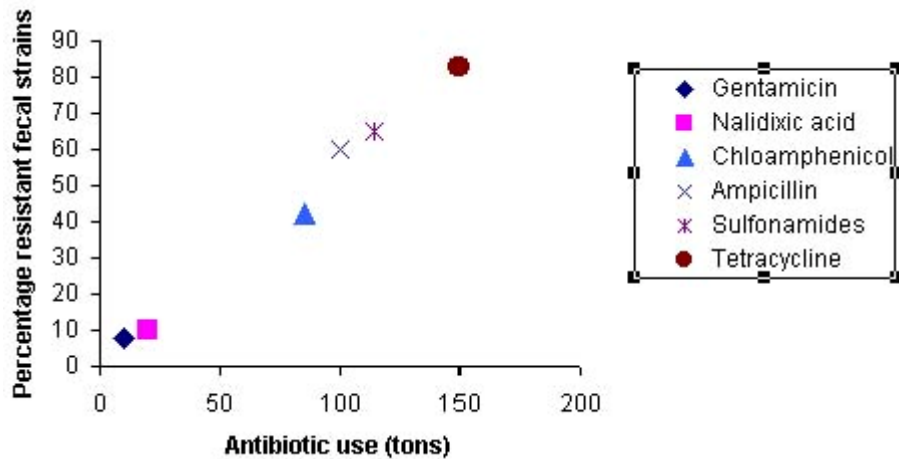


Antibiotic usage as a contributor to antibiotic resistant bacteria
By Spike Cover
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The topic of bacterial antibiotic resistance is getting significant attention these days. This little blurb, however, is only a quick look at one aspect of what is generally held to be a major driving force in this phenomenon, that of increasing antibiotic usage.

As one would imagine, there are numerous facets to the subject and plenty of groups are blaming others and some are even blaming themselves. The one thing that seems to not be in dispute is the direct correlation between increased antibiotic usage and the increasing resistance to those drugs. Here's a plot that depicts just that (1):



So if the resistance is directly tied to usage, then it follows that the folks who promote their usage are driving that part. Let's explore this a little.

In the U.S. about 70 percent of all antibiotics produced go into livestock, according to Keep Antibiotics Working, a health advocacy group (2). A study in the Journal of the American Medical Association reported that in a single year doctors wrote 12 million antibiotic prescriptions for colds, bronchitis and other respiratory infections. But the study noted more than 90 percent of such infections are caused by viruses impervious to antibiotics. Another study concluded as many as half of all antibiotic prescriptions are not needed (3).

In 2001, Fox News reported that industry estimates of antibiotic usage in farm animals was 17.8 million pounds in the U.S. (3)

To try to put some perspective on this, let's try to estimate how many pounds of antibiotics are used by koi hobbyists each year. In the U.S. there are about 10,000 club members in the AKCA clubs. Of those, I'd guess that no more than 10 percent of the members use antibiotics in their fish on any kind of a regular basis (meaning at least once per year). I'd estimate that each of

those who do use them, on average use no more than 10 gr (at the very high end) per year. That's $10\% \times 10,000 \text{ hobbyists} \times 10 \text{ gr/yr/hobbyist} = 10,000 \text{ gr}$ or 10 kg per year or about 22 pounds per year in the U.S. Let's guess that 10 times that much is used overall by U.S. koi keepers (including non-club members). I think this estimate is way over the actual usage but let's use it anyway to prove a point. So this means that maybe 220 pounds of antibiotics is used per year by koi hobbyists in the U.S.

Now let's compare this to the 17,800,000 pounds used just in farm animals each year in the U.S. My likely over estimated hobbyists' annual usage of 220 pounds turns out to be 0.0012% of "the problem." And, by the way, I have never heard of any koi hobbyist ever using Vancomycin.

It's true that every use of antibiotics, legal or illegal, proper or improper, will almost certainly contribute to the evolution of antibiotic resistant strains of bacteria. That said, if the sheer volume of usage is any indicator of the degree of contribution to this phenomenon, then the agriculture folks (presumably largely through the veterinarians) and the human patients (presumably through their doctors) are the hands down major contributors and the koi hobbyists are squarely in the "virtually no-effect" category.

However, the koi hobbyists continue to take heat from the professional communities over their reported improper use of antibiotics (and even of other chemicals). This criticism is despite the fact that koi-related veterinary and other professional services are very restricted from both an availability and affordability standpoint thus encouraging hobbyists to seek DIY alternatives.

So should we sweat the small stuff or focus on the big problem? While I'm all for conservation, I gotta tell you that I think it's past time to say,

"Never mind that junior left a light on, the damned house is on fire!"

References:

1. <http://www.physics.ohio-state.edu/~wilkins/writing/Samples/policy/antibiotics.html>
2. http://www.keepantibioticsworking.com/News/news.cfm?News_ID=340
3. <http://www.junkscience.com/foxnews/fn011201.htm>