacodynamics, pharmacokinetics and side effects. 		P	
3.20 Nose and ear disease & injury	<ul style="list-style-type: none"> Describe and manage acute otitis media, otitis externa epistaxis, and foreign body in the ear. 		P	
3.21 Basic CPR & BLS	<ul style="list-style-type: none"> Perform 1 and 2 person CPR. 	Evidence req eg CPR certificate, ACLS etc	P	
3.22 The unconscious patient	<ul style="list-style-type: none"> Describe the common causes of unconsciousness. Provide initial assessment and management of the unconscious patient using DRABCDE. 		P	

Code:

C= Core, P= pre-requisite, E = elective

Information source : SDL= self directed learning (Workbook, references), FT= Field Trip P= Placements (DEM, Travel Med Clinic)

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
3.23 Wounds & control of bleeding	<ul style="list-style-type: none"> • Know how to clean a wound. • Assess when and how to close a wound and the contraindications to wound closure. • Close a wound appropriately. • Manage the complications of wounds eg infections. • Manage special wounds eg crush injuries, hand wounds, gunshot wounds, massive wounds, amputation, splinters, blisters, bleeding noses, subungual haematomas & penetrating wounds. 		P	
3.24 Fractures & dislocations	<ul style="list-style-type: none"> • Assess an injured person for bony injuries. • Describe the general principles of fracture management. • Splint a fracture in the wilderness setting. • Diagnose and manage specific dislocations especially shoulder, finger & patella. 		C	
3.25 Sports specific injuries	<ul style="list-style-type: none"> • Describe common injuries that occur in specific outdoor sports. 	Eg skiing, bushwalking, climbing	E	
3.26 Putting together a first aid kit	<ul style="list-style-type: none"> • Design first aid kits for various types of expeditions. • Advise travelers on the contents of personal first aid kits. 		C	

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
4. General Travel Medicine				
4.1 Scope of travel advice	<ul style="list-style-type: none"> Provide essential pre-travel advice including prevention advice, first aid, immunisation, DVT prevention, motion sickness prevention. 		C	
4.2 Geographic Medicine	<ul style="list-style-type: none"> Describe common political and physical geography and associated regional factors such as: Temperature, Humidity, Altitude, Specific Vectors and their habitats, City/Country issues and State Boundaries vs. Geographic boundaries. Integrate mapped data into specific travel health contexts. 			
4.3 Business related travel	<ul style="list-style-type: none"> Describe the differences between business travelers and tourists, and apply these in the consultation. 			
4.4 Travel mode issues & Fitness to travel	<p>Describe key issues related to the following topics and apply these in appropriate consultations :</p> <ul style="list-style-type: none"> Fitness to fly Motion Sickness Deep Venous Thrombosis Jetlag Aid available in airports and aircraft Mobility Issues 		C	
4.5 Immunisation & Vaccines	<ul style="list-style-type: none"> Describe the common infectious diseases experienced in travel and the immunisation schedule to prevent them. Describe the indications, limitations, and side effects of the commonly used vaccines in Australia. 		C	
4.3 Travellers Diarrhoea and food poisoning	<ul style="list-style-type: none"> Describe the aetiology and natural history of travellers' diarrhoea (TD). Diagnose and manage TD. 		C	
4.7 Insect borne illnesses and infestations	<ul style="list-style-type: none"> Describe the common insect vectors and their associated diseases. Describe prevention strategies for avoidance of these diseases. Describe the aetiology, clinical presentation and treatment of common parasite infestations, including: Scabies, Lice, Myiasis, Cutaneous Larva Migrans, Cutaneous Leishmaniasis and Helminths. 		C	

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
4.8 Malaria	<ul style="list-style-type: none"> Describe the lifecycle of the malaria parasite and the role of the anopheles mosquito in the transmission of malaria. Describe the approach to the prevention and treatment of malaria and apply it in consultations. 		C	
4.9 Parasitology	<ul style="list-style-type: none"> Describe the clinical presentation, investigation and treatment of common intestinal parasites. 		C	
4.10 Injuries and illness abroad	<ul style="list-style-type: none"> Describe the costs and problems of hospitalisation overseas and repatriation. Describe the range of insurance options available. 		C	
4.11 Baromedicine	<ul style="list-style-type: none"> Describe aircraft cabin pressurization and its impact on human health. Describe the aetiology, clinical presentation and management of acute mountain sickness (AMS), high altitude pulmonary oedema (HAPE) and high altitude cerebral oedema (HACE). Describe the common barotraumas of flying and diving and how to manage each. Describe the risk of post SCUBA airtravel. 		C	
4.12 Pregnancy & sexual issues	<ul style="list-style-type: none"> Provide basic antenatal care. Describe the risks associated with travel during pregnancy. Describe sexual health issues as related to travel. Provide pre-travel counselling and advice related to the prevention and treatment of STIs. 		C	
4.13 Psychiatric	<ul style="list-style-type: none"> Perform a critical incident debrief. Diagnose and manage acute psychosis, and panic disorder. Assess "PUTA" (Psychologically unfit to travel abroad). 		C	

