

Introduction

OURS IS AN age accustomed to miracle drugs. We expect new triumphs of science that, in our lifetime, will eliminate mankind's most ancient enemies: all the illnesses that bring pain, sorrow, frailty, and untimely death. We expect these triumphs, moreover, to come in pharmaceutical form. The most famous miracle drug remains penicillin, and rightly so. In the 1940s, this microbe-derived antibiotic (and its successors) made a huge difference to human well-being and life expectancy. Thanks to penicillin, death by bacterial infection changed, almost overnight, from a commonplace tragedy to a rarity. Before penicillin's introduction, there were also a few medicines one could "fairly call miracle drugs," for example, Salvarsan, the anti-syphilis medicine in the 1910s; insulin for diabetes in the 1920s; and the first "sulfa" antibacterial agents in the 1930s.¹

Many more drugs have been hailed as miracles since the Second World War, medicines for the soul as well as the body. In the 1950s, alongside the cortical steroids that helped the crippled walk again, came the first antipsychotic drugs like chlorpromazine (Thorazine), restoring composure to the raving mad. In the 1960s, accompanying the birth control pill and the beta-blockers for heart disease, were the benzodiazepine "minor tranquilizers," such as Librium and Valium, that saved us undue suffering from anxieties born of inner conflict.² And the list goes on. None of our latter-day miracles for mind and body has matched the contribution of penicillin, nor has any presented so few adverse consequences. Still, new pharmaceuticals continue to enjoy hearty acclaim as "miracle drugs." Creating or at least amplifying such acclaim is now a routine function of pharmaceutical company marketing.

Just as the the first flush of enthusiasm inevitably leads to a marvelous new drug's prescription to millions, so inevitably does consumption of a new drug by millions reveal its limits and its dark side.³ Now cortical steroids are known to cause their own set of crippling

side-effects, antipsychotics like chlorpromazine cause brain damage, the benzodiazepine tranquilizers are fiercely addictive, and the original contraceptive formulas can cause deadly blood clots and probably cancer as well. To be sure, certain people did benefit overall from these drugs. Some of them are still part of medical practice, though they are used more cautiously now than when they were first welcomed as panaceas. Other drugs have fallen completely by the wayside, as their use proved more harmful than beneficial. None produced the miracles they first promised.

Yet, despite the predictability of disenchantment, we remain prepared to welcome new miracle drugs with undiminished optimism. In the 1990s Cox-2 inhibitors, such as Bextra and Celebrex, were the miraculous breakthroughs. These drugs promised to make arthritis suffering obsolete. Joining them were the selective serotonin reuptake inhibitor (SSRI) antidepressants like Prozac and Zoloft, which transformed oversensitivity and pessimism into easily treatable illnesses. The Cox-2 inhibitors are now in dramatic decline following revelations about their potential damage to the heart. The SSRIs, too, have lost some of their lustre but have not progressed as far as the Cox-2 inhibitors through the cycle that runs from tremendous promise to bitter disappointment. If past experience is any guide, they, too, in retrospect, will be seen as overprescribed to millions of unsuitable patients who could never even have benefited from the drugs but only bore the risks. The pharmaceutical industry has long understood this pattern of overzealousness, disillusionment, and rational reassessment of a drug's place in medicine—and has learned to make the most of the initial enthusiasm. Physicians seem at least partly aware, as testified by their inside joke: "Always prescribe the latest drug—while it still works!" The rest of us apparently prefer boundless hope to cynicism, trusting in the latest miracle drugs despite the repetitive lessons of the past.

Ultimately, this book is about the way age-old human fantasies of magical cures and elixirs of youth live on in the age of science-based pharmaceuticals. It is about the place drugs have come to occupy in our culture, and the role they play in medicine. It approaches these general questions through the remarkable and unique history of amphetamine, or "speed" as it has long been known colloquially. Choosing this drug as a basis for generalizing about pharmaceuticals may seem, at first, a peculiar choice. However, although we now think of

recreational street drugs when we hear the name of this powerful stimulant, amphetamine was originally another miracle drug. Its fame was so great by about 1940 that it could have been included in the above list of medical breakthroughs, alongside insulin and penicillin. According to both experts and advertisements, amphetamine not only was the first antidepressant but the very first specific medicine for a mood disorder. It was also among the first generation of medicines developed through scientific research managed by drug companies. As a new chemical invention, it was protected by the patents whose limited terms create such an incentive for manufacturers to maximize the wave of early zeal around novel drugs.

