

# How Antibiotics Created the Industrial Chicken Industry — And Drug-Resistant Infections

*Antibiotic resistance is a vastly underestimated health threat — an estimated 23,000 Americans die each year from drug-resistant infections, including drug-resistant sexually transmitted diseases.*

By [Dr. Joseph Mercola](#)

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## Story at a glance:

- Antibiotic resistance is a vastly underestimated health threat; an estimated 23,000 Americans die each year from drug-resistant infections, including drug-resistant sexually transmitted diseases.
- Agriculture plays a major role in this; in the U.S., four times as many antibiotics are used in livestock as are used in human medicine.
- When animals are given antibiotics, it causes unnatural growth by altering their gut microbiome. In the process, some of those gut bacteria become antibiotic-resistant. Contaminated meat can then become a source of drug-resistant infections.
- Historically, chickens were scrawny little birds that no one thought to consume as a primary meal on a regular basis. Antibiotics changed this, when it was discovered the drug made the birds grow twice as large, twice as fast.
- Targeted breeding, creating a more full-breasted bird, and federal dietary guidelines called for reducing saturated fat found in beef-fueled consumption of chicken.

Maryn McKenna is an investigative journalist and senior fellow at the Schuster Institute for Investigative Journalism at Brandeis University who has written a number of health-related books.

Her book, "[Big Chicken](#): The Incredible Story of How Antibiotics Created Modern Agriculture and Changed the Way the World Eats," exposes many aspects of the chicken industry that most people are completely unaware of.

The book grew out of an interest in [antibiotic resistance](#), which she began investigating about 10 years ago. As noted by McKenna, antibiotic resistance is a vastly underestimated health threat.

An estimated 23,000 Americans die each year from [drug-resistant infections](#), and even though health officials are growing increasingly concerned that drug-resistant STDs (sexually

transmitted diseases) are rising at alarming rates, the issue remains largely ignored.

Globally, the death toll attributed to drug-resistant infections is thought to be around 700,000 annually, and it's only getting worse.

**Agriculture** plays a major role in this; in the U.S., four times as many antibiotics are used in livestock as are used in human medicine.

On the one hand, scientists warn we need to preserve and protect antibiotics lest they end up losing their effectiveness, and on the other, the **food industry** is feeding them to animals, most of which are not sick. "That contradiction is what set me on the journey that ended up in this book," McKenna says.



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## How it all began

Historically, **chickens** were rather scrawny little birds that no one thought to consume as a primary meal on a regular basis.

Today, Americans consume an average of 91 pounds of chicken each year. "Chickens are growing fastest in consumption around the world because they're very easy to raise," McKenna notes. They don't require a lot of land, for example, and can eat scraps.

"If we go back to the time of our grandparents and great grandparents, almost everyone raised chickens ... But the reason they were there wasn't primarily to be a meat source. It was to be a source for eggs, because eggs were very inexpensive, very easy to produce protein. For the most part, we ate chicken after a hen's egg-laying days were done.

“If you imagine a hen that’s been running around for a couple of years chasing chicks around the barnyard, flapping up into a tree to avoid the family dog, scratching for insects ... that bird is going to be scrawny and muscular. Not very delicious.

“Probably with a very rich flavor from all of that muscular development, but not tender and juicy the way our chickens are now. The only [exception] would have been ... baby roosters ... [which are] fed for a couple of months and then sold. They were called spring chickens and were considered uniquely delicious ...

“Then, out of a really interesting confluence of accidents, chicken moves forward as a meat source — first, because it turns out that chickens are so easy to raise that farmers in Delaware, Maryland and Virginia ... convert from being farmers of vegetables to farmers of chickens ... Their market for these meat chickens is New York City, which ... [had] the largest concentration of Jewish population in the world.

“Jews who want to observe the Sabbath and want to have a lovely, exotic, luxurious meal for the Sabbath can’t eat pork, obviously ... You could go into a live market and watch the chicken get killed in front of you, and know that it was religiously appropriate. So, chicken became the meat of New York City.”

## **How antibiotics created the modern chicken industry**

But these facts alone did not create the chicken industry we have today. Antibiotics played a crucial role in this development.

