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Concerning the Center for Science in the Public Interest Report
on Threats to Antibiotic Effectiveness
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The first major, modern advance in the development of antibiotics was the discovery of penicillin by Fleming, 70 years ago in 1928. Not until large enough quantities were able to be made in 1943 did its use as a therapeutic antibiotic take off. Streptomycin followed in 1944 and the modern era of antibiotics was off and running. Quickly, however, microbial resistance developed to these drugs which had, upon their introduction, been giant steps forward.

An examination of the volume of published medical literature on microbial drug resistance reveals that there have been three phases of concern about this serious problem. After the development of resistance to streptomycin and penicillin and the search for alternatives, there were an average of 501 articles published per year (1966-1974). (**See chart**) In the Encyclopedia Britannica, 1976, it was optimistically stated that the more cautious use of antibiotics and the development of effective alternatives had lessened the concerns about antibiotic resistance. Thus, as the synthetic penicillin and cephalosporin-producing industry accelerated and other classes of antibiotics, more broad-spectrum, were developed, a complacency set in with the thought that you could keep coming up with alternatives whenever the bacteria outsmarted the older antibiotics and thus "solve" the problem of resistance to antibiotics. By the years 1980 to 1984, this smug attitude was reflected in an astounding decrease in the volume of articles published about microbial drug resistance, from the 501 per year in 1966-74 to 82 per year in 1980 to 1984, one-sixth as many. In 1983, an NIH-sponsored conference on Antibiotic Use and Antibiotic Resistance Worldwide documented the problem and offered many solutions, but in that era of reckless optimism, little was done. The misuse and overuse of antibiotics surged and more and more new molecules were developed to cope with the problem. As antibiotic resistance escalated, there was a steady resurgence in the larger volume of articles published and, for the most recent period, 1995 through the present, the average number of articles per year was 590.

There are several indisputable facts concerning the increasing threat to the effectiveness of antibiotics:

- 1/ There is massive overuse/misuse of antibiotics in humans and animals.
- 2/ There are rapidly-increasing, health-threatening numbers of antibiotic resistant bacteria in proportion to increasing use and the concomitant misuse (a major component of total use) of these drugs. It is inevitable that a certain amount of antibiotic resistance will develop even if antibiotics are used only when needed and, when they are, the proper drug is chosen. But the unacceptable additional amount of antibiotic resistance which currently plagues us is a predictable and inevitable derivative of gross overprescribing and misprescribing of these drugs.

3/ Antibiotic resistance will keep escalating as long as there are two kinds of drug industry resistance to efforts to remedy the problem: First, by promoting inappropriate use and second, by fighting against banning sub-therapeutic use of antibiotics on animals.

4/ Recommendations made 15 years ago (NIH-Fogarty), and more recently by the Institute of Medicine, the World Health Organization and the Office of Technology Assessment have gone 95% or more not acted upon.

5/ Unless there is action, instead of empty rhetoric, the global problem of antibiotic resistance threatens to set us back toward the time when there were many untreatable infections

I will focus briefly on the dangerous role of false and/or misleading drug industry advertising in perpetuating irrational and dangerous prescribing of antibiotics.

In a study funded by the U.S. Inspector General's office, based on ads appearing in medical journals in the first months of 1990, experts in medicine, pharmacology and pharmacy reviewed 109 ads including 24 for antibiotics. 17, or 70% of these published antibiotic ads were determined to be so poor as to merit rejection or major revision. We obtained copies of the ads and the reviewers' comments. Examples include the following:

Amoxicil: "Kids Love'Em--so do moms." Sound like a peanut butter advertisement rather than an antibiotic.

Mezlin: "This is a typical antibiotic ad that plays to physicians' insecurity in diagnosis, hence 'broad spectrum' anxieties."

Unasyn: "These ads are fundamentally lacking in integrity."

More recently, the FDA has sent letters to drug companies concerning antibiotic ads which are in violation of FDA laws and regulations. In 1997 and thus far in 1998 alone, there have been 16 antibiotic ads which the FDA found to be violative. An example includes Timentin (ticarcillin/clavulanate), in which the company (SmithKlineBeecham) failed to include adequate risk information and presented efficacy data in a misleading fashion. The common denominator of these illegal ads is to understate the risks and/or overstate the benefits. How else to get doctors (or patients, in the case of direct-to consumer advertising) to use the newest antibiotic?

In summary, antibiotic resistance is rapidly increasing while the contributions of new antibiotics are minuscule compared to the giant steps forward of the past. There is no possibility that the impending crisis will be averted unless the series of actions outlined this morning are taken, instead of just being talked about.

Articles per Year: Microbial Drug Resistance

Data from National Library of Medicine

