Food Researched: Turkeys
Focus of Research: Antibiotic Use
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Title

Gobbling Up Bacteria: The Politics of Antibiotic Use in Farm-Raised Turkeys

Objective(s)

There are three objectives to this paper. One objective is to reveal the reasons for using antibiotics on turkeys and to reveal the possible negative effects on humans. The second is to inform the reader about government regulations within factories that process turkeys. The third objective is to discuss the importance of labels and what responsibilities they dispense to the consumer.

Summary of Findings

Introduction

Thanksgiving is a time for family, friends, football, and (of course) food. As families become preoccupied with holiday festivities, they probably do not take the time to consider what they may be vicariously consuming. Of the over 248 million turkeys produced each year in the U.S., over 205 million will receive antibiotics in their diets (Peeples). The pros of its use are that it can prevent diseases and it can promote growth. However, the biggest con is that the overuse of antibiotics has created antibiotic-resistant bacteria, which can be passed on to humans as an incurable disease. This paper will deal with the pros and cons of antibiotic use in turkeys. I will use Cargill’s turkey recall as a case study in preventive contamination measures. I will organize this paper from the farm to your dinner table. First, I will discuss how turkeys are treated for diseases on farms. Then I will explain alternative methods to preventing disease on turkey farms. Then I will move on to bacteria prevention within factories. As the turkey makes its way to your table, I will conclude by explaining labeling disputes that leave the consumer responsible for preventing food contamination. With all this in mind, I hope to address the questions of what can be done about antibiotic use, and in broader terms, how does one choose and prepare safe food?
Case Study

On August 3, 2011, Cargill announced a voluntary recall of approximately 36 million pounds of ground turkey products from around the country. The company proceeded with these measures under the presumption of Salmonella Heidelberg contamination, a known, drug-resistant strain. 107 people were found to be sick, with one fatality (Horowitz).

After a sample from their Arkansas-based plant tested positive for Salmonella, the company also decided to halt production until further notice. Though the actual source of the bacteria could not be traced, the company took extra precautions within the factory by increasing bacteria reduction steps, enhancing their monitoring systems, increasing the number of tests for Salmonella, and using high pressure processing in order to reduce the amount of bacteria (Cargill). All of the turkey that was recalled was immediately destroyed.

The company continued to meet demands through their other plant in Dayton, VA, (Cargill) though this incident reduced sales. However, there was some debate over the promptness of the recall. Bloomberg business journal reported that the U.S. Department of Agriculture’s Food Safety and Inspection Service did not gather sufficient data to conclude a serious threat early on, nor was a public alert issued or the company warned (Bjerga).

This example of preventative measures gives us a glimpse at how complex the regulations surrounding food safety must be. Even though Cargill recalled their product, could other precautions have prevented the reported illnesses even further? Let us take a look at this complex web, first, in order to determine this.

On the Farm

The main diseases that affect turkeys as well as humans are Salmonella, Escherichia coli (E. coli), and Campylobacter. These bacteria occur naturally, but can easily spread when the turkeys are kept in close quarters or in unsanitary conditions, often times seen in commercial farming (Pickett). In order to treat these illnesses, turkeys are given various antibiotics, some of which are available for human use. One example of a commonly used antibiotic is cephalosporin. In turkeys, it is used to prevent disease; in humans, it is used to treat pneumonia and urinary tract infections, and administered prior to surgery (Pickett). However, some research claims that overuse of antibiotics can cause antibiotic-resistant bacteria (Perrone).

Antibiotics “[block] specific steps in the synthesis of structures or in metabolic processes unique to bacteria” (Nestle 176). Some bacteria, however, have slight differences in their structures that prevent antibiotics from binding to them. In turn, these bacteria proliferate. What is worse is that some bacteria can pass their antibiotic-resistant DNA to other bacteria, making multiple antibiotic-resistant bacteria (177). This process first became alarming for the Food and Drug Administration (FDA) in the mid-1990s when researchers found that these bacteria could be passed from animals to humans (46). Ever since, there have been many reports concerning – though inconclusive – drug-resistant infections in humans (Hughlett). Drug-resistant infections
can most easily be transmitted directly from the bird to the farmer. As quoted in the Huffington Post by professor of Public Health at Johns Hopkins, Ellen Silbergeld, “Turkey is one of the most frequently contaminated meats” (Peeples). This could be worrisome to the average consumer if there is a possibility that they could develop a drug-resistant infection.

