sickening

HOW BIG PHARMA BROKE AMERICAN HEALTH CARE AND HOW WE CAN REPAIR IT

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Dedication

To Charlotte, without whose love, friendship,
indefatigable support, and fearless criticism
this book would not be possible

Epigraph

Be not intimidated, therefore, by any terrors, from publishing with the utmost freedom, whatever can be warranted by the laws of your country; nor suffer yourselves to be wheedled out of your liberty by any pretences of politeness, delicacy, or decency. These, as they are often used, are but three different names for hypocrisy, chicanery, and cowardice.

— JOHN ADAMS,
A Dissertation on the Canon and Feudal Law, 1765

Modern medicine has been a powerful force for good, and many people owe their lives to that power. However, because of humanity's shared reverence for that success, combined with the increasing financial rewards from the industrialisation of healthcare, almost everyone has been slow to recognise that medicine also has great power to harm.

— IONA HEATH,
British Medical Journal, February 2020

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Introduction

Tragically, during the first year of the coronavirus pandemic, an average of fourteen hundred Americans lost their lives to COVID-19 every day. Far more tragically, but with far less public awareness, Americans have been dying unnecessarily at almost the same rate for two decades.* This invisible tragedy is occurring not because of a once-in-a-century pandemic, but rather because, compared to citizens of other wealthy nations, we in the United States have such inferior health and health care.

Not only is our health worse, but the pace at which we are falling behind is accelerating. For example, the (pre-pandemic) rate of American deaths that could have been prevented by adequate medical care was by far the highest: half again higher than the average of nine other wealthy countries. Similarly, the United States ranks lowest in quality and access to health care among eleven wealthy nations, and it is the only country to have declined on this measure since 2010, despite the expanded access provided by Obamacare. And since 2000, Americans' healthy life expectancy has plummeted from thirty-eighth in the world to sixty-eighth in 2019 (now behind China, Cuba, and Jamaica). Citizens of Japan live 8 years longer in good health and Canadians live 5.2 years longer in good health than Americans do. How can this possibly be, when Americans clearly have the best access in the world to the latest medical advances? The unvarnished truth is that the siren call of breakthrough medical innovation commands far more of our attention than the alarms set off by the decline in our health.

Making matters even worse, while we are spending 17.7 percent of our GDP on health care annually, eleven other wealthy countries are spending an average of just 10.7 percent. This additional 7 percent of GDP translates into our spending an *excess $1.5 trillion* on health care every year. To put this in more personal terms, despite our health losing so much ground in comparison to that of other wealthy and not-so-wealthy nations, Americans

spend $4,500 *extra* per person each year — like an unlegislated tax — on health care.

Obviously, there is no single source of the dysfunction in our health-care system, but the most powerful force driving this toxic combination of poor health and high costs is Big Pharma's influence on American medical care. And the reason the pharmaceutical industry has been able to achieve this "tail wags dog" position is that, over the past forty years, public funding for clinical research and federal support of university-based medical research has declined, allowing the drug companies to step in to fill the gap. This has led to increased commercial influence over much of the information that doctors rely on to determine optimal treatment for their patients.

The pharmaceutical companies now control most of the medical research agenda, and their primary goal is not to improve Americans' health but to maximize their own profits, which they do masterfully. To that end they control the design, conduct, and analysis of most clinical research; and they largely control the delivery of the results of that research across the entire spectrum, from the most respected peer-reviewed medical journals to all those annoying drug ads on TV. Although the supposed purpose of this information is to educate doctors and the public, it is — truth be told — carefully curated to disseminate key marketing messages designed to maximize drug sales.

Still, how does it happen that so many smart, well-trained, hardworking, and dedicated physicians are misdirected by the commercially motivated "knowledge" produced by this self-serving system? Ironically, doctors are vulnerable to this misinformation precisely because they are taught to base their practice on the best scientific evidence published in peer-reviewed medical journals, respected clinical practice guidelines, and recommendations made by recognized medical authorities. But these trusted sources have become increasingly dependent on drug-company funding.

One of the best-kept secrets in all of health care — understood by few doctors — is that the peer reviewers, medical journal editors, and guideline writers, who are assumed to be performing due diligence to ensure the accuracy and completeness of the data reported from company-sponsored studies, *do not have access to the real data from these trials.* The published reports that doctors accept as fully vetted scientific evidence can be more

accurately described as unverified data summaries prepared largely by or for the sponsoring drug companies.