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
4.14 Skin problems	<ul style="list-style-type: none"> • Diagnose and manage specific wilderness conditions such as polar hands, bushwalkers chaffing. 		P +/- C	
4.15 Chronic disease and travel	<p>Recognise and manage the following chronic diseases in the context of travel:</p> <ul style="list-style-type: none"> • Diabetes • HIV and other immunosuppressed status • COAD • Acid suppressed • Pregnancy • Elderly • Arthritis and use of immunosuppressives • Effect of some chronic medications on immunisations 		C	
4.16 Expatriate health issues	<ul style="list-style-type: none"> • Describe the issues involved in providing health care for expatriates. 		C	

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
4.17 Post-travel illness	<ul style="list-style-type: none"> Describe the diseases that may present during or after travel. Describe the relative risk and likelihood of these diseases (includes: Malaria, Hepatitis, Acute and Chronic Diarrhoea, DVT, Pneumonia, common skin rashes, Schistosomiasis, Strongyloidiasis, Dengue Fever, Rickettsial disease, Enteric Fevers). Apply protocols for investigation of fever and diarrhea in returned travelers. 		C	
4.18 Post-travel & Expatriate screening	<ul style="list-style-type: none"> Describe the common diseases brought back from overseas, and how to screen for their presence. Describe the latent psychological issues that may return with the traveler. Describe the rationale for screening. 		C	
4.19 Special cases	<p>Describe the following with respect to travel health:</p> <ul style="list-style-type: none"> Avian Influenza The Hajj Overseas adoption 		C	
4.20 Fever	<ul style="list-style-type: none"> Describe the management of P.U.O. including rational antibiotic use. 		P	
4.21 Womens & men's problems	<ul style="list-style-type: none"> Diagnose and treat UTIs, dysmenorrhoeas, menorrhagia, PID, torted testis, candiiasis, hernia and urethral discharge. 		P	
4.22 Elderly	<ul style="list-style-type: none"> Describe specific issues relating to travel in the elderly. 		C	
4.23 Children	<ul style="list-style-type: none"> Describe specific issues relating to travel in children. 		C	

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
5. Bushcraft & Mountaineering				
5.1 Building a shelter	<ul style="list-style-type: none"> Construct shelters in various hostile environments eg snow. Describe the hazards associated with natural shelters. 		C	
5.2 Putting together a first aid kit	<ul style="list-style-type: none"> Design first aid kits for various types of expeditions. Advise travellers on the contents of personal first aid kits. 		C	
5.3 Communications	<ul style="list-style-type: none"> Describe the basic principles of handheld radio use (VHF & UHF). Describe the basic principles of cellular & satellite phone use and coverage. Describe the principles regarding use of EPIRBs. Describe the advantages and limitations of the various communication methods described. 		C	
5.4 Mountaineering			E	
5.5 Vertical rescue			E	
5.6 Navigation			E	
5.7 Meteorology			E	
6. Expedition management				
6.1 Planning an expedition	<ul style="list-style-type: none"> Describe the principles and practice of expedition planning. 		C	
6.2 Conditioning, clothing & personal equipment (eg sunglasses)	<ul style="list-style-type: none"> Describe the physiological responses, and practical approaches to acclimatising to heat and altitude. Describe practical strategies for photoprotection and effective clothing in a range of commonly visited hostile environments. 		C	

Topic content	Competency (knowledge/skill/procedure)	Comments	Core/prereq or elective	Information source
6.3 Planning and assisting with an evacuation	<ul style="list-style-type: none"> Describe the factors involved in a successful evacuation of a sick/injured person from the wilderness. Describe how to initiate evacuations in Tasmania and abroad. Manage a patient's special needs whilst they are being evacuated. Describe the issues related to helicopter evacuation. Manage a fatality in the wilderness. 		C	
6.4 Nutrition & menu planning	<ul style="list-style-type: none"> Describe the important macro and micro nutrients required for optimal performance during an expedition. Calculate the energy requirements and essential nutrients required for individuals participating in different expeditions especially endurance and high impact events. Design a balanced, nutritionally adequate and flavoursome menu which caters for all the needs of expeditioners in a party. Describe the different cooking and food preparation styles and associated equipment. Describe the adaptations required to carry, prepare and consume food in different environments. 		C	
6.5 Indemnity & legal issues	<ul style="list-style-type: none"> Describe the medico-legal issues associated with expedition leadership. 		C	
7. Careers				
7.1 Where could this post take you ?	<ul style="list-style-type: none"> Describe the range of job prospects for someone with Expedition medicine training. Describe the other training posts and courses available to further knowledge and skills in this area. 		C	