The FDA pressed Congress to restrict antibiotic use in farm animals in 1977, but they were overruled because of pressure from farm lobbyists (Nestle 46). However, the FDA has begun hearings as of March 2012 concerning the safety of specific antibiotics use in animals (Hughlett). Another use for antibiotics is to help animals grow faster, therefore saving time and money for farmers (Nestle 45). If the FDA restricts antibiotic use, then farmers will not only have to spend more money on feed in order to fatten up their turkeys, they will also have to spend more money on caring for their turkeys in different ways, so as to prevent disease. The upside to this situation is that antibiotic-resistance can be reversed and other methods of disease prevention exist (47). The fact that many industry leaders believe that taking precautions in terms of human health only “inhibits business” (24) means that there will most likely be a lot of negativity towards any sort of regulations against antibiotic use.

Alternatives

Some other methods of preventing infection in turkeys include the use of probiotics. These can be either synthetic or natural and they promote the growth of healthy bacteria that will take over space in the digestive tract of turkeys, preventing the growth of bad bacteria. These probiotics can either be live cultures or non-digestible good bacteria enhancers (Grimes). A more “natural” approach is to use Oregano as a probiotic. Scientific data shows that perhaps this product does not have much influence on the weight-gain of the bird, but farmers like to use it has a healthy alternative for promoting good bacteria growth (Florou-Paneri, et al.). More on the effects of Oregano on turkey health is outside the scope of this paper.

One other alternative that could always do a turkey good is giving them ample space and time outside in the fresh air. Ferndale Market of Cannon Falls, MN is just one example of the advantages of having a free-range turkey farm. These turkeys live healthier lives because they are not exposed to the harsh conditions of a crowded barn. Granted, they may have to deal with other diseases due to exposure to the outdoors, but places especially like Ferndale Market, work to keep the place clean and well stocked for the turkeys to live as naturally as possible.

Now that we have seen how healthy farmed turkeys can be, let’s take a look at what happens to them in the factories.

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1 Discover Magazine shares a rather scary story of a Virginia poultry worker who cut his finger on the job and later had to have it removed because of a drug-resistant infection. Therefore, you should always wear gloves on a farm. http://discovermagazine.com/2007/sep/better-planet
In the Factory

We hear about Upton Sinclair’s depiction of the terrible conditions in the meat packing plants of the turn of the century, where diseases and grime can easily be transmitted to the once fresh meat. One would like to assume that the process of packing meat has improved immensely. Well, it has, but there are still a few glitches in the system, as we saw with the case of Cargill. Thankfully, there are regulations, standards, and inspections to catch infections such as in our case study (even though later than one would hope). But how did these standards come about? The Pure Food and Drugs Act of 1906 began the regulation processes that we see today.² It was not until 1957 and 1968 that all meat inspection programs were made mandatory (Nestle 54). This delay in regulation only supports the fact that industries care more about profit than the public’s well-being. But the U.S. Department of Agriculture (USDA) and Food and Drug Administration (FDA) worked – and continue to work – at controlling microbial pathogens through a science-based method called Pathogen Reduction: Hazard Analysis Critical Control Point (HACCP). This method requires specific control points where meat must be checked for contamination and preventative measures must be taken (Nestle 69) (Table 1). However, this requires a lot of diligence from the companies and from the USDA inspectors, where companies cannot necessarily be trusted to follow through with preventative commitments. The issue is that HACCP regulations would cost industries over a billion dollars in a 20-year period, but the economic benefits to society outweigh these costs (96). Though this systematic way of preventing hazard seems very effective, politics has kept it out of the arena for all foods and HACCP is only mandatory for certain foods, such as meat, seafood, and juice (FDA Food).

It is preventative measures such as the ones set by HACCP that keep companies like Cargill in check. Why did Cargill still end up with contamination? Perhaps the inspectors or the company itself were not being as careful as they ought to have been. The fact that there are so many regulations and mandatory procedures makes it ever more difficult for companies to afford and keep up. However, HACCP and laws referring to it force companies to look out for public well-being, even if only a little. Otherwise, there would be many more companies out there selling products with dangerous components for the sole purpose of making a profit.

