



# Deadliest Enemy: Our War Against Killer Germs

*Michael T. Osterholm , Mark Olshaker*

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**We are facing an overwhelming army of deadly, invisible enemies. We need a plan -- before it's too late.**

Unlike natural disasters, whose destruction is concentrated in a limited area over a period of days, and illnesses, which have devastating effects but are limited to individuals and their families, infectious disease has the terrifying power to disrupt everyday life on a global scale, overwhelming public and private resources and bringing trade and transportation to a grinding halt.

In today's world, it's easier than ever to move people, animals, and materials around the planet, but the same advances that make modern infrastructure so efficient have made epidemics and even pandemics nearly inevitable. And as outbreaks of Ebola, MERS, yellow fever, and Zika have demonstrated, we are woefully underprepared to deal with the fallout. So what can -- and must -- we do in order to protect ourselves from mankind's deadliest enemy?

Drawing on the latest medical science, case studies, policy research, and hard-earned epidemiological lessons, *Deadliest Enemy* explores the resources and programs we need to develop if we are to keep ourselves safe from infectious disease. The authors show how we could wake up to a reality in which many antibiotics no longer cure, bioterror is a certainty, and the threat of a disastrous influenza pandemic looms ever larger. Only by understanding the challenges we face can we prevent the unthinkable from becoming the inevitable.

*Deadliest Enemy* is high scientific drama, a chronicle of medical mystery and discovery, a reality check, and a practical plan of action.

## Deadliest Enemy: Our War Against Killer Germs Details

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# From Reader Review **Deadliest Enemy: Our War Against Killer Germs** for online ebook

## **Sarah says**

I've read reviews of this book that found the author to be pretentious, but I didn't feel that way at all. He was clearly knowledgeable and outlined when relevant his background and experiences that give him the foundation with which to make certain statements. It didn't seem at all gratuitous. It balances nicely accurate science with content that is easily understood by a lay reader. It paints a sobering picture of the future of our world with infectious disease. It sets some clear priorities for where funding should be concentrated. This is a very recent book, but given the direction that this country has taken in the past year, I think the picture is bleaker than ever.

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## **Lionel Berthouex says**

Self-aggrandizing and scientifically unsound.

Even for a book aimed at the general audience, this one is poor on hard facts - not a single photograph or chart or references. I grew rapidly irritated at Osterholm's constant pointing out (and exaggerating) of his contributions as an infectious disease specialist. If you were to believe him, he had predicted every major epidemic of the last 40 years, including HIV-1 and Zika (conveniently enough, he always seems to make these predictions in oral presentations rather than in writing, so that we cannot verify these claims later). His current battle is against the "gain-of-function" experiments, which he doesn't hesitate to place among the greatest threats against humanity. These were important experiments designed to identify which influenza variants were predictive of the capacity of the virus to be transmitted airborne in an animal model; the experiments were done in highly controlled environments and did not aim at producing a virus that would be more infectious to humans. Truth is, he simply does not fully understand this scientific approach, and/or he is exploiting the cliché of the dangerous "mad scientist" to raise his own profile in the media. Either way, he is doing more harm than good to the pursuit of knowledge.

I was reading this book in preparation for a class I am giving, but rapidly came to the conclusion that it would not provide much valuable materials. What made me stop reading it after 5 or 6 chapters was the ridiculous statement that there were no epidemics in the human population when we were just a small group of animals. There is simply no truth to this, on the contrary. There are plenty of examples of rare animal species and relatively small groups of people that were wiped out by infectious diseases - just think of the diseases brought to Native Americans by European settlers, for instance. Even more wrong is his statement that "you need to have at least a hundred thousand individuals to have a measles epidemic". In fact, the measles virus is one of the most easily transmitted virus we know, which is why it used to infect close to 100% of the human race during childhood before a vaccine was invented. This is one virus (or its ancestor, at least) that you can bet would not have had any difficulty infecting the human race even when we were just a small species (influenza would be another one).

I suppose the general public will learn a few things reading this book, but be warned: some of it will be wrong or misleading. It's the perfect book if you enjoy getting scared about things that are beyond your control, though.

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## **John says**

Scary title. Scary book.

If you want to get good and scared right away, skip directly to the chapter titled "Pandemic: From Unspeakable to Inevitable," and fast forward a couple of pages to where Michael T. Osterholm begins to present a scenario of how an influenza pandemic could play out in our day.

Osterholm, an infectious disease guru from the University of Minnesota, isn't suggesting that this is exactly how such a pandemic would occur. He's careful to say that such a pandemic is unlikely to occur in any given year, or even in any given decade. But, he argues, it's inevitable that some sort of catastrophic influenza pandemic will occur someday, unless we've taken action to prevent it.

