

## Pastured Pork and Food borne Pathogens

Posted on [May 19, 2009](#) by [Shannon](#)

By Shannon Hayes

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On April 9th 2009, The New York Times ran an Op Ed written by historian James McWilliams titled “Free Range Trichinosis” (1). In a rather clumsy effort at reporting on scientific research, McWilliams attempted to persuade the public that eating humanely raised pastured pork (that *didn't* come from a confined factory farm setting) would dramatically increase our risk of exposure to Salmonella, Toxoplasmosis, and Trichinosis. Setting aside the embarrassing fact that the study McWilliams cited was funded by the National Pork Board (2), there are a number of other flaws in his interpretation of the research. McWilliams’ conclusion that factory farmed pork is safer than pastured pork would be like assuming your children are safe strapped into a minivan driven by an axe murderer, because the doors are equipped with child safety locks. Let’s look first at the two types of swine production systems that were included in the study McWilliams references. In the indoor system, antimicrobials (a.k.a. *antibiotics*) were added to the feed, and were also used for therapeutic purposes. In the outdoor system, pigs were kept in open fields and had free access to soil and water. No antibiotics were used. The results of the study were that the free-range, antibiotic-free pigs had higher rates of seropositivity for Salmonella and Toxoplasmosis. According to McWilliams’ interpretation of the investigation, two of the free-range pigs also “carried the parasite trichina.” In truth, the animals were found only to be seropositive, which means that they had trichinosis antibodies. It did not mean that they had the pathogen, as Mr. McWilliams’ suggested. Then, when both of these animals were re-tested nine months later, both pigs showed a dramatic drop in the number of antibodies. One dropped so low; in fact, that it was considered negative for trichinosis antibodies (it might even be possible that there was a testing error).

What can we infer from this? First, that both of these free-range piggies had healthy immune systems. Exposure to bacteria and parasites is a normal part of life for all animals, including humans. A healthy individual will have a healthy immune system that can fight illness. Secondly, the finding also suggests that the *Trichinella* strain to which the pigs were exposed in a natural free-range setting was not especially virulent. In fact, the occurrence in humans is very low, and is extremely easy to prevent in the kitchen (see below). This leads to the biggest oversight in McWilliams’ reporting. McWilliams suggests that the reason the free-range pork was riskier to eat was because the pigs were kept outdoors. “Just a little time outdoors increases pigs’ interaction with rats and other wildlife and even with domesticated cats,” warns McWilliams. If he spent more time on a good farm, he might observe that rats and cats are very unlikely to hang out in a grassy pasture. They’d also be pretty foolish to want to share territory with omnivores that weigh a couple hundred pounds and have a full set of teeth. Regarding Salmonella, what McWilliams neglects to divulge was the truly critical difference between the two groups that would have caused free-range pigs to have a higher seroprevalance: The factory farmed pigs had a *steady diet of antibiotics*. The free-range ones did not. When subjected to a never-ending course of antibiotics, factory-farmed pigs are naturally going to show a lower seroprevalance for bacteria. *However*, this steady diet does not make our pork safer. It makes it more dangerous. It subjects bacteria, such as Salmonella, to selective pressure, making it more perilous. Any bacteria that are able to survive in antibiotic-laden conditions will be more virulent than what would originate from a free-range, antibiotic-free farming system. If we contract Salmonella from factory farmed pork, chances are we’re

going to have a much harder time combating it. If McWilliams had thoroughly done his homework, he might have seen a subsequent article that was printed in the same volume where he found his first study. Titled *Antimicrobial Susceptibility of Foodborne Pathogens in Organic or Natural Production Systems: An Overview (3)*, the article is a review of the research literature exploring farming systems and their impact on food borne pathogen antibiotic susceptibility. What it found was that the foodborne pathogen isolates from factory-farmed systems were typically more resistant to antibiotics than those from natural (organic, antibiotic free, free-range, etc) systems. In short, *the use of antibiotics in our meat is making it increasingly difficult for us to use them in the treatment of foodborne illnesses.*

Still, Professor McWilliams' assertions may raise alarm in any of us who love nothing more than some barbecued ribs or a nice juicy grilled pork chop. If we buy pastured pork, are we at more risk for Salmonella, Trichinosis or Toxoplasmosis? Hogwash. Common sense when working with meat is all that you need to protect yourself. First, as you may have noticed, most of us pastured pork farmers sell our meat frozen. That's because Toxoplasma oocysts and most Trichinella are killed when frozen. If you are still fearful about Trichinosis, then I recommend not eating raw pork. Trichinella are also killed once the internal temperature of pork hits 137 degrees Fahrenheit. Salmonella bacteria are even easier to thwart. According to the Texas A&M Extension service, exposing meat to cooking temperatures above 150 degrees Fahrenheit is enough to kill Salmonella bacteria. Most modern ovens will not go below 170 degrees, so even if you are slow roasting your meat, it is being exposed to adequately high temperatures. Another way to prevent Salmonella is to make sure that you do not use any utensils or plates that touched raw meat to handle cooked foods or foods that will be eaten raw. For example, don't dice your salad radishes with the same knife you used to slice your uncooked kebabs. When you carry raw meat out to the grill on a plate, do not use that same plate to carry your cooked meat to the table.

In the end, the oversight of food safety is not ideally suited to large for-profit food corporations who have little investment in the welfare of the animals or the consumers. The small farmer, whose livelihood and reputation depends on well-cared-for animals, coupled with the sensible consumer who has practical knowledge about safe food handling, is the surest formula for reducing the likelihood of food borne illness.

*I wish to thank my father, Dr. James Hayes, retired professor of Animal Science from SUNY Cobleskill, and my brother, Dr. Sean Hayes, from the NOAA lab in Santa Cruz, for their generous assistance with accessing and interpreting this research.*