It used to be that most animals raised for food in the U.S. were fed antibiotics on a daily basis — not because they were sick, but rather because small doses of antibiotics (too small to actually cure an infection) caused the animal to put on weight faster.

Now, McKenna says this practice has been banned since January 2017 for the purpose of weight gain, but the use of antibiotics as a “preventive” measure (for potential illness) is still legal — and therefore still largely unregulated.

Since more meat per animal means more profit, the practice is driven primarily by economics.

Subtherapeutic doses of antibiotics were also shown to protect animals from diseases frequently spread in crowded barns and feedlots. The first antibiotic, penicillin, was successfully used in the battlefields of World War II in 1943.

In 1944, the drug became available for the general public and became an instant success. But another interesting thing also happened at the end of World War II. The food system grew fragile, partly because of the destruction caused during the war. There was also a strong push to save money.

One way producers did that was by giving their animals cheaper feed. Alas, cheaper feed meant less nutrition and more disease, so farmers began to search for ways to compensate.

“A specialist in the dietary needs of chicken — who happens to be working for one of those companies that’s making one of the first antibiotics — goes in a search for supplements. One of the supplements he tries uses the dried manufacturing leftovers from his company’s drug, Aureomycin. It’s the first of the tetracycline class of drugs.

company's drug, but only within the first of the two-day time class of usage.

"To his amazement, the baby chicks that get the dried Aureomycin leftovers grow more than twice as fast and put on twice as much weight as any of the other chicks in his experiment.

"From that, the worldwide industry of giving antibiotics to animals is born. Within five years, American farmers are giving their livestock 500,000 pounds of antibiotics a year. Now, it's over 30 million pounds [per year]."

## How chicken became a primary meat source

Breeding also played a crucial role. In a nationwide contest called "[The Chicken of Tomorrow Contest](#)," which took place in the 1940s into the early '50s, breeders reshaped the scrawny barnyard chicken into the breast-heavy bird we're familiar with today.

"So, there's a series of both historical accidents and technological innovations that get us to the point where, right now, compared to the chickens that were around in the 1950s, they [grow] to twice the slaughter weight in half the time," McKenna says.

A Republican campaign ad with the slogan "[A Chicken for Every Pot](#)," eventually turned chicken meat into a true household staple. "At the time, chicken was rare and special. Chicken was a thing you ate mostly on Sunday. It was by no means the meat that we eat every day as it is today," McKenna says. The slogan was essentially a political campaign promise of prosperity made on behalf of Herbert Hoover.

Then, in 1977, the U.S. government issued its first-ever dietary guidelines for Americans, which included the recommendation to avoid saturated fat.

While it didn't specify that you should avoid red meat, it was interpreted that way by most people, and chicken — white meat — grew exponentially in popularity as a result.

One other thing occurred at this time that made the transition from beef to chicken easier.

"A very clever idiosyncratic scientist working up in upstate New York figured out how to do with chicken what farmers and householders have been doing with beef and pork for generations, and that was to make chicken into different things.

"You didn't have to just roast, fry, bake or broil the chicken. You could eat chicken bologna, chicken hotdogs and the most important thing — the thing that really changes the history of the chicken — chicken nuggets.

"We think of them as being a creation of [McDonald's](#), but before McDonald's in 1980, there was Robert Baker of Cornell University who, in 1963, published the first recipe for what he called a chicken stick, which was bits of chicken glued together with excess protein; breaded, frozen and then deep-fried ...

"Processed chicken — chicken that's not just chicken on the bone — completely changed our relationship to chicken ... That's how it got to where it is in our diet."

## The evolution of chicken farming

Sadly, [chicken production in the U.S.](#) has become an industry that places profits over just about everything else, including animal welfare and farmers' rights.

Precision breeding turned the boisterous barnyard chicken into an exceptionally docile animal that didn't (indeed couldn't) move much. These new traits allowed farmers to cram the animals together in tight spaces.

Today, commercial chickens are raised in giant warehouses the length of a football field, which can house 25,000 to 35,000 chickens at a time.

There, they live in artificial daylight, with an artificially shortened night. Lack of space prevents them from moving about much and, on average, they only live 42 days.

