



The antibiotic paradox

Stuart B Levy

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Documenting the trajectory of the “modern miracle” of antibiotics, *The Antibiotic Paradox* describes how our modern obsession for taking a “pill for every ill” is rapidly depleting the

curative powers of these drugs.

When antibiotics were first discovered, they were touted as the “magic bullet” to cure all illnesses. Levy describes how the concept of antibiotics being the cure to all ailments became so ingrained that there are even medical reports from the early days of antibiotic use purporting that viral illnesses like colds respond to antibiotics. This myth was so prevalent that it still persists today. The titular antibiotic paradox, as Levy describes it, is the irony that the ever-increasing capabilities of bacteria to resist antibiotics are being strengthened by the use of the very same antibiotics. The author likens the rapid evolution of these bacteria to develop increasing resistance to a sort of Darwinian selection in which the “fittest” bacteria survive.

In keeping with Levy’s firm belief that the public are vital in tackling this problem, the book is easily accessible to lay readers, peppered with personal anecdotes and clear explanations of the concepts behind resistance gene transfer. Imaginative cartoons explaining these scientific concepts feature alongside more technical drawings.

The book as a whole has a rough chronological outline, starting with an account of the first time penicillin made its debut in medical treatment and ending with a look to the future, discussing post-September 11 bioterrorism fears in America. However, the nested chronology of each chapter separates them into disparate segments rather than cohesive units of a single book. This thought-provoking treatise is also occasionally flawed by Levy’s tendency towards repackaging ideas, and certain paragraphs provoke a mild sense of déjà vu as they struggle to differentiate themselves from previous sections of text.

Antimicrobial resistance in humans is a multifaceted problem and Levy explores each of the contributing factors in turn, from the excessive use of antibiotics in both food

and domestic animals to crop spraying with highly concentrated chemicals. The focus of antibiotic resistance discussions often tends to be on developed parts of the world, America and Europe in particular, and Levy astutely reasons that this can be shortsighted. A major problem of antibiotic misuse in developing countries is the availability of antibiotics without a prescription, often without adequate medical advice. The indiscriminate spread of resistance genes between bacteria renders national boundaries meaningless and the misuse of antibiotics in developing countries is inevitably a global concern. While much of the public debate on antibiotic misuse concentrates on over-use, the author points out that the under-use of antibiotics can often prove just as disastrous. Incomplete treatment allows surviving bacteria to emerge with decreased susceptibility to antibiotics, adding to the reservoir of resistant bacteria.

Citing the currently fashionable “hygiene hypothesis”, Levy maintains that our transition into a post-antibiotic era is being accelerated by the proliferation of antimicrobial agents in household cleaners and children’s toys. The author

also acknowledges that science does not exist separately from the rest of society, and that tackling issues of public health effectively necessitates an appreciation of the underlying social and cultural attitudes. In other words, the issues defining persistent antibiotic misuse, both by professionals and the general public, needs to be addressed. The ideology of science and medicine as both authoritative and magical has led to a

pervasive social outlook where antimicrobials are treated as wonder drugs of which one cannot have enough.

Concern over antibiotic resistance is not novel, nor is Levy scaremongering. As early as 1945, the discoverer of penicillin, Alexander Fleming, found that bacteria exposed to continual small doses of penicillin could mutate to develop resistance to the drug. Although it has taken a while, the acknowledgment of the growing problem of antimicrobial resistance is widening and has provoked political and scientific organisations, such as the World Health Organization and the European Union, to engage in discussions over the action that needs to be taken.

Levy is certainly not afraid to let his imagination run riot in visions of a post-antibiotic era, but this does not undermine the clarity of his message, that if antibiotics are to be as valuable in this century as they were in the last, the world has a whole needs to take unified action.

Priya Shetty

