

For the Record

Straight talk about antibiotic use in food-animal production
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INSIGHTS ON THE ISSUE

The issue that keeps going and going ...

Fueled by sloppy press reporting, marketing opportunism on the part of “natural” foods sellers, and relentless redundancy of politicians and issue-advocacy groups, the debate concerning a theoretical risk to food consumers posed by using low-level antibiotics in livestock continues to smolder. Recently ...

■ Ohio Representative **Sherrrod Brown** revived his dead 1999 bill demanding a ban on virtually all important low-level livestock drugs and **resubmitted it to Congress** in July 2003. The mirror **Senate version** appeared under **Ted Kennedy's** sponsorship shortly afterward. As of summer 2004, both bills were so far being treated to the same fate as their predecessors: sub-committee limbo.

Meanwhile, Brown demonstrated his understanding of political incrementalism by introducing another late **2003 bill** to forbid school-lunch program money from going toward any chicken treated with only one class of antibiotics, the fluoroquinolones.

Fluoroquinolones, particularly Bayer's enrofloxacin, Baytril, have become the issue's lightning rod. First approved as safe and effective for broilers in 1996, the drug has today become the first to face reversal and removal by FDA due to concerns over human drug resistance. Despite Bayer's contention that FDA has not proven human health is significantly threatened by the drug's use, court rulings favoring FDA have put the process dangerously close to becoming a done deal. Bayer, chastised by activist groups for not

rolling over to public pressure and poor science, argues a precedent is being set that will impossibly burden drug manufacturers with disproving any pure speculation anyone floats regarding human health risks.

■ At the same time, FDA has begun the process initiated two years ago to re-evaluate its approval of all animal drugs — new and old — based on an assessment of the risk that they could contribute to resistance in humans.

The **new regulatory interpretation** would rate each drug on a grid that includes its potential to cause human disease because of resistance against human drugs. It would

define that risk based on the estimated potential for resistant animal organisms to contaminate meat, the estimated potential for humans to then be exposed to those organisms, and the likely consequences of that exposure.

Although the industry has expressed openness to including resistance as one part of a drug's safety approval process, some have voiced concern that FDA's new framework is too subjective. It pushes out debate over disputed facts and data in favor of consensus-building on flexible labels of relative risk that can't be argued over because there's no clear definition.

Also in this issue:

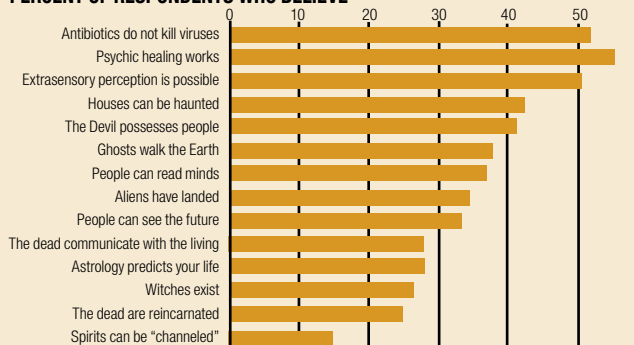
- A two-year scientific review of more than 250 studies has helped turn the monologue over animal-antibiotic use back into a dialog, by demonstrating the body of evidence being ignored showing low or no risk to human health.
- Some suggestions on why today's media just doesn't seem to get it when reporting scientific issues like antibiotic resistance.

CONSUMER RELATIONS & EDUCATION

Progress ... yet so far to go

The U.S. National Science Foundation's annual report on scientific literacy found some good news resulting from the flood of antibiotic-resistance news reporting and educational campaigns: The one exception to Americans' continuing decline in their ability to answer simple science questions is that more than half now know that antibiotics won't kill viruses, an improvement from a study four years earlier. The bad news? Surveyors also found these other “scientific” beliefs held by your typical consumer:

PERCENT OF RESPONDENTS WHO BELIEVE



Source: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology, 2001; Newport F, Strausberg M. Poll analyses: Americans' belief in psychic and paranormal phenomena is up over last decade, Gallup Organization (Princeton, NJ, 2001).

For the record

Good science aside, the piling-on regarding antibiotic use in agriculture continues. Here's a brief run-down and progress report on some recent action.

Challenging the orthodox assumptions

For the record

Noting the one-sidedness of the debate over antibiotic use, a team of medical and veterinary researchers spent two years reviewing the current research on the subject. Their results challenge the orthodoxy of oft-reported “scientific consensus.”