To do so would cost a whole lot of money. And then there's the other threats Osterholm discusses in this disconcerting book, such as bioterrorism and the many dread diseases brought to us by mosquitoes. More billions of dollars will be required to meet these threats, he writes.

Frankly, I doubt that we -- "we" meaning the United States and everyone else -- have the will to spend the kind of money it would take to meet threats that we either haven't experienced in our lifetimes or have experienced in relatively narrow spheres. We may someday wish that we had had the will.

The writing of "Deadliest Enemy" is solid if grindy. There are lots of acronyms.

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## **Amy says**

Another win from First Reads, I may have to stop entering to win, my husband definitely thinks I should.

Michael Osterholm gives a very direct and stark look at infectious diseases, their risks, and the rate of antibiotic and anti-viral resistance. He isn't Minnesota nice about it at all, yet he avoids being alarmist in his claims as well. He talks plainly about the faults in the US public health system, as well as the global one. He looks at practical steps that we need to take as a global society to avoid, reduce, and mitigate the consequences of pandemics and antibiotic resistance. He doesn't claim it will be easy, but outlines what he sees as clear priorities that need to be set and shifts in attitude about public health that need to occur to protect ourselves, our children, and our grandchildren.

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## **David Montgomery says**

An easily readable summary of the biggest epidemiological risks facing the world today. It's also part memoir, and those first-person parts from Osterholm's accomplished life were to me the weakest part of the book. But as a summary of the risks from influenza, antibiotic-resistant germs, SARS, AIDS, mosquitos and other health risks, it was both an informative summary and a thought-provoking polemic.

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## **Jackie says**

Excellent book written in layman's terms on infectious disease and the likelihood of a global pandemic in the very near future. I did not realize that the flu vaccine is one of the poorest-performing vaccines in our medical armamentarium. Sometimes only 10 to 40 percent effective. And for people over sixty-five years of age the vaccine has significantly lower efficacy. It actually works better in younger adults. It's a very sobering book on how quickly our entire planet will change with a flu pandemic or the spread of a virus or

parasite by mosquitoes. Antibiotics are no longer as effective as they were because of overuse. It's a dire situation.

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### **Jeanette says**

It's an ominous read. Truly.

This is more a 3.5 star because of the "tone". Smug? He says he is accused of being arrogant. Oh his is not a voice of shy estimation, but of exponential estimations. Truthful and instructive. But truly, also fairly stark rapidly approaching horrific tragedy. The future is a pandemic formation- greatly in the odds. Many people, moving quickly from one continent to another continent guarantee it.

If you've read numerous pathogens books, or have thorough knowledge of vectors, bacteria, etc. - then this book will be what you already know. But in a far wider lens of global disease pandemic prevention as it plays out presently.

HIV, Ebola, the bacterial diseases returning, virus formed, and others-many categories are covered well.

But it is still the fast mutating airborne transferred influenza that is the prime player. Coming faster than climate change or any other war weapon scenario to be "the worst". One similar to the 1918 Spanish Influenza that killed more than WWI.

"Humanity has but three great enemies: fever, famine, and war; of these by far the greatest, by far the most terrible, is fever."

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### **Carol A. Plotsky says**

#### **Excellent**

Comprehensive review of dangers of our lack of attention to influenza and antibiotic resistance and new viruses. Scary information but needed

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### **Josh says**

As an Emergency Management guy, I'm going to be buying this one and adding it to the reference shelf. There's a handful of things that 'keep me up at night', as the expression goes. A massive pandemic is one of them ~ and Osterhold / Olshaker did nothing to assuage that fear; rather, they managed to drive home just how unprepared we are. And by "we" here, I mean "public health / EM / policy people.

The book was very well-written and made some fairly complex epidemiological studies / findings surprisingly accessible to the general public. I look forward to the day that we can look back and say "man, I'm happy these guys thought about this and took action back then, preventing us from falling victim to this unmitigated mess".

Great piece of non-fiction writing!

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## **Ryan says**

**\*\*I received this book as part of Goodreads' FirstReads giveaway.\*\***

I found this book to be a great introduction to infectious disease epidemiology and epidemics/pandemics. Having studied microbiology at the graduate-level and read numerous books in the field, this one definitely provides enough detail to cover the topics, but not too much to overwhelm someone with minimal exposure to infectious diseases, epidemiology, or microbiology.