For sure, some newly approved drugs — one out of eight — provide heretofore unavailable medical benefits. These can be genuinely lifesaving or quality-of-life-improving, like the drugs that transformed HIV/AIDS from a death sentence into a chronic disease compatible with a normal life, drugs to treat hepatitis C, and drugs to treat (but not cure) cystic fibrosis. But unlike other wealthy countries, the United States lets drug companies charge as much as they want, so the drugs that offer unique benefits are generally priced at ransomlike levels. Moreover, because the industry controls much of the scientific evidence that reaches health-care professionals and the public, the seven out of eight newly approved drugs that do *not* provide previously unavailable benefits can be promoted as if they do. The business environment for prescription drugs in the United States is so different from that of other wealthy countries that an estimated two-thirds to three-quarters of global pharmaceutical profits come from the United States.

Americans are well aware that Big Pharma is taking advantage of them. A Gallup poll conducted six months before the COVID-19 pandemic began found drug companies to be the least well regarded among the twenty-five industries included in the survey, Pharma's worst ranking since the annual survey began, in 2001. This strong negative sentiment reflected rapidly increasing drug prices and occasional scandals, most recently the gross overselling of prescription opioids, which has contributed to tens of thousands of American deaths each year.

Big Pharma does not set out to purposely harm Americans' health, but its primary job has become the exploitation of each situation as a unique opportunity to maximize profits, regardless of the overall impact on society. The COVID-19 vaccines, touted as highly effective (they are) and free (they are decidedly not), provide a striking example. Historically, vaccine development in the face of acute viral threats — like Zika and SARS — has not panned out financially for manufacturers, so, early in the coronavirus pandemic, they were not enthusiastic about developing and testing vaccines. Three months into the pandemic, as the gravity of the situation became impossible to ignore, the U.S. government launched Operation Warp Speed, an administrative mechanism to create financial incentives rich enough to motivate potential vaccine makers to develop, test, and manufacture

vaccines quickly and in large quantity. Thankfully, this strategy helped produce highly effective vaccines in remarkably short order.

Early on, Operation Warp Speed spent five times more per person to procure vaccines for Americans than was spent by the European Union ($36 versus $7.25). This strategy was so successful that by mid-May 2021 the vaccination rate in the United States was far ahead of schedule and double that of the European Union. (By the end of July 2021, the EU had caught up to the United States, with about 70 percent of adults having received at least one dose of vaccine.) And given the oncoming toll in illness and death, in disruption of normal activities, and in economic loss, few would argue that we should have been more penny-wise with vaccine development and manufacture.

Not surprisingly, as the vaccines rolled out, the reputations of both Pfizer and Moderna — the first two manufacturers to be granted Emergency Use Authorization by the FDA — skyrocketed into the top ten among U.S. companies. Americans were grateful to them for working so quickly to integrate the best of medical science into effective vaccines, which allowed us to take the first step toward putting the pandemic behind us.

But a look behind the curtain reveals how the manufacturers exploited the public's desperation and hope, and how they adapted their tried-and-true profit-maximizing tactics to the entirely new opportunity presented by the pandemic.

First, the vaccine manufacturers' claim that the innovative drive of private enterprise was solely, or even primarily, responsible for the rapid development of COVID-19 vaccines was self-serving fiction. The foundational research that made the rapid development of vaccines possible had been completed in 2016 by scientists at the National Institutes of Health (NIH), working with researchers at Dartmouth College and Scripps Research Institute. They developed the technology to genetically engineer the exact sequence of amino acid building blocks that comprise the antibody-inducing spike proteins surrounding any specific strain of coronavirus.

In January 2020, armed with this technology, NIH researchers needed only a few days to turn the genetic code for COVID-19, provided by Chinese scientists, into a genetic "blueprint" for the vaccine. From that point it took Moderna only one month to develop and produce enough vaccine to begin large clinical trials. Zain Rizvi, a researcher with Public

Citizen, summed up the mRNA vaccine manufacturers' role in the development of the COVID-19 vaccine succinctly: "Big Pharma started on third base and thought it hit a triple."

