



## Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century

*Kevin Fong*

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Little more than one hundred years ago, maps of the world still boasted white space: places where no human had ever trod. Within a few short decades the most hostile of the world's environments had all been conquered. Likewise, in the twentieth century, medicine transformed human life. Doctors took what was routinely fatal and made it survivable. As modernity brought us ever more into different kinds of extremis, doctors pushed the bounds of medical advances and human endurance. Extreme exploration challenged the body in ways that only the vanguard of science could answer. Doctors, scientists, and explorers all share a defining trait: they push on in the face of grim odds. Because of their extreme exploration we not only understand our physiology better; we have also made enormous strides in the science of healing.

Drawing on his own experience as an anesthesiologist, intensive care expert, and NASA adviser, Dr. Kevin Fong examines how cutting-edge medicine pushes the envelope of human survival by studying the human body's response when tested by physical extremes. *Extreme Medicine* explores different limits of endurance and the lens each offers on one of the systems of the body. The challenges of Arctic exploration created opportunities for breakthroughs in open heart surgery; battlefield doctors pioneered techniques for skin grafts, heart surgery, and trauma care; underwater and outer space exploration have revolutionized our understanding of breathing, gravity, and much more. Avant-garde medicine is fundamentally changing our ideas about the nature of life and death.

Through astonishing accounts of extraordinary events and pioneering medicine, Fong illustrates the sheer audacity of medical practice at extreme limits, where human life is balanced on a knife's edge. *Extreme Medicine* is a gripping debut about the science of healing, but also about exploration in its broadest sense—and about how, by probing the very limits of our biology, we may ultimately return with a better appreciation of how our bodies work, of what life is, and what it means to be human.

## Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century Details

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# From Reader Review Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century for online ebook

## Melissa says

Ugh. I couldn't even finish it. A potentially great subject was crushed by the author's fecundity. His editing was inconsistent (spelling World War Two) three different ways within the same chapter). He fawned over the subject of medicine, elevating doctors to a god-like status. This is something that particularly annoyed me. The cavalier attitude towards people's lives- treating it like a Star Trek episode. Boldly exploring peoples' bodies like foreign planets regardless of the consequences. He also writes in a way that makes me think he loves the sound his fingers make as they lightly tap the keys of his computer. In a nutshell, the book had the potential for greatness but fell under the lackluster writing of someone who's too wordy and smart to write for the common person.

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## Simon says

(NB: this is the US version of the British title "Extremes: Life, Death and the Limits of the Human Body". The chapter names are identical, and it's roughly the same length.)

I thoroughly enjoyed this. Dr F has a very snappy way of writing, which makes it an effortless read. He also exhibits a healthy British dry sense of humour (despite the whole "Kevin Fong, M.D." thang - he's a Brit).

I read that some readers were a bit miffed that it wasn't all 'takes of daring do' from the likes of Livingston, Hilary, Armstrong and Fiennes, and given the front cover I can sort of see why. It didn't bother me, though, and reading about how medicine has been influenced in its attempts to cope with Polio, pilots burnt in WWII, skiing accidents, terror attacks and even plain old age was very interesting. He covers a potential trip to Mars and simulated helicopter crashes in some detail.

I often enjoy Kevin's TV appearances, and look forward to his 2018 book about air ambulance medicine.

He's a credit to the University of London.

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## Kay says

This fairly short book covers a lot of medical ground demonstrating just how far medicine has come in the 20th century and can be expected to advance. Connecting exploration from polar regions of the earth to spaceflight including what challenges for human travel to Mars, this book covers major barriers such as severe burns, intensive care, and aging. Included are medical advances which originated in the World Wars' traumatic injuries. A lot of medical advantages that were unheard of 100 years ago, we almost take for granted these days. This book explains the challenges involved with a great infusion of wonder. This is one of the most uplifting books I've read in a long time.

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## **Veronica says**

I was very, very disappointed with this book. The subject of each of the chapters is something that typically would have fascinated me, but this book fell far short of my expectations. The writing was dry and tedious. I felt like I was reading nine teasers/excerpts of longer books, not one complete book. The author really needed to spend more time focusing on each of the subjects.

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## **Lauren says**

Top caliber science with great storytelling: this is a special combination indeed.

The book was riveting, and I've already recommended it to two people.