With that being said, this book was far from perfect. There were several times where the authors strayed from the chapter topics into personal stories or anecdotes that were very distracting. I understand the need to share stories over a lengthy career in public health, but at times the book read more like a memoir than an analysis of global public health and epidemiology. The author also came off as smug at times, to the point that his analysis seemed like the only correct solution to any given global health problem. I respect his confidence, especially as a fellow scientist, but felt his points would have more effective and poignant if delivered in a more neutral tone.

I also believe the sections detailing public policy and the politics of public health will leave some readers bored or disinterested. Personally, I found it fascinating and the detailed plan in the final chapter provided a conceivable, practical guide for preventing many of the epidemics/pandemics expounded upon in the previous chapters. I think others may feel differently as it a sharp change from the chapters detailing the 2014-15 Ebola outbreak, 1918 Influenza pandemic, and other historical events.

Overall, I highly recommend this book to anyone interested in epidemiology, microbiology, and infectious diseases. Considering the recent outbreaks (Influenza, Ebola, Zika, etc.), this book is incredibly relevant and is a great introduction or overview on the subjects.

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## **Steve says**

Great science writing and a fascinating story

There have been several books recently published about the microbiome and how we coexist with it. This book is definitely not about coexistence; it is about how the microbial world is trying to kill us and how we can fight back. It's about epidemiology, government policy, and some of author Michael Osterholm's personal adventures. I am not sure who contributed what in this collaboration with author Mark Olshaker, but it works beautifully. I couldn't put the book down. And no prior knowledge of science is required; the authors explain everything on the go. This is great science writing for everyone. I strongly recommend it. I received an advanced reading copy of this book via Netgalley for review purposes.

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## **Jacki (Julia Flyte) says**

Wow. This book is equal parts fascinating and terrifying. Co-written by a leading epidemiologist, it outlines

the existing and potential risks to mankind from infectious diseases and makes it clear that the expected cost to humanity over the next century from epidemics and pandemics is every bit as high as the expected cost from global warming.

"There are only four events that truly have the power to negatively affect the entire planet. One is all-out thermonuclear war. Another is an asteroid striking the earth. The third is global climate change. And the fourth is infectious disease."

As the authors explain, it's not a question of IF we will face a global pandemic, but when. Beside major established killers like Malaria, AIDS and TB, in the last fifteen years alone we've experienced outbreaks of SARS, Ebola and Zika (to name but some). But the greatest threat is from "the queen of diseases" – influenza. Constantly mutating strains mean that the potential for a global pandemic that we are spectacularly underprepared for. \$35-40 million is spent annually on game-changing influenza vaccines, which might sound like a lot until you compare it with the \$1 billion being spent annually on the development of an HIV vaccine.

It's highly readable and it's scary. (The chapter on bioterrorism might be the most frightening thing I've ever read. Although the chapter on antibiotics ranks pretty high as well). For the most part it's written in such a way that you don't have to be a scientist to understand it (although a glossary of the many acronyms would have been a welcome addition – telling me once and expecting me to remember it from then on is a little optimistic). Twice the authors outline a fictional scenario on how a pandemic might evolve and these stories are so powerful that I wish they had incorporated more.

I hope that every politician and health professional reads this book. And I truly hope that it helps to effect some changes in public health policy. Because the alternative doesn't bear thinking about.

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## **Zachary says**

Well, this was a cheerful book. The summary can be given as that we are in deep, deep trouble because we have let greed and stupidity erode the effectiveness of extant antibiotics, due to dedication to capitalism, we have let the pipeline for new antibiotics wither, we do not have the infrastructure in place to effectively deal with known threats, and we are wholly unprepared for a serious pandemic that, because of a combination of global interconnectedness and just-in-time supply chains, will dwarf anything we've seen before. While the book doesn't go into this, it's actually worse than this at the moment because the current US administration is steadily working to further degrade the federal government's ability. We're in for a wild ride.

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## **Lisa Workman says**

If you're looking for a scary and alarming book about what the future may hold, this is the terrifying medical drama of real life. It is, at times, heavy on the science, but in a way that is well-explained. It covers bioterror, pandemics, the antibiotic resistant super germs, and much more. An informative and eye-opening read. I won a copy of this book in a Goodreads giveaway.

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## **Peter Chapin says**

This book is a sobering account of our general lack of preparedness for a variety of pandemic illnesses. As described by the author, the potential for social devastation from unchecked disease or related problems, such as the rise of antibiotic resistant bacteria, is much greater than most people realize. Furthermore, this book makes it clear that some kind of catastrophic situation is likely to occur eventually (it's not about "if" but rather about "when"). After reading this book I was left wondering why our political institutions aren't doing more to counter this threat. We seem to be suffering from a case of misplaced priorities.

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