McKenna says:

"The thing that is so extraordinary ... is the business structure that grew up to enable these giant farms to happen. The farmers who raise chickens don't actually own the chickens. They own their land, usually, although they're probably paying a mortgage on it. They pay to build those houses. They own their debt. They own the manure that comes out of those houses.

"The company they grow for, the company to which they're contracted (they're called contract farmers), buys parent birds from a genetics company, hatches the chicks, takes the chicks to the farmers, brings the feed to the farmers, picks the birds up six weeks later, takes them to a company-owned slaughtering plant, slaughters them, packages them, distributes them and negotiates the wholesale contract.

"Almost everything that's profit-making in the process of raising chicken belongs to the corporation. Almost everything that is difficult or economically perilous about it remains with the farmer."

## **Politics prevented FDA from addressing antibiotic harms**

If a bird has received antibiotics to the point that it's still present in the meat, this antibiotic residue is regulated by law in the U.S. The real peril when animals are given antibiotics is that it causes unnatural growth by altering their gut microbiome.

In the process, some of those gut bacteria become antibiotic-resistant. One of two things can then happen. Either the bacteria are passed into the environment via the animal's manure, or the gut contents may contaminate the meat during slaughter or processing.

This contaminated meat can then spread the bacteria onto utensils, cutting boards and countertops, contaminating other foods as well. "So, the peril here is the creation of antibiotic-resistant bacteria. That's the larger backdrop to the problem of the way that antibiotics created an artificial system of raising animals," McKenna says.

As mentioned, an estimated 23,000 Americans die each year from antibiotic-resistant infections. Another 48 million people contract foodborne illness. Contaminated chicken meat has also been linked to a drug-resistant UTI epidemic.

"Antibiotic-resistant foodborne illness is an enormous problem," she says. "It's actually how the

issue of giving antibiotics to meat animals first was exposed as a danger — first in England and then in the U.S.

McKenna continues:

“It was noticed in the 1960s and ’70s, when there were suddenly very large outbreaks of antibiotic-resistant, foodborne illness, which had never existed in the world before. England successfully controlled this practice first.

“A government commission told the English government in 1969, ‘We really should ban the use of growth promoters.’ In 1971, they did. They were the first government anywhere to do that. That directed attention to the U.S. because we were the historic home of growth promoters.

“In 1977 ... FDA [U.S. Food and Drug Administration] commissioner ... Donald Kennedy ... came into office swearing he was going to take away the licenses for growth promoters that the FDA had approved in the 1950s ...

“He never got [the chance]. A powerful congressman who had oversight over the FDA’s budget communicated via a back channel to the White House saying, ‘If this hearing goes forward, I will hold hostage the entire FDA budget.’ The Carter Administration were reformers, but they weren’t dumb about politics.

“They knew they had a lot of other battles they wanted to fight ... They ... told [Kennedy] his hearing could not go ahead.

“That congressman, Congressman Jamie Whitten of Mississippi, actually put a rider on the Appropriations Bills that said that — until he said otherwise — the FDA could not invest in research [to investigate] whether antibiotics used in animals were a risk. That went on until the 1990s when Congressman Whitten retired ...

“The government’s hands were tied, even though from that point, decade after decade, every major scientific body — the National Academy of Sciences, the Institute of Medicine, the AMA [American Medical Association], even academic researchers funded by the NIH [National Institutes of Health] — all said that antibiotics used freely in meat animals are a grave risk to human health.”

## **Steps in the right direction**

It took more than 30 years before any significant changes took place. It wasn’t until last year, just as the Obama administration was exiting office, that a set of rules were created by the White House that changed how we use antibiotics in animals raised for food. A number of large chicken producers are also taking proactive steps to phase out antibiotics.

Sanderson Farms is an exception to this trend. Refusing to acknowledge the impact antibiotics are having, Sanderson Farms has gone on record stating that antibiotic-free chicken is nothing but a gimmick designed to sell chicken for higher prices.

The reason they call it a gimmick is that antibiotic-treated chicken will not have antibiotic residue in its meat. Hence there’s no difference between treated and untreated animals.