During the Second World War, amphetamine and methamphetamine were adopted in the military services on all sides, in quasi-medical efforts to tune mind and body beyond normal human capabilities. Similarly, athletes welcomed the drugs as performance-enhancing panaceas in the postwar years. Around 1950, family doctors embraced amphetamines as psychiatric medications for their distressed patients, cementing the notion that depression was both commonplace and easily treatable. Moreover, amphetamines were hailed as a breakthrough in weight loss and enjoyed enormous success as diet pills, helping to transform obesity into the menacing though preventable and treatable epidemic that medicine views it as today. When scientists and drug firms began looking for improved antidepressants and diet drugs in the later 1950s, they based that search on amphetamine and the benchmarks it set in both areas of medicine. In revolutionizing the understanding and management of disease and paving the way for progress, amphetamine behaved as a model miracle drug, a pathbreaking pharmaceutical.

As with miracle drugs before and since, the imperfections of amphetamines emerged with extensive prescription use. In the late 1950s, researchers gradually learned that amphetamine and related drugs are addictive, and that heavy enough use may cause a severe psychotic condition. Psychiatrists abandoned amphetamines for newer, better antidepressants by the beginning of the 1960s. Remarkably, though, the consumption of amphetamines did not decline, as one would expect of outmoded miracle drugs. In general practice amphetamines remained the drugs of choice for lifting mood, and for aiding in weight loss. In the late 1960s, at the peak of the drug's popularity, one in twenty American adults were active users of amphetamines by

prescription; at least half as many were using “speed” without prescriptions—altogether around 10 million people, equal to the entire combined populations of New York and Philadelphia at the time.⁴ Amphetamine abuse was recognized, briefly, as the leading drug problem in the United States. Finally, in the early 1970s, strong government actions overcame drug industry resistance and restricted the supply of pharmaceutical amphetamines. By the late 1970s, America’s speed epidemic seemed almost a concern of the past.

This one-time miracle drug still refused to retire gracefully, however. Speed remains with us today, despite relentless narcotics enforcement. Indeed, we are now suffering another epidemic of amphetamine abuse and addiction, driven by a recent surge in the popularity of crystalline methamphetamine or “ice,” as well as the amphetamine derivatives known as “ecstasy.” And, once again, amphetamine and its close relatives have become enormously popular pharmaceuticals, this time for Attention Deficit Disorder. The replacements for amphetamine offered up by the drug industry as diet drugs, from the 1970s to the mid-2000s, have remained closely related to amphetamines. We might also consider the antidepressant drugs which, although not amphetamines, have recently acquired the psychiatric market once belonging to amphetamine. From the perspective of user demand, more than one in ten Americans is now using drugs that, in the 1960s, would have been amphetamines. It seems that America’s need for speed has doubled since 1970. So, although looking at the business of pharmaceuticals through the lens of amphetamine may seem odd initially, I believe just the opposite to be true. In one sense, there has never been a more successful pharmaceutical.

Amphetamine’s triumphant career makes its history an excellent vehicle for understanding our society’s routine miracle, the pharmaceutical blockbuster. Its late deviations from a breakthrough medicine’s typical life cycle only help cast extra light on the place of drugs in our culture, and on what drives demand and success in the drug business. Of course, researching the history of commercial drug development, especially the action behind the experimental reports and advertisements published in the medical journals, is always challenging for the historian. Reliable documentary evidence on what occurs within corporations is rare. In the case of this particular drug, rumors and fables abound. Certainly, I have been fortunate in having the excellent work of other historians to study, as well as the work of social

and medical theorists about drugs, all cited where the value of their contributions to this story is especially great. Where I have been able to go further than previous authors in finding the facts about amphetamine's history and sorting fact from fiction, I have done so largely by using evidence generated in the course of intellectual property lawsuits, where often secretive drug companies must publicly struggle to reconstruct and document the past. The story of amphetamine encapsulates America's love affair with pharmaceuticals, and that story now needs to be told.⁵