At Home

There are rules and regulations for the turkey processing plants, but does that mean that you are free from infection? Absolutely not! Farmers and industries do not always feel that they are at fault and neither do government inspectors. It seems that industries could always put more effort into reducing the risk of contamination. But instead they wish to push some of the responsibility on consumers. Table 2 shows how the USDA wishes to divide up the

² For more information on the initiation of this Act, please see Vileisis’ Kitchen Literacy.
responsibilities or preventing contamination. Consumers wish to take some responsibility, though, as they pushed for the USDA to create safe handling labels in 1993. It was not until 1994 that the labels were introduced, though, because of much opposition from meat producers who did not want consumers to think there was anything wrong with their product (Nestle 77). The labels indicate the possibility of bacterial contamination, safety precautions, and storage and preparation information.

Along with proper labels, the Department of Health and Human Services (DHHS) created the Action Plan to Combat Antimicrobial Resistance in order to educate the public to use fewer clinical antibiotics, instead of reducing animal antibiotic use (179). This type of education also put more responsibility on the consumer. Therefore, it would seem that not only do you have to carve your own turkey; you also have to ensure that you are following the cooking instructions very closely, according to government regulations, and not using many antibiotics yourself. It would seem, then, that we cannot put much trust into the food industry.

Conclusions

So what can we conclude about antibiotic use? It seems that even if the results are not entirely conclusive, the fact that antibiotic-resistant bacteria are being ‘selected’ definitely means bad things for the turkeys and possible humans. This means that perhaps more regulations should be put in place to limit antibiotic use. However, some of these ‘rules’ are voluntary. For example, Ferndale Market chooses to not treat their turkeys with antibiotics unless absolutely necessary. In the latter case, they send the sick turkeys away because they do not wish to sell turkeys that have used antibiotics under their name. Since there is a risk of antibiotics in turkeys affecting human health, it would probably be best to avoid commercially raised turkeys, because they are most likely to have been treated with antibiotics on a regular basis.

Because of all the rules and regulations behind antibiotic use and labeling of turkey meat, it would seem that no one is safe. This is not true. The safe handling labels are put on meat packages for a reason and there is always a slight risk of bacterial contamination. Just proceed with caution and cook your meat at high temperatures. The incident with Cargill is scary, but it is also something that just happens. It does not take many Salmonella bacteria to cause a huge outbreak. The real problem is in the company’s lack of attention to detail, which can easily be missed, and the health inspector’s lack of attention, which can also be easily missed. Both of these events should not happen and it seems that consumers should probably not put all their trust into these entities, but also not run away and hide. As long as there is a demand for more regulations, then there is a chance that industries will give in so as to continue making profits.
Appendix A

Table 1. The seven principles of HACCP (Hazard Analysis Critical Control Point)

<table>
<thead>
<tr>
<th>Principle</th>
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<tbody>
<tr>
<td>1. Conduct a hazard analysis: determine where microbial contamination is most likely to occur and identify measures for preventing such contamination.</td>
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<tr>
<td>2. Identify critical control points: locate the steps in processing where microbial contamination can best be prevented.</td>
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<td>3. Establish critical limits or standards for each critical control point (temperature, for example).</td>
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<td>4. Establish requirements for monitoring of standards at each critical control point (when and how temperature is to be measured, for example).</td>
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<td>5. Establish corrective actions needed to maintain standards at each critical control point (for example, adjusting refrigerators or ovens).</td>
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<td>7. Establish—and use—procedures for verifying that the HACCP system is working as intended.</td>
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Table 2. Advice from the Department of Agriculture: food safety is everyone’s responsibility

<table>
<thead>
<tr>
<th>Category</th>
<th>Advice</th>
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<tbody>
<tr>
<td>Farm</td>
<td>Pathogens are found to some extent in all farm animals</td>
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<td></td>
<td>Livestock operations should be separated from produce operations.</td>
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<tr>
<td></td>
<td>Clean water should be used to irrigate produce.</td>
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<tr>
<td>Storage/Transport</td>
<td>Keep products cold.</td>
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<td></td>
<td>Clean tanks between shipments.</td>
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<tr>
<td>Slaughter/Processing</td>
<td>Apply HACCP preventive systems.</td>
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<td></td>
<td>New technologies can reduce the risk of pathogen contamination.</td>
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<tr>
<td>Consumer</td>
<td>Clean: Wash hands and surfaces often.</td>
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<td></td>
<td>Separate: Don’t cross-contaminate.</td>
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<td></td>
<td>Cook: Cook to proper temperatures.</td>
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<td></td>
<td>Chill: Refrigerate promptly.</td>
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SOURCE: Adapted from Nestle, 75. Crutchfield S. FoodReview 1998; 21(3):34-35