However, this rationale completely misses the point, because the issue is not the elimination of antibiotics in the meat, it's the elimination of antibiotic-resistant bacteria in the meat. It's the bacteria that pose a threat to human health.

Others have done a far greater job. Perdue Farms announced its plan to go antibiotic-free in 2014, and by then the company had already made significant strides. At present, Perdue Farms claims to be more than 99% antibiotic-free, and have forced competitors to follow suit.

McKenna says:

“After Perdue came Tyson, Cargill, McDonald’s, Subway, Taco Bell and many others ... The reason, I think, Perdue felt they could [go antibiotic-free] is [because] they were being pressured by consumers. They told me they would get more than 3,000 comments a month from consumers through phone, email, Facebook and so forth, asking them about antibiotic use in their chickens ...

“The Obama administration also felt it was possible to create [new] rules ... because a consumer movement was rising. They said to food companies, ‘We no longer want to spend our dollars for meat raised with routine use of antibiotics. We don’t feel this is safe.’ This was also stated by large catering departments at hospitals who said, ‘This puts our vulnerable patients at risk.’ It was also said by very large food systems in school districts.”

### **Consumer demand drives creation of a safer food system**

In other words, consumer demand demonstrated there was a real market for antibiotic-free chicken. Interestingly, once Perdue began investigating the use of antibiotics, they discovered that the drugs no longer work the way they used to.

Everyone was basically just following a formula they knew had worked in the past, and no one had bothered to assess whether anything had changed. As it turns out, things had changed, and removing antibiotics actually didn’t result in any significant losses at all.

Another question that arose was whether antibiotics could prevent disease in animals living in crowded conditions. Perdue realized they could stimulate the birds’ immune systems in other ways, using herbs and probiotics, for example.

The last step they took was to improve the animal’s living conditions, installing windows in the barns. The natural sunlight in turn provides natural vitamin D protection. They also changed the interior around to allow the birds to get more exercise and the opportunity to flap their wings.

“[Perdue] is still raising a lot of chickens, but not in quite as close quarters as they used to,” McKenna says.

“The thing that’s especially magic about that to me is that all of the stuff I just described — giving them a different diet, letting them exercise, letting them to have sunlight — those are not only things that stimulate the immune system, they’re also things that create flavor.”

### **Be part of the change**

McKenna’s book, “Big Chicken,” does an excellent job of detailing how consumer pressure can create enormously beneficial changes in our food system. There are still other changes that

need to be made.

For starters, chickens are still fed a diet consisting primarily of genetically engineered (GE) grains sprayed with the herbicide glyphosate, which in addition to being a toxin also has antibiotic activity. Ideally, chicken producers would at the very least revert back to using all non-GE grains for their feed.

Considering the fact that most [CAFOs](#) (concentrated animal feeding operations) in other nations are able to profitably raise chickens on non-GE grains, where GMOs (genetically modified organisms) are not permitted, there's no doubt it can be done in the U.S. as well. The key is to keep asking for it. We also need to continue pushing for change in other areas.

As noted by McKenna:

"We can't rest on what we've gotten so far. We have to go forward to [pig producers](#), to [cattle producers](#), to fish producers. [Fish farming](#) — and especially in the developing world, shrimp farming — are huge consumers of antibiotics, which is even more influential for the ecosystem of the ocean than it is for the ecosystem of the land.

"As pointless as it seems to send a message through a company's Facebook page or to talk to the customer service desk at a supermarket, all of those messages add up. People can create more change if they just persist ...

"I hope people will take this to heart, and look for antibiotic-free meat when they do their grocery shopping ... Look for a label that says, 'Raised without antibiotics' and/or 'no antibiotics ever' ... Don't rely on organic, because the U.S. organic standard for chicken starts on Day Two of the chicken's life.

"A chicken raised by an organic producer that thinks they're doing everything right could have been given antibiotics, either injected into the shell or in the first day of life to protect them in transit to the organic producer.

"For me, it's as important to see 'no antibiotics ever' or 'raised without antibiotics' [on the label] as it is to see 'organic,' though that covers so many other benefits for the animal. I really think if people just keep pressing, we're going to see more change."

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### [Dr. Joseph Mercola](#)

Dr. Joseph Mercola is the founder of [Mercola.com](#).

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