EXPERIENCE AND WILDERNESS MEDICINE

With an increase in visits to remote and dangerous locations around the world, the number of serious and fatal injuries and illnesses associated with these expeditions has markedly increased. Medical personnel working in or near such locations are not always explicitly trained in the management of unique environmental injuries, such as high-altitude illness, the bends, lightning strikes, frostbite, acute dehydration, venomous stings and bites, and tropical diseases. Many health care professionals seek training in the specialties of expedition or wilderness medicine to cope with the health risks faced when far removed from professional care resources, and the American College of Emergency Physicians has recently mandated that a minimum level of proficiency needs to be exhibited by all emergency medicine physicians in these disciplines. This book covers everything a prospective field physician or medical consultant needs to prepare for when beginning an expedition and explains how to treat a variety of conditions in a concise, clinically oriented format.

Dr. Gregory H. Bledsoe is a board certified Emergency Medicine physician and the founder and CEO of ExpedMed, LLC. After completing medical school and residency at the University of Arkansas for Medical Sciences, Dr. Bledsoe spent five years on faculty within the Johns Hopkins Department of Emergency Medicine, completing a fellowship in international emergency medicine and a master's degree in public health. He has worked as a field physician and medical consultant all over the world, served as an instructor and medical consultant for the U.S. Secret Service, and provided medical support during the African tours of both presidents Bill Clinton and George W. Bush. Each year Dr. Bledsoe directs the Expedition Medicine National Conference in Washington, DC.

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Photo courtesy of James A. Coldewood, Jr.
EXPEDITION AND WILDERNESS MEDICINE

Edited by

Gregory H. Bledsoe

Michael J. Manyak

David A. Townes
For those who explore and those who assist them, may their expeditions be safer because of this knowledge.
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As we travel along life's sometimes convoluted and perilous path, we've always had one thing in common with our ancient ancestors: a desire to explore new territories. Whether to exploit natural resources, conduct research, or enjoy recreation, many of us still need to travel, explore, or seek outdoor adventure.

Natural survival of the fittest ensured an average life span much shorter in earlier days, and losing a few Vikings on trips was probably tolerated. Sailors were unaware of why they suffered from scurvy. If General Nobile had access to this textbook, his men may have survived their Arctic balloon crash depicted in *The Red Tent*. Today, we require permits and insurance to travel remotely, and everyone expects to come back alive!

However, life expectancy has increased and field medical care has improved considerably with better access to medicines, vaccines, and rapid transport. Before I first went to Africa in 1957 to produce a wildlife documentary that included an unwounded lion charging directly into camera, I was advised to consider having my appendix removed or learning to operate on myself in case it became inflamed. My choice was to have a former veterinarian turned missionary 200 miles away do the job if necessary. Today, I could consult this book on expedition medicine to prepare for such problems and potential evacuation.

My personal concerns in Africa were minimized when the expedition leader was bitten on the thumb by an Egyptian cobra and then, a few weeks later, temporarily blinded by a spitting cobra. The thumb bite was lucky because the fangs passed completely through before venom injection. The spitting cobra incident was more serious, but luckily a container of milk – handy as an ulcer remedy – was poured immediately into his eyes to dilute the venom. Otherwise, he faced the local treatment of a villager urinating into his eyes to wash out the poison. I made a note to always have milk available with spitting cobras in the neighborhood. The reader must determine whether this remains a good option.

This book should be read by everyone who enjoys nature, camps or conducts field research in distant areas, goes on safari, or just wants protection in remote places. Much information in *Expedition and Wilderness Medicine* has been learned the best way – the hard way – in the field by experienced explorers. If I had this book in the early 1960s, when I was deep in the Amazon forests on the first wild studies of the monkey-eating Harpy eagle, the world's largest, I may have avoided both the malaria and leishmaniasis that I contracted. Back in my hometown of Albany, Georgia, doctors did not diagnose the malaria for a week and never did figure out the leishmaniasis that was eating my ear for 6 months. Fortunately, a week of sun and saltwater on the Gulf of Mexico finally cured the infection.

Some things I have learned on my own to avoid:

- The brown jumping leach in Sumatra, which lives on land along trails and will latch on to you in a second, but a little tobacco juice or insect spray will keep it away.
- Amazonian red bugs or chiggers called Beta Rouge, big cousins to our North American variety.
• Green mambas in Africa. If you get bitten, you have time for one phone call – but you don't know who to call!

Though I have been charged by many animals, including 200 elephants led by an angry female, had my arm swallowed by a 22-foot-long anaconda, been bitten by piranhas in Peru, and been operated on by an Angolan witchdoctor, I have learned that the wilderness is not to be feared. Many undisturbed wilderness areas in the world are safe, healthy, beautiful, and full of life of all kinds. The dangerous places are usually where people are with their big cities, cars, electrical appliances, lawn mowers that cut people's legs off, and dangerous people themselves.