Code:

C= Core, P= pre-requisite, E = elective

Information source : SDL= self directed learning (Workbook, references), FT= Field Trip P= Placements (DEM, Travel Med Clinic)

4 Placement/Teaching/Supervision

1. *RHH DEM (10 hr session per week for 5 months)*

- Clinical Exposure
- Special interest in trauma, procedures
- Research project
- Participation in DEM doctor education program
- Includes 10 days in Dept of Anaesthetics

2. *Travel Medicine Clinic Sandy Bay (3 days per week for 5 months)*

- Work as GP registrar seeing routine GP patients 2 days per week
- Work as a travel medicine doctor 1 day per week

3. *Self directed learning (1/2 day per week)*

- Completing tasks in GPTT Expedition Medicine Workbook
N.B. Senior Medical Educator will be available for assistance

4. *Teaching (1/2 day per week)*

- Providing teaching to TAFE students (Remote Area First Aid Course)
- Undergraduate School of Medicine
- GP registrars

5. *Tas Ambulance Service (8 day attachment)*

6. *Visit to Polar Medicine Unit (2 days)-linked to a research project*

7. *Aurora Australis Visit (2 days)*

8. *Field courses*

- 7 day Expedition Medicine Field Trip - compulsory
- Risk & Crisis management.- optional
- Search & Rescue Course (TAFE) - optional

9. *Attachment to Flinders Island PRVTS - optional*

- Work as a locum GP

10. *Optional Skill development*

- Rock skills or vertical rescue techniques or snow camping

5 Pre-requisites/Assumed prior knowledge & experience

- Basic & advanced GP terms in Australian GP Training program
- Hospital resident term in Emergency Medicine
- Prior knowledge of CPR and BLS
- Experience as a participant of an expedition(s)
- Ability to carry a 15 kg backpack and complete a 2 day bushwalk

6 Feedback & Assessment methods

Completion of some of the following assessment items to be negotiated with the medical educator at the commencement of the post and based on each individual learning plan.

- Regular informal feedback from supervisors during each rotation
- End of rotation assessment form completed by supervisor
- Monthly feedback from mentor
- Reflective journal
- Evidence of completion of workbook topics: a minimum of 10 exercises to be formally completed.
- Satisfactory completion of two expedition medicine short courses
- Learning Plan
- Literature review of relevant topic and small research project- assessed by mentor
- Portfolio- collection of evidence of learning and outputs from the post eg videos. Certificates, brochures, feedback forms, logs, reflection on learning
- Travel Medicine placement at Sandy Bay Clinic:
 - a) MCQ questions (<http://rob.skelly.com> and ISTM website <http://www.istm.org/>)
 - b) 2 case presentations at the Travel Medicine meeting

7 Time & Learning resources

Duration

The duration of the special skills post in expedition medicine is 6 months full time.

Workbook

GPTT Expedition Medicine Workbook

Textbooks/ CD ROMs

The core text for this special skills post is:

Pocket First Aid & Wilderness Medicine, 2003. Duff J & Gormly P. Treksafe.

Other texts include:

Field Guide to Wilderness Medicine, 2003. Auerbach PS, Donner HJ & Weiss EA. Mosby*

This is the pocket-sized version of the definitive wilderness medicine text. Although written from an American perspective it is nevertheless very useful. Highly recommended.

Manual of Travel Medicine: A pre-travel guide for health care practitioners 2nd Ed Yung, A et al IP Communications 2004. The key text for the travel medicine component of the post.

Wilderness Medicine, 4th ed. Witucki P & Panacek, E

Expedition Medicine, 2002. Ed. Warrell D & Anderson S. Profile Books.

This is the textbook that arose out of the PDF documents available free of charge on the RGS website.

The Travel and Tropical Medicine Manual, 2003. Jong EC & McMullen R. Saunders*
An excellent book. Also includes chapters on diving and altitude. Highly recommended.

High Altitude Medicine Handbook. Pollard A.

A useful, practical text, for those who want more than is provided in the general texts.

High Altitude Medicine and Physiology. Ward M, Milledge J & West J.

The definitive text on the subject. Not worth buying for this post unless you have a deep interest in the subject.

Mountaineering First Aid 4th Ed Carline, J Lents, M & McDonald, S

CD - **Bush Doctors Manual** 2004 Rural Workforce Support , Tasmania

Primer of Travel Medicine. Leggat P (ed)

* available on-line from www.elsevierhealth.com