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## **Kevin says**

As a former expeditionary emergency medical technician, I found this book to be BRILLIANT. I believe it was written for aspiring, practicing, and retired doctors, but ANYONE with a curiosity about extreme medical practices and expeditionary history will LOVE this text. It explains the most cutting edge, extreme modern medical practices by detailing their histories, all of which in this book were born out of exploration. From the South Pole expeditions leading to the story of the most extreme hypothermic case on record who has survived, to the fighter pilots of WWII's European theater courageously enduring horrific attempts at "plastic surgery" after unimaginable burns leading to today's face transplants, this book has given me the historical context to just begin to truly appreciate modern medicine's most miraculous practices. The development of heart surgery was so intense and required enduring the statistics and stories of all the brave volunteers who knowingly gave their lives so others in the future could survive... their courage and self sacrifice brought tears to my eyes. The chapters' titles hint at the genre of practices explained through their historical developments: ICE, FIRE, HEART, TRAUMA, INTENSIVE CARE, WATER, ORBIT, MARS, FINAL FRONTIERS. As an EMT who's worked in both hospital and expeditionary settings, I personally found the chapters about trauma and intensive care especially interesting. I learned things about water and diving I had no idea about, such as why you better exit a sinking helicopter (or car) in seven seconds or less (after it breaks the surface and starts sinking) or else all odds are against your survival. The author's personal experiences with NASA and medicine in weightlessness and space was very engaging and helped me understand my own issues with sea and air sickness. Final Frontiers detailed modern medicine's challenges with helping our bodies cope with entropy, extreme aging, and dying. Like a historical expeditionary explorer, I look forward to humanity's future explorations and the medical practices that are born from such. Very highly recommended to anyone, especially those with backgrounds in medicine, survival training, and/or exploration.

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## **Shawn says**

really fun history of the progress of different kinds of medicine, with a emphasis on the challenges posed by people's exploration into extremely inhabitable environments, namely outer space. cool description of pressure, and boiling points of blood, and the development of plastic surgery and its benefits

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## Lynne King says

*At the Battle of Waterloo, Wellington noticed a French doctor in the midst of combat, attending casualties and moving them quickly by horse and cart from the battlefield to the rear. Upon discovering that it was Dominique-Jean Larrey – chief surgeon to Napoléon Bonaparte – the British general ordered his men not to fire in the doctor's direction and, according to legend, lifted his hat in salute.*

*In medicine, the importance of speed has long been recognized. Larrey, present on the battlefields of the late eighteenth century, had witnessed heavy-artillery units wheeling and then retreating rapidly from the advancing enemy while casualties were left behind unattended. Only after hostilities ceased were the wounded collected and transported to field hospitals; introducing significant delays before definitive surgery could begin. And in an age of more powerful fire-arms and artillery, surgery often meant the amputation of more than one shattered limb.*

I'm currently going through a phase of reading remarkable books and this one is indeed no exception.

What I love about Dr Keven Fong is his enthusiasm and dedication to medicine. It literally pulsates throughout the book.

The amazing part is that he gives examples of what has happened to particular people and to such extreme lengths. In fact, from all accounts, I'm amazed to hear that they are still alive.

The most incredible case has to be that of a Norwegian doctor, twenty-nine year old Anna, who was out skiing off-piste with two colleagues (sheer madness in itself) and who was trapped under the ice in 1999 but miraculously in an air pocket. Her two colleagues immediately contacted the emergency services. Eighty minutes in fact since Anna had first fallen into the water. "She had stopped breathing and was without a pulse". Now this is riveting stuff! Anyway, like a miracle it all worked out. This was all about hypothermia and the comparison was made with Scott who in 1912 at the South Pole finally succumbed to this. In the interim, remarkable progress in medicine ensured that individuals such as Anna, would amazingly survive to see another day.

We then read and learn about all these dreadful situations that can occur with people, such as fire, problems with the heart, trauma, intensive care, water and we even venture into Mars.

Even a face transplant, due to fire, is discussed and the complications that are involved there to stop the face being rejected. I was so immersed in this reading.

But the most sobering aspect that struck me about this book was when I read:

*There is such a thing as life after death. It's called transplant medicine. After death a patient's heart, lungs, liver and kidneys can be donated to give the gift of life. Many lives can be saved or improved by that single act of generosity. But death must come first.*

There is no other word for this. This is gripping and compulsive reading. But could I work in intensive care or be an anaesthetist or a surgeon? No, but I applaud them one hundred percent for their dedication and to never knowing whether or not they have actually made the correct choice in their diagnoses or surgical

approach. That does show dedication!

Read it and you will learn how wonderful our medical explorers are changing our world.

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### **Tiffany says**

Really interesting, though the connection to exploration was a bit stretched. But, discussion of how fumbles and accidents drove advances in medicine was interesting. I wouldn't recommend the audiobook, though - the narrator's cadence was very much the same throughout the book and it was too easy to tune it out.

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### **Ray says**

Unique book describing medical advances due to extreme conditions such as cold, heat/fire, gravity-free and old age and others. Effects of gravity-free environments was interesting since it's not too common to hear/read about it. Readable for those with some or little medical background or with lots of medical background.

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### **Caroline says**

I always think of medicine as the ultimate caring profession, and imagine that people become doctors because they want to look after people. Well this book shows the other side of medicine, the lure of the science of medicine. Kevin Fong, the author, is utterly enthralled by the workings of the human body, and conveys his wonder and excitement brilliantly as a writer.