A great challenge facing our civilization is to keep people connected with the natural world since its existence is important to our lives. If we are uncomfortable or afraid of nature and its diverse life forms, big or small, then we may not save it. Human quality of life, even the very future of life on earth, would then be seriously threatened. This book provides a framework for health and safety in the field so that we can all enjoy nature, give it value, and try to preserve it for posterity.
As long as there have been expeditions, there has been expedition medicine. Whether it was Dr. David Livingstone treating his exploration party with quinine as they traveled up the Zambezi, Meriwether Lewis receiving medical training from Dr. Benjamin Rush, James McIlroy amputating frostbitten toes during Ernest Shackleton’s Imperial Trans-Antarctic Expedition, or Dr. Jose Antonio Cajazeira treating Theodore Roosevelt on their Brazilian River of Doubt journey, expeditions and medicine have demonstrated a natural tendency to intersect.

In spite of this long and colorful history of medicine on expeditions, defining “expedition medicine” is no easy task. A medical professional providing medical care on an expedition might need to be a high-altitude expert one day and a tropical medicine expert the next. Exposure to envenomations, animal attacks, parasitic disease, and environmental extremes all may occur while traveling through remote areas on expeditions. It is this diversity of practice, and this intersection of medicine and nature, that initially draws many individuals to expedition medicine, and yet, when attempting to assimilate these varied topics into a single functional text, it is just this diversity that creates difficulty.

The editorial team has selected topics for this text that represent both the depth and the breadth of this expansive medical discipline. We recognize that even as individuals are drawn to different geographic environments, readers will use this text for different purposes. Depending on whether you plunge into the ocean depths, climb the highest peaks, or explore the deepest rainforest or jungle, certain chapters will apply to your journey more than others. Our goal was not to be completely comprehensive on every topic – as there are already excellent detailed texts dedicated to the various subtopics within expedition medicine – but rather to provide enough practical information to support a medical officer in a variety of field environments.

We strongly believed that for our text to truly help those in the field it needed to be written and edited by those in the field. Each of our authors was selected for their combination of both impeccable academic credentials and vast field experience. On any given day our authors could be climbing Everest, diving in the oceans, resuscitating patients on the battlefield, treating snakebites in the tropics, navigating hostile geopolitical environments, or rescuing stranded victims off mountains. These talented individuals do a lot because they know a lot; consequently, they also know a lot because they do a lot. Their perspective of medical care in these extreme environments is shaped by their field experience and translates into practical educational points for the reader. These chapters are not filled with tips for what one might do if he or she is ever in a particular situation, but what the author has done, and does, when faced with a specific decision point.

Preface

Gregory H. Bledsoe, MD, MPH
Michael J. Manyak, MD, FACS
David A. Townes, MD, MPH, DTM&H, FACEP
In the end, the book you now hold in your hands is the product of many thousands of hours of labor over the course of three years. It is not perfect – no text is, of course – but the editorial team hopes it will be a tool for those individuals who choose to venture into the many remote, extreme, and wilderness environments of our amazingly diverse world. We hope you find it helpful. We hope you find it interesting. We hope you find it inspiring. Most of all, we hope this text opens up a new level of understanding concerning medical care on expeditions and offers a resource to the expedition community that would make even a Livingstone, Lewis, Shackleton, or Roosevelt proud.
A special thanks to the following individuals who helped review chapters for this textbook:

- Christian Tomaszewski, MD
- Kimball Maull, MD
- Craig Cook, MD

Gregory H. Bledsoe expresses gratitude

- To my amazing wife, Sara, whose beauty is only surpassed by her kind, generous, and genuine spirit, who took my hand and leapt with me into this crazy world of international medicine. I love you, Honey; you are my best friend and the perfect partner for me in this adventure we are on together. Thanks for all your patience while I worked on this project.

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Michael J. Manyak offers his appreciation.

• So many to thank, so little time. First and foremost for dedication are the ones who keep the home fires burning. I am sincerely indebted to my most tolerant wife, Rebecca, who listens to my rantings and encourages me to dive the Titanic, hunt with pygmies in the African rainforest, seek artifacts on the Atocha treasure galleon, and break ice in Antarctica . . . and who is there waiting when I return. She is absolute proof that behind every successful man stands a surprised woman.

• Thanks to my children, Rachel, Susanna, and Tim, always companions on my expeditions . . . whether in my heart or by my side. Please try to remember some of my stories so you can tell them back to me when I forget them in later life.

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• Lastly, a special dedication to the memory of Dr. Roy Chapman Andrews, former director of the American Museum of Natural History, president of The Explorers Club, and inspiration for the Indiana Jones character . . . he was my first hero whose books ignited my scientific curiosity at age 5.

David A. Townes

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