He was critiquing Pharma's attempt, through a PR campaign with a cautionary message, to leverage the reputational boost it received from producing successful vaccines. The campaign's headline: "An American Success Story We Should Never Take for Granted." Sponsored by the Pharmaceutical Research and Manufacturers of America, or PhRMA,* the message warned, "Unfortunately some in Congress want to enact partisan changes that could threaten access to medicines today and new treatments and cures in the future." In other words, if you dare cut the prices we are allowed to charge Medicare for our highest-revenue-generating drugs, we won't be able to continue to innovate. But this premise was in large part misleading. If Pharma really wanted to protect innovation, its warning to Americans should have been "Don't take *NIH research* for granted."

Second, despite paying top dollar for the initial round of vaccinations for Americans, Operation Warp Speed failed to leverage the federal government's generosity and purchasing power to ensure global vaccine equity. Although these agreements remain largely secret, the *New York Times* wrote, the U.S. government "used unusual contracts that omitted its right to take over intellectual property [which would have allowed it to provide vaccine for low- and middle-income countries] or influence the price and availability of vaccines."

At the $15- to $20-per-dose purchase price negotiated with the United States and other wealthy nations, Moderna projected more than $18 billion in sales in 2021 alone. With virtually the entire $1 billion cost of the research and development for its vaccine having been paid by the U.S. government (except for a generous $1 million donated by Dolly Parton) and the actual cost of production estimated to be as low as $3 per shot, it's not surprising that the price of Moderna's stock shot up elevenfold from January 2020 through May 2021.

Global sales of the Pfizer/BioNTech vaccine are expected to be even higher, $33.5 billion in 2021, making it by far the best-selling drug in the world, with an estimated profit margin "in the high 20 percent range." Pfizer CEO Albert Bourla broadcast his intention for post-pandemic pricing of the Pfizer vaccine in an interview with *Time*, referring to the *initial* vaccine sales to Operation Warp Speed and other wealthy nations as

generating “a very, very marginal profit at this stage.” Most people would consider a profit margin of almost 30 percent on billions of dollars of guaranteed sales to be considerably above the “very, very marginal” level.

Pfizer CFO Frank D’Amelio confirmed these expectations, explaining that the transition from acute COVID-19 pandemic to ongoing endemic would provide Pfizer with “a significant opportunity . . . from a pricing perspective,” especially with the likely need for booster shots. Sales of Pfizer’s COVID-19 vaccine are projected to reach almost $100 billion over the next five years. An analyst with the investment bank SVB Leerink estimated that Pfizer’s profit margin on these sales will be a whopping 60 to 80 percent.

So, COVID-19 vaccines have not been offered free of cost. The vaccine manufacturers have been able to capitalize on the worst public health crisis in over a century by not charging consumers directly for the vaccines but rather extracting outsized profits from the taxpayers of wealthy nations. During the first fifteen months of the pandemic, nine new vaccine billionaires — including the CEOs of Moderna and of Pfizer’s partner, BioNTech — gained $19.3 billion in personal wealth. In addition, eight already established billionaires with large investments in vaccines gained $32.2 billion. The total wealth of vaccine billionaires had increased by over $50 billion.

Third and lastly, the mRNA vaccine makers made sure they would squeeze out the most profit possible from the revolutionary new technology. Indeed, the best way for the manufacturers to maximize their financial gains was to ignore global needs and sell the largest possible share of their available vaccines for top dollar to wealthy nations while maintaining tight control of their patents and other intellectual property. Predictably, fifteen months into the pandemic 85 percent of the approximately two billion doses of COVID-19 vaccine administered worldwide had been given to residents of wealthy nations. At the other end of the spectrum, a mere 0.3 percent had been administered to people living in low-income countries. Dr. Tedros Ghebreyesus, the director general of the World Health Organization (WHO), called this “a scandalous inequity that is perpetuating the pandemic.”

The WHO had tried to preempt this global inequity by launching the COVID-19 Technology Access Pool (C-TAP) in May 2020. The goal of C-TAP was to equip and train independent vaccine manufacturers in Latin

America, Asia, and Africa by providing access to the patents *and* the technical know-how required to produce their own vaccines. Such a program, if it had been successful, would have at least partially freed less wealthy countries from being dependent on the voluntary largesse of wealthy countries and vaccine makers. When President-Elect Joe Biden's designated chief medical adviser, Dr. Anthony Fauci, was asked in January 2021 if he would encourage the United States to participate in C-TAP's sharing of technology, his response was emphatic: "That's an easy answer: yes, yes, yes." Pfizer CEO Bourla was equally emphatic, but in the opposite direction: "At this point in time, I think it's nonsense, and . . . it's also dangerous."