As part of his medical training he studied space medicine at NASA. He is fascinated by all medical experiences that happen under extreme conditions. That is what the book is all about. Extreme circumstances that have challenged existing ways of doing things. Doctors who have come up with breakthroughs, new ideas, or introduced new protocols, often against great odds and under incredibly stressful circumstances.

The book starts with an amazing story that almost defies belief. (view spoiler)

(hide spoiler)]

Other areas touched upon include the origins of trauma care practices - designed by Dr James Styner, after a plane crash involving his family, the journey and challenges of the Sars epidemic, face transplants, the phenomenon of holding one's breath whilst diving under water, the challenges of lack of gravity in space travel, and the possibility of us one day travelling to Mars.

All in all a hugely stimulating read. I learnt a lot about the amazing wonders of the human body....so excitingly conveyed by Dr. Fong, with his descriptions of mankind at the very edge of survival.

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### **Petra CigareX says**

If you are interested in modern medical history, not dawn-of-anaesthesia type , where we are now, where we are going and why we might never get there, but will keep on trying, then you will enjoy the book as much as I did.

Each of the chapters, whether on ice, fire, heart, trauma, intensive care, water, or Mars (and a few others) is a mixture of history, science, personal experience, anecdotes and conjecture, but factually-based, on the future.

Unusually for a science book it is actually gripping, you want to know what happens next in the stories. Kevin Fong is an excellent writer and knows his extensive subject matter so well there is no need for repetition or waffle.

There is a small synchronicity with the author and me. One of those six degrees things. Dr. Fong is a specialist in anaesthesia and intensive care. A close family member originated the concept of intensive care units and was a consultant anaesthetist and has medals named after him in these specialities. This doesn't influence what I think of the book, but does make me smile.

Notes on reading, mostly on why we aren't going to Mars any time soon. Or until much later probably.(view spoiler)

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### **Zac Stojcevski says**

What a wonderful blend of the anachronistic with the timeless -stories of survival and history blended with application to everyday lifesaving strategies that we have come to take for granted. A clever astrophysicist retrained as a doctor, Fong holds my attention with the details of all that is relevant making me, the reader a pedestrian in Antarctica with Scott through to a cramped passenger on a space probe as I learn about human limitations. Mind expanding work!

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## Becky says

This book most clearly demonstrates the problem with the current publishing industries obsession with the (colon + subtitle) combo. Don't get me wrong, I'm a total sucker for the subtitle. The more complicated, the better it is. It's a sickness I know. But there is an inherent danger in the subtitle, just as there is in the book jacket, or the blurb. That danger is the cardinal sin of MISLEADING. Take, for instance, this title:

**"Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century"** its not even a very long subtitle, but it entirely sets up the reader for disappointment, because they are not getting the book that they thought they were getting.

This subtitle leads you to believe that we are going to learn what additions to medicine mankind found by travelling through the arctic, through unknown jungles, through deserts and through a journey into space.

That is *not* the book that you are getting. Someone COULD write a book about that, and some probably HAS, but it is NOT this book.

This book is about a different type of adventure, and different type of exploration, and that is exploration purely within the medical field. It's about how plastic surgery became a field of medicine because people wanted to help the disfigured pilots of WWII who were burned terribly in their cockpits. It's about how we learned we could put people "on ice" to stave off brain damage during surgery. It's about the invention of ICU and elderly care.

And it really is quite fascinating. It is a very interesting book that makes you appreciate the trials and error and fortitude of doctors and their patients as they tried something new, some questionable, in the hopes of improving the lives of those around them. It's about EXTREME medicine. How DO we keep people alive in space long enough for them to get to Mars and back (my favorite chapter), how do we do open heart surgery, etc.

They should have left the name at Extreme Medicine, because that's what it is about.

Now as for the actual book I found it very enlightening (and not just because I found out that the British pronounce respiratory differently than Americans, or Magellan, etc.). The part about WWII pilots was really breathtaking. The questions posed about how far we are going, and how that has shaped our culture were great, but, in my opinion could have been delved into further, though I understand was not the intention of this book. Still, at times, the personal stories the author inserted seemed misplaced, the narrative became at times a bit disjointed. Nothing too bad really, but you could become confused when we suddenly jumped back to how a patient was doing when they hadn't been discussed in nearly forty pages.

It's a solid three stars. I learned a lot, and I felt it was engaging for the most part. I tried not to be disappointed when I realized this book wasn't what I thought it was about. Bad marketing is the shits. It wasn't so captivating that I would just recommend it to anyone though. **I felt that I could have read a whole book on any one chapter that he did- this book just seemed like a good introduction to me. If you are interested in the subject this book provides a wide overview but will likely leave you wanting more**

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### **Joan says**

Very well written and informative, but somehow lacking 'depth'. The medical situations are well-covered, but I would have liked greater background information in places, particularly with regard to early exploration. The section on 'Ice' was only 20 pages long, and of those, only 5 were concerned with early Antarctic exploration.

However, three stars is 'I liked it' which I did.

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