Judging by the ongoing, near-unison press coverage, one-sided scientific debate, and the pronouncements of figures like Sherrod Brown and Ted Kennedy (“... many scientific studies confirm ... nontherapeutic use of antibiotics in agricultural animals contributes to ... antibiotic-resistant bacterial infections in people ...”), it’s little wonder the issue may strike the average consumer as cut, dried, baled and stacked.

One good alternative resource to help you answer critics was published earlier this year in the *Journal of Antimicrobial Chemotherapy*. A team of scientists spent more than two years reviewing over 250 scholarly papers on antimicrobial resistance. Their stated objective — to draw the line clearly between events that do happen, may happen, might happen and do not happen — suggests that all is not settled about this debate. Some of their conclusions:

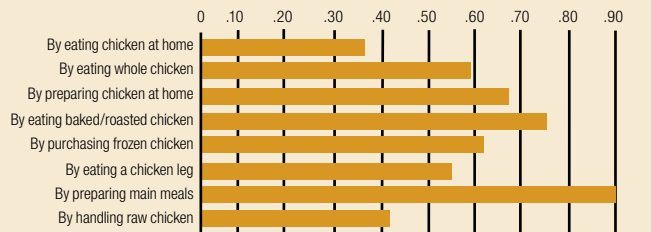
The hazard is theoretical, small and in many cases nil. When you look at the facts of the studies — objectively and without a political or commercial agenda — the researchers concluded, the **actual risk** to human health posed by using antibiotics in food production is extremely small and may be zero in many cases. Their conclusions suggest the debate has grown so one-sided in opposi-

CONSUMER RELATIONS & EDUCATION

The chicken contradiction

No part of the *Journal of Antimicrobial Chemotherapy* article drew more professional indignation from fellow scientists than the authors’ suggestion that one of the widest consensus beliefs of all may not hold water: That chicken is a source of human *Campylobacter* food poisoning. Undercover press investigations of poultry processing plants and secret meat case sampling notwithstanding, the science demonstrates the paradox that eating chicken prepared at home actually reduces, not increases, your risk of *Campylobacter* infection. And if chicken is not a significant source of human food poisoning, that contradiction knocks an important prop from beneath the advocates’ contention that antibiotic use in chickens must be curtailed. FDA’s own assumption that the harm to human health by antibiotic resistance is directly proportional to the amount of chicken they eat, for instance, is directly contradicted by available data on the protective effects of chicken consumption, they noted.

INCREASED ODDS OF NOT GETTING A CAMPYLOBACTER INFECTION



Source: Neimann J. The epidemiology of sporadic campylobacteriosis in Denmark investigated by a case-control study and strain characterization of patient isolates. Ph.D. thesis, 2001; *Journal of Emerging Infectious Diseases*.

tion to the practice because many conclusions start with unsupported assumptions, because many researchers hold an incorrect perception that no human health benefits result from using low-level antibiotics and so there’s no downside to erring on the side of over-precaution,

and because the goal in many cases (Europe’s, for instance) has been redefined from actually protecting human health to simply removing the potential to harm human health.

“... risk managers need to know when there is scientific consensus,” the authors write, “and when this

Quantifying the risk

When opponents of agricultural antibiotic use make a blanket statement that the practice poses risk to human health, the press often lets the warning pass without challenge. Granted, risk exists. But what’s sorely needed is some scientific quantification of that risk. A team of university and private researchers recently reported their model that attempted to do just that. They estimated the number of *Campylobacter* and *E. faecium* cases that would be expected to be untreatable by using a human drug in the macrolide class because animals were given the similar drugs tylosin or tilmicosin. By tracking the improbable chain of events that must occur, from the resistant organism escaping the farm where a drug is used through the probability that contaminated food would cause human illness to the probability that human disease would be treated with a macrolide that then fails, they arrived at these — admittedly conservative — risk estimates:

NUMBER OF PROBABLE CASES YEARLY IN WHICH A MACROLIDE DRUG FAILS TO TREAT A HUMAN DISEASE CASE

	HUMAN CASE FAILURES	
	CAMPYLOBACTER	E. FAECIUM
Because poultry are treated	1 in 14 million	1 in 3 billion
Because swine are treated	1 in 53 million	1 in 21 billion
Because beef cattle are treated	1 in 236 million	1 in 29 billion

Source: *Journal of Food Protection*, May 2004.

is lacking — something that has not always been made clear.”

The growth promotion/disease control line is not distinct. Opponents of animal antibiotic use often base opposition on the claim that because antibiotics are used only for growth promotion, they're expendable. Yet, the journal study authors **point up work that confirms** what many producers know: Mass medication often helps control infection and subclinical disease even when used only at labeled “growth-promotion” levels.