Moderna also rejected C-TAP, but much less forthrightly. In October 2020 the company issued a statement promising to act as responsible global citizens: "We feel a special obligation under the current circumstances to use our resources to bring this pandemic to an end as quickly as possible. Accordingly, while the pandemic continues, Moderna will not enforce our COVID-19 related patents against those making vaccines intended to combat the pandemic." Great talk, but the *Washington Post* reported that as of March 2021, Moderna had "taken no steps to share information about the vaccine's design or manufacture, citing commercial interests in the underlying technology." Without Moderna providing the requisite know-how, the company's offering of access to its patents did nothing to get vaccines to those living in low-income countries.

In May 2021, leaders from the International Monetary Fund, the World Health Organization, the World Bank, and the World Trade Organization sounded a global all-hands-on-deck alarm, calling attention to the enormous impending negative consequences of not immediately increasing vaccination rates in low- and middle-income countries. They explained that on top of the imminent health risk to poor countries from high infection rates — by June 2021, 85 percent of the world's COVID-19 related deaths were occurring in developing countries — vaccine inequality would allow "deadly variants to emerge and ricochet back across the world." In other words, no country would be safe from COVID-19 until all countries were safe.

The leaders from the four organizations also explained that the global economy would sacrifice $9 *trillion* in lost productivity unless a 40 percent vaccination rate in all countries was achieved by the end of 2021 and "at

least 60 percent by the first half of 2022." Most important, they concluded these goals could be achieved and economic disaster averted with an urgent infusion of about $50 *billion* to purchase vaccines for developing countries. (Coincidentally, this is exactly the amount of wealth gained by the seventeen vaccine billionaires during the first fifteen months of the pandemic.) The managing director of the IMF, Kristalina Georgieva, commented that this investment in global health would probably provide "the highest return on public investment in modern history."

Even in the most grotesquely selfish terms, an investment by the wealthy nations of $50 billion now — meaning in the early summer of 2021 — would return to them an estimated $1 trillion in increased tax revenues. Yet the slow walk by wealthy nations and vaccine manufacturers toward adequate rates of vaccination in nonwealthy countries — whether done on purpose or not — will pretty much ensure that the pandemic will continue and that booster shots will be necessary in wealthy nations in order to protect against the viral mutations breeding in under-vaccinated countries.

Moderna had publicly promised not to enforce its patents but failed to provide the additional technical know-how required to turn that promise into vaccine-making capacity. Pfizer CEO Bourla had promised that nonwealthy countries would "have the same access as the rest of the world" to its vaccine, but according to the World Health Organization, Pfizer also failed to follow through. As the vaccine maker was basking in the glow of its vaunted but false altruism, Richard Kozul-Wright of the United Nations Conference on Trade and Development commented that despite feigning commitment to low-income countries, Pfizer had prioritized sales to wealthy ones, making Pfizer's dramatic reputational turn-around "one of the great public relations triumphs of recent corporate history." But Big Pharma's triumph, like so many of its other triumphs, came at the public's expense.

The global public-health crisis caused by COVID-19 has provided a rare opportunity to observe the true extent of the vaccine makers' commitment to public responsibility and to private profit-seeking. Their willingness to ignore the needs of low- and middle-income countries in the interest of maximizing their own bottom line — despite the obvious risk to the health and economic well-being of wealthy nations — will make it easier to comprehend the "business as usual" situations and profit-making strategies described in this book. They are often quite jarring. And the

example of the pandemic also helps show why, when the drug companies' profiteering techniques are focused on Americans, our health declines, and we are unable to provide all Americans with adequate health-care coverage, despite our off-the-charts spending.

I did not set out in my career to become a critic of the drug companies. After completing a family medicine internship, I served two years in the National Health Service Corps as a primary care physician in rural West Virginia. I then went back into training to complete two years of a family medicine residency and a two-year Robert Wood Johnson Fellowship, studying statistics, research design, and epidemiology. Although I had trained for a career of teaching, research, and practice in an academic medical center, I decided that my true calling was serving as a community-based family doctor.

