Introduction

There are some remedies worse than the disease.
Publilius Syrus, 85-43 B.C.

This book explores the pharmaceutical industry, the U.S. Food and Drug Administration (FDA), and the practice of medicine, with an eye toward questioning the assumptions that many people hold.

Like many readers, I grew up believing that government agencies protect us in the same ways that our parents protected us when we were young; they understand the world well, know us well, and put our interests before their own. But later, I began to question that view: why would a huge government agency manned by people who are complete strangers to me care so much about my well-being? Even if those people do care, do they have the right information to make good decisions about my health and welfare? Do they know anything about me? What if my childhood assumptions were wrong? (To know more about me, please see About the Author at the end.)

Let's start by considering four people and their stories; then I'll explain what this book is about.

Maurice Hilleman's Vaccines

Maurice Hilleman, an employee of Merck & Co., might have saved more lives than almost any other person in history. According to one count, he saved 129 million lives.[1]

What did Hilleman do? He almost singlehandedly developed 40 vaccines over his 60-year career at Merck. Of the fourteen vaccines routinely recommended in current vaccine schedules, he developed eight. What's

more, his vaccines save primarily children—otherwise healthy people with long lives still in front of them.

His ingenuity, persistence, and diligence are legendary. In 1963, when Hilleman's oldest daughter developed a fever and swollen glands that were symptoms indicative of mumps, he made a late-night trip to his laboratory to retrieve some equipment to culture her virus. Using the isolate from his daughter, Hilleman carefully reduced the virulence of the virus and shepherded the new vaccine through testing and production in his typical focused fashion. His younger daughter was a subject in early clinical trials. Happily, both daughters survived, and Hilleman's ubiquitous mumps vaccine has since brought a classic childhood disease to the verge of extinction.

The editors of *The Atlantic* listed the vaccines that Hilleman and others developed as number eight on its list of the "50 greatest breakthroughs" over the last 6,000 years. (Penicillin, incidentally, was number three).[2]

In addition to their life-saving value, vaccines are a fantastic economic value. Of the total value of vaccines, a mere two percent accrues to the companies that develop and manufacture them, while 98 percent is enjoyed by those patients who are vaccinated and by society overall.[3]

What was life like before vaccines? One couple that I read about had six children who all died, one after another, from typical childhood diseases. The father was so heartbroken that he slept at the cemetery.

Magic Johnson's HIV

On November 7, 1991, basketball great Magic Johnson shocked the sports world by announcing, at the peak of his career, that he had tested positive for HIV and would retire immediately. In 2004, ESPN ranked this announcement as the seventh most memorable sports moment of the previous 25 years.

HIV was seen as a death sentence during that era. People in San Francisco and other big cities were seen venturing out into public with visible opportunistic infections, as they inevitably wasted away from AIDS. Clouds of pessimism and fear hung in the air like the ubiquitous San Francisco fog, motivating Oprah Winfrey to report in 1987: "Research studies now project that one in five—listen to me, hard to believe—one in five heterosexuals could be dead from AIDS at the end of the next three years. That's by 1990. One in five. It is no longer just a gay disease. Believe me."[4]

We should all be thankful that Oprah's prediction went so horribly askew. That happened for two reasons. First, she had a profound misunderstanding of the actual situation. Second, the pharmaceutical industry worked hard to prove her wrong.

HIV, while a killer in 1991, is now treated like many other chronic conditions. What changed? At first, with a paroxysm of public outcry, AIDS activists convinced the FDA to be more lenient and expeditious, and the agency approved Burroughs Wellcome's AZT[5] in the astounding time of 107 days. Most FDA reviews at that time took a couple of *years*. Since then, we've had Abbott, Agouron, Boehringer Ingelheim, Bristol-Myers Squibb, Gilead Sciences, GlaxoSmithKline, Johnson & Johnson, Merck,

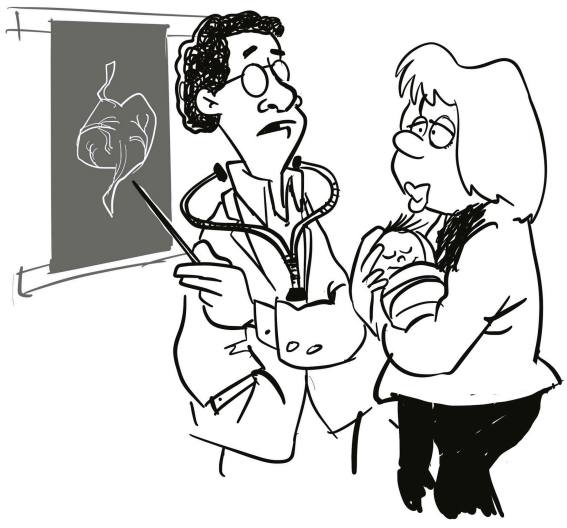
Pfizer, Roche, and ViiV to thank for their alphabet soup of single-agent and combination products to treat HIV. Physicians now have nucleotide/nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, protease inhibitors, integrase inhibitors, and entry inhibitors to choose from—and HIV patients benefit daily. Even patients' daily mound of pills has been squeezed into easy-to-take single-tablet regimens. All said, the pharmaceutical industry has reduced the mortality rate of HIV/AIDS by 92.5 percent.[6]

Magic Johnson is as alive today as he was 30 years ago, thanks to AIDS activists, pharmaceutical companies, and an FDA that saw the light.

Allen Tower: Hero, Criminal

Allen Tower is a hero to doctors and the parents of small children with heart defects. To the FDA, he's a criminal.