Antibiotics improve health. Because antibiotics improve animal health, their use also at least has potential to improve human health — a benefit usually ignored in calls for ending their use. Banning fluoroquinolone use in chickens, for example, stands at least **some chance of increasing** the variance in microbial loads on processed chickens, the authors note — a phenomenon that has recently been confirmed with other antibiotics. That could create far more cases of human food poisoning than the number of cases of resistant infection it might prevent, and in fact could explain the in-

crease in human *Campylobacter* infections Europe has experienced of late.

Low-level use doesn't always create resistance. Another founding pillar of the anti-antibiotics movement — that low-level, continual mass medication automatically encourages only the resistant bacteria to thrive — remains only an **unproven assumption** in many cases, they note. Few studies have actually measured how gut drug levels affect germ populations, but the fact that low-level doses remain effective in livestock after decades of use suggests resistance isn't always a given.

MEDIA RELATIONS THAT GET YOUR STORY TOLD

Why does the press miss the full story?

The modern media, as Mark Twain said of the weather, is easy to complain over but hard to do anything about. Here are some suggestions as to why the press tends to mis-report issues like antibiotic resistance:

■ Correlation/causation confusion

If, as the *Journal of Antimicrobial Chemotherapy* authors suggest, the world's pre-eminent scientists often make unfounded assumptions about cause and effect in antibiotic resistance, it shouldn't come as a surprise that reporters and editors follow. Data to prove true causation often either remains unavailable or confuses reporters not trained in science.

■ **Reliance on pet sources** Over-dependence on knowledgeable sources to explain that confusing science has led to what science novelist Dr. Michael Crichton labels a dangerous phenomenon: “**consensus science.**” True scientific breakthroughs, he notes, have historically occurred not by getting all scientists to agree on something, but by the voices in the wilderness who opposed conventional wisdom — such as Earth as the universe's center or the inevitability of mass global starvation caused by population explosion. Activists often pitch such consensus science — and the appointed stable of pedigreed sources — to reporters who

can't or won't do the legwork themselves.

■ **Misplaced intentions** Reporters are human, and like most, they want to improve the world. The attraction of improving human health, coupled with their ignorance about modern agri-technology, the perception that losing low-level animal antibiotics poses little risk to anything but somebody's pocketbook, a continuous activist PR machine, and not a small portion of plain lazy reporting leads to stories that start with the assumption that ending the practice is a common good.

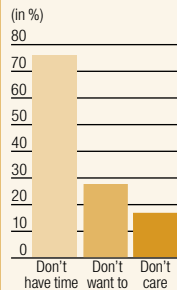
■ Hostility toward science and gotcha journalism

One of the 20th Century's best science reporters and now a journalism professor at Maryland, **Jon Franklin**, notes a shift that occurred in science reporting over the last half century. Where post-war science reporters held research scientists in nearly the same awe reserved for clergymen, by the '60s and '70s reporters

coming out of humanities departments either cared little about science or harbored suspicion about its motives. By the '80s and '90s, that apathy turned into

HAVE OURSELVES TO BLAME?

A recent poll of scientists found that 42 percent said they do nothing to get their side of the story into the press. Here are the reasons they cited:



Source: Sigma Xi Membership Poll, conducted with Research/America, 2001.

investigative journalism, focused on finding dishonesty and malpractice in studies and their funding. That philosophy can be seen in today's news stories insinuating that scientists who insist on sound science before political action are merely skills for the pharmaceutical industry and agricultural corporations.

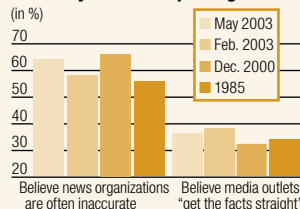
Robert L. Park, professor of physics at the University of Maryland and Director of the Washington Office of the American Physical Society and author of *Voodoo Science*, offers these seven warning signs to spot bogus science reporting:

- The source has not subjected his work to the peer-review process, instead going directly to the media.
- He claims a powerful establishment, industry or conspiracy is suppressing his work.
- The scientific effect is so small as to be at the very limit of detection.
- Evidence is anecdotal.
- The source says a belief is credible because it has endured for centuries.
- He has worked in isolation.
- New laws of nature have to be proposed in order to explain an observation.

PRESS IS NOT GOSPEL

A 2003 Gallup Poll found more than six in 10 Americans believe news organizations are often inaccurate. Another study showed almost half don't trust the press, and on average trust the government more.

Accuracy of news reporting



Trust in the media



Source: Gallup Organization, May 30, 2003; Gallup Organization, April 20, 2004.