When I entered private practice in 1982, I was confident that the care provided by American doctors (including me) was as good as the care available anywhere in the world. At that time, U.S. health-care costs were only slightly higher than those of other wealthy countries, and the U.S. death rate was well below the average in those same countries. I practiced family medicine for twenty years in a small town an hour north of Boston (and yes, I made house calls). I became the chair of family medicine at Lahey Clinic in Burlington, Massachusetts, and I have served on the faculty of Harvard Medical School since 1997, first as an instructor teaching primary care and, since 2010, as a lecturer in the Department of Health Care Policy.

During my years as a family doctor, I saw major changes in the practice of medicine. Beginning in the early 1990s, I became increasingly aware of the commercialism that was creeping into the sources of information I had been taught to trust — respected medical journals, educational lectures, and conferences. In 2001, drawing on the skills I had acquired during my fellowship twenty years earlier, I found serious and life-threatening discrepancies between the supposedly trustworthy scientific evidence published in the world's most respected medical journals and the actual data that drugmakers submitted to the FDA as summarized in FDA officers' reports, which had just started to be posted on the internet.

My curiosity was piqued by evidence that suggested an undisclosed increased risk of heart attack and stroke associated with the most heavily

advertised drug at the time, the pain reliever Vioxx. By following a footnote in a medical journal article to its source, I found my way to a trove of data on the FDA's website providing undeniable evidence that cardiovascular risks were significantly higher with Vioxx than with an equally effective over-the-counter pain reliever, naproxen (brand name Aleve). But these risks had not been reported in the *New England Journal of Medicine* article that claimed Vioxx provided a safety *advantage* over the older anti-inflammatory drug, and the misleading advertisements led my own patients to request — and even demand — that I prescribe Vioxx for them. At that point I felt the need to understand how the integrity of the medical information delivered to doctors and patients was being distorted by the drug companies.

So in 2002 I left practice to write *Overdo$ed America: The Broken Promise of American Medicine,* to explain from a family doctor's perspective the extent to which this growing commercial intrusion was undermining medical care. Three days before the book was published, the *New York Times* ran an op-ed I wrote, titled "Information Is the Best Medicine," in which I argued that doctors needed better access to clinical trial data (I specifically cited data showing the significantly increased cardiovascular risk of Vioxx) to provide their patients with safe and effective care. *Overdo$ed America* was published on September 21, 2004. Nine days later Merck abruptly pulled Vioxx off the market, not because of my book but because the results of yet another study had documented the increased risk of heart attack and stroke associated with the drug. It was the biggest drug recall in U.S. history.

I immediately sat down at my computer to write another op-ed, explaining why Merck's sudden withdrawal of Vioxx ought not to have come as a surprise. About half an hour later, my publicist called to tell me that a limousine would be picking me up in fifty minutes; I was to do three live national television interviews by satellite from Boston and then fly to New York City, where Katie Couric would interview me on *Today* the following morning. At this point I had done a total of one television interview on a local station, so the agenda for the next twenty-four hours was, to say the least, intimidating.

When I arrived in the greenroom of the *Today* show, I saw pictures of the hosts lined up on one wall. I had to ask my publicist which one was Katie. I was taken to the set and seated on a couch, where I waited

nervously. Katie finished up another segment and came over and joined me, and we were quickly (and comfortably) in the middle of a conversation, with millions of Americans watching on live TV. I was invited back six weeks later, when another study showed that Celebrex too might increase the risk of cardiovascular problems (although this turned out not to be a major issue, and the drug was not withdrawn from the market).

Soon lawyers coordinating national litigation involving thousands, and sometimes tens of thousands, of plaintiffs allegedly injured by one or another prescription drug began to ask me to serve as an expert witness. This work turned out to be the most challenging and consequential I had ever undertaken (besides caring for individual patients at critical moments). After signing a confidentiality agreement (without which, access to the confidential corporate documents produced in discovery was not allowed), I would begin my investigation. Typically, the first step was reviewing key documents, culled by plaintiffs' lawyers, which were deemed to be evidence that the manufacturer had misled doctors, the public, and insurers by exaggerating the benefit of a drug or minimizing the harm it might cause. But that was just the starting point.