Doctors treating dying babies with congenital heart defects rely on Tower to make and quickly deliver customized cardiological devices, often within hours. Without these devices used to widen the aortas or open the valves in their hearts, afflicted babies would die. Not surprisingly, time is critical. The government hasn't questioned the safety and efficacy of Tower's devices, but it is making it more difficult for him to provide them, requiring Tower to file documents with the agency for specific approval *each time* he sells a "custom device." Of course, each device is custom—that's the whole point. Why should he be required to submit paperwork each time?



Worse, federal prosecutors have charged Tower with a crime, claiming that he

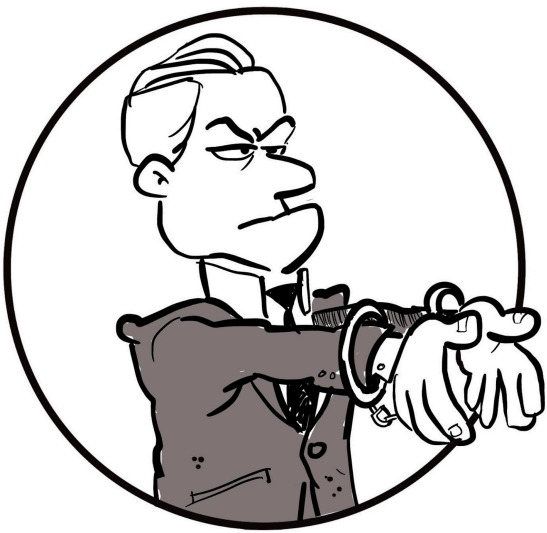
marketed “unapproved” stents for use in children. Tower could even be charged with a felony.

In response to these threats from the FDA, 650 cardiologists and parents have signed a petition stating that the actions against Tower could cause "a devastating loss to patients . . . should Mr. Tower be relieved of his freedom or ability to continue his work." Larry Latson, director of the congenital cardiac catheterization lab at the Cleveland Clinic, calls the FDA rules “terrible,” and he lists specific instances of children who, as a result of the FDA’s scrutiny, died because they couldn’t get Tower’s devices. "The FDA wants more data, yet there are few patients to acquire the data," Latson said. "The FDA's system does not work well for fields like ours, where there are small numbers of widely varying patients."[7]

Tower pleaded guilty to selling medical devices without FDA approval and paid a $2.3 million fine. Nine years later his company, NuMed, did receive FDA approval to sell the devices.

Howard Root’s Cardiac Arrest

Howard Root was CEO of Vascular Solutions when he faced his “cardiac arrest” moment. Root was arrested and charged with a felony, for which he faced prison time and expulsion from the medical profession. What had he done wrong? It turns out—nothing.



A disgruntled Vascular Solutions sales representative reported the company to federal prosecutors for allegedly selling unapproved medical devices. The product in question was of a slightly different length than an approved cardiac

catheter and accounted for less than one percent of the company's sales. This product was almost identical to other, already approved medical devices, and not a single patient had ever claimed to be hurt by it. Facing a resolute Root who defended his case and didn't knuckle under, federal prosecutors resorted to "threatening witnesses, misleading grand juries, and strategically leaking secret documents. Whatever it took to pressure a headline-grabbing settlement."[8] Their dirty tactics didn't work.

Root's marathon case lasted five years, took 121 attorneys, cost $25 million in legal fees, and even launched a Congressional investigation, but he was eventually acquitted.

One juror, shortly after the trial, confided to Root: "What the federal government did to you . . . is nothing short of criminal."

What, exactly, is this book about?

The pharmaceutical, biotechnology, vitamin, supplement, diagnostic, vaccine, and medical device industries are comprised of real people, people like Hilleman, Tower, and Root, who are helping real people like Magic Johnson. Unless you follow the news very closely, you might miss their stories and you might miss any discussion of how the FDA affects the people who struggle to bring us the next big medical advances.

Pro-FDA Thesis

The FDA's powers are predicated on six straightforward concepts:

One, that some drugs are so dangerous that they shouldn't be used. Dangerous drugs harm patients in three ways: the drugs cost money, they are used in place of other drugs that might help, and they directly harm patients.

Two, that ineffective drugs can be recognized and should be prohibited. Ineffective drugs harm patients in two ways: the drugs cost money and they are used in place of other drugs that might help.

Three, that someone can clearly judge drugs based on points one and two and, further, that that "someone" is a federal government agency. Most of us haven't been trained as medical professionals and we are unable to assess the relevant

scientific information. Other experts in the field, such as doctors and drug companies, may have perverse incentives to sell us useless or harmful medicines. It helps to have an objective third party—the FDA—pore over the data and decide what's right.

Four, that the FDA must have enforcement powers to ensure that companies abide by the best research, manufacturing, and marketing practices. We need to trust that the medicines we purchase are honestly and accurately labeled and promoted.

Five, that the FDA can and should tell us which drugs work for which diseases and inform us of optimal dosing schedules. This government agency should also warn us of possible side effects and drug-drug interactions. If safety issues do arise with marketed drugs, the FDA should alert manufacturers, pharmacists, doctors, and the media. If marketed drugs are deemed unsafe, they should be pulled from the market.

Six, that by testing new drugs before they are put into widespread use we will know what to expect when and if we ever require one. With the FDA on our side we face fewer health risks and are healthier overall.

If you believe that these six concepts justify a regulatory agency such as the FDA, congratulations, you're in the majority. You can take comfort in knowing that most reasonable people agree with you.

What the FDA Does

The FDA assesses new drugs to make sure they are safe and effective. To better understand the FDA and how it works, we will first explore safety through the lens of dangerous drugs and then explore efficacy through the lens of ineffective drugs.

This exploration will start to chip away at the six ideas comprising the pro-FDA thesis and we'll see how quickly they crumble. What follows are some aspects that are little discussed in the pharmaceutical industry, yet they should be.