Correction

"Real-World Perspective On The Issue" in July's

For the Record incorrectly calculated that because the United States inventories 60 million sows and produces 100 million market hogs annually, housing them all outdoors would require an estimated 40 million acres. According to USDA, U.S. farms farrowed 5.65 million sows and slaughtered 97.3 million barrows and gilts in 2003, making for a one-time inventory of just over 60 million hogs and pigs on Dec. 1, 2003. Using the author's assumption of 4 hogs per acre, the total land required at any one point in time would therefore be 15 million acres.

For the Record

For the Record, sponsored by a grant from ALPHARMA, is designed to help unite the industry and provide a unified, rational message on behalf of producers whose freedom to use safe, effective, economical production methods is at stake. Working together, we can set the record straight on antibiotics. Questions or comments? Contact Steve Kopperud, at skopperud@poldir.com.

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REAL-WORLD PERSPECTIVE ON THE ISSUE

Time for us to start making the noise

Our current epidemic of man-bites-dog journalism finds today's media foregoing the research and fact-checking of



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traditional solid journalism. Instead, they embrace the sensational press releases, the drum beat of prospective

disaster, and the policing of our behavior by those to whom we have given no authority to act on our behalf.

The issue of low-level antibiotics in animal agriculture has percolated within federal agencies and Congress for more than 25 years, emerging every few years as the latest and greatest in food safety threats. Each time the issue reared its head, our industry beat it down with solid science,

or at the very least, by arguing our government should take action when a threat is known and when risk is real and great — not simply when it's alleged.

Our frustration with the media over this issue lingers on; our ire at the media ignoring facts and science which run counter to activist propaganda grows. But if we sit on our hands, we have only ourselves to blame. Too often, we're quiet, complacent and apparently confounded by the opportunities we have to set the record straight.

Does our industry have a vested interest in the continued use of low-level antibiotics? Yes. But with that said, it does not dilute the impact we can make when we take a bold step to expose junk science and self-serving activism for what it is. You cannot rely on the news media to carry your message of what's at stake for producers, food marketers, consumers and all the

other beneficiaries of safe, science-based tools that improve animal production — whether that's low-level antibiotic use or the other technologies that keep food production as efficient as it can be. Using tools like *For the Record*, you have to take the initiative to respond to the attacks when you see them, and to get to the press and local, state and federal decision-makers ahead of the activists.

The media doesn't "miss" the story; they ignore it, or they go with the side making the most noise. Witness the statistic reported inside this issue that 42 percent of scientists do nothing to get their side of the story into the press. Their main reason for inaction: They don't have time. OK, then we must make the time to ensure our side of the story gets to those who control the printing presses and airwaves.

It's time to make the most noise.

A good mis-report never dies: One example

The U.S. Centers for Disease Control estimates that 76 million cases of food-borne disease occur each year. That statistic, repeated more than 200 times in major media stories in the last two years alone and currently gracing about 7,000 Internet pages, is often used to suggest the problem is so large that antibiotic use presents crisis proportions.

There's just one small problem with that logic, according to the Animal Health Institutes' Vice President of Regulatory, Scientific and International Affairs Richard Carnevale. It doesn't hold up.

- Of the 76 million cases originally estimated in a 1997 study in the *Journal of Emerging Infectious Diseases*, only 38 million are estimated from known causes. That means only about half are reliable estimates.
- Of those 38 million reliable estimated cases, 2.5 million are caused by intestinal parasites like *Giardia* and *Cryptosporidia* (not affected by antibiotics), and 31 million are caused by viruses like *Norwalk* (not affected by antibiotics.) That leaves an estimated 5.2 million cases caused by bacteria susceptible to antibiotics, most often *Salmonella* and *Campylobacter*.
- Of those 5.2 million estimated cases, only about 80 percent, or 4 million are believed to come from food.
- Of those 4 million, the estimated portion caused by *Campylobacter* is about 2.5 million. CDC arrived at that estimate by taking the observed incidence rate from surveillance systems of 24 cases per 100,000 people, multiplying it by 2,700 to account for the whole country, and then multiplying it again by a fudge factor of 38 to account for under-reporting in the surveillance system. However, CDC itself reports the incidence rate for 2003 had fallen to only 12 cases per 100,000. That means a more accurate estimate of *Campylobacter* cases is 1.3 million, using CDC's adjustments, bringing the total estimate for bacterial causes at least down to under 3 million.
- The vast majority of those 3 million estimated cases are non-life threatening infections that resolve themselves with little or no treatment, and only a portion of the remainder that do require treatment are resistant to antibiotics.