I was granted access to the computer files of the relevant drug-company executives and scientists. No longer on the outside, wondering whether the company-sponsored science really supported the claims being made about a drug, I had access to millions of confidential documents — scientific data, e-mails, business and marketing plans, internal slide presentations about science and marketing, and so on. With this access I could piece together what the science really showed and evaluate:

- whether clinical trials had been designed to produce results that were misleadingly advantageous to drug sales;
- whether corporate marketing and business plans designed to capitalize on marketing research called for misrepresentation of scientific evidence;
- whether actual scientific data from clinical trials, when analyzed according to the rules the manufacturer had established before the study was started, supported the results presented in medical journals and marketing materials;* and
- whether marketing plans and slides developed by the manufacturer to "educate" doctors about its drug accurately presented the scientific

findings.

Thus I could compare, on the one hand, what doctors would reasonably conclude about the safety and efficacy of the drug based on the information provided by the manufacturer with, on the other hand, what doctors would likely conclude if they had accurate and unbiased summaries of *all the information.* Or, stated more succinctly, I could determine if the reported benefits and risks of a given medication represented the best available scientific evidence. Often they did not.

Vioxx was the first litigation I worked on, but over the next ten years I served as an expert in about fifteen other cases and was deposed by many lawyers hired to defend many different drugmakers and one medical-device maker. These cases were all civil litigation: Plaintiffs' attorneys sought to win compensation for individuals who had allegedly suffered personal injury or for institutions — such as union health plans, insurers, or governmental bodies — that had allegedly suffered economic injury arising from fraudulent claims of a drug's efficacy, safety, or value.

After I had thoroughly reviewed the information available in the company's files and had written an expert report, I would be deposed by the lawyers hired to defend the drugmakers. These depositions often felt like heavyweight boxing matches, as accomplished and tough corporate attorneys, informed by their own scientific experts and backed by teams of lawyers and support staff, challenged my analyses. My reports and opinions had to be rock solid; any weakness would be quickly and embarrassingly exposed.

In addition to serving as an expert in civil litigation, I was able to bring some of what I learned to the FBI and the U.S. Department of Justice as an unpaid consultant. In one of these cases, Pfizer pleaded guilty to a felony for marketing its arthritis drug Bextra (a cousin of Vioxx) "with the intent to defraud or mislead" and, according to a DOJ press release, agreed to pay "a criminal fine of $1.195 billion, the largest criminal fine ever imposed in the United States for any matter." Even so, nobody went to jail for committing this felony, and the documents, including those I brought to the DOJ and my analyses showing how Pfizer had allegedly misled doctors, remain sealed under the terms of the settlement. I am still not at liberty to explain how Pfizer hoodwinked (or, more accurately, feloniously misled) American

doctors into prescribing enough Bextra to make the company a handsome profit.

The relationship between the science and the marketing of almost all the drugs I investigated turned out to be a variation on this theme. I saw that doctors were being misled by the drug companies — misled about the results of clinical trials and misled about how the claimed findings should be integrated into optimal care. Where the terms of the settlement allow, I have included in this book the findings of some of the cases I worked on. And after seeing this pattern repeated again and again, I realized how much important information was being concealed and saw how the drug companies manipulated the scientific evidence that health-care professionals rely on.

This experience gave me a unique window into the dysfunction of American health care. Neither the public nor the nation's physicians are aware of the extent to which drug companies and other commercial interests produce and control the information that guides medical decisions. This is the key to understanding how America can be spending so much more money on health care than the other wealthy nations do while the health of its citizens continues to fall farther and farther behind.

Each of the chapters in part I discusses a drug or class of drugs that became far more widely used than the science justified or good care warranted. These examples reveal the range of tactics drug companies use to oversell their drugs without regard for the consequences. They range from manipulating medical journals, including some of the most influential in the world, to illegally marketing drugs (I testified in a trial that found a global pharmaceutical company had committed fraud and engaged in a racketeering conspiracy), to recommending, in treatment guidelines, that more than half of U.S. adults between the ages of forty and seventy-five take statins to lower cholesterol — though 60 percent have no history of heart attack, stroke, or diabetes, to employing deception to promote the use of unconscionably expensive insulin for people with type 2 diabetes when far less expensive insulin would have been at least as safe and effective.

Part II shifts from these specific examples of overprescribed drugs to a broader discussion of how the changes in American society over the past four decades have allowed commercial interests to control much of the medical knowledge that now guides our health care. Beginning around 1980, the primary mission of for-profit, publicly held corporations in the