

A Tale of Two Kitchens, Meals and Microbes

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Deanna Altomara] Hi, I'm Deanna Altomara. Today we're talking with Byron Breedlove, managing editor of EID, and Dr. Martin Meltzer, a CDC economist. We'll be discussing the cover art, titled Kitchens, and their accompanying essay for the June 2018 issue. Welcome, Byron and Martin.

[Byron Breedlove] Thank you, Deanna, it's a pleasure to be here.

[Martin Meltzer] Thank you, Deanna, pleasure to be here.

[Deanna Altomara] There's a lot going on in this painting. What most fascinates you and why?

[Byron Breedlove] You're right, there is a lot going on in this painting. It's often noted the kitchen's the heart of the home, and Campi's painting captures that notion. This manor kitchen is humming with all kinds of activity. I think one thing that fascinates me right away is the cat and dog at the bottom of the picture, and they're scrapping there for entrails from the poultry carcass, and you've got these two women just nonchalantly glancing as though it's just the most common thing to have a cat and dog, and a bunch of entrails in your kitchen. It's not something we're used to these days.

[Martin Meltzer] I find this painting to just be so kinetic. Beyond the obvious colors, there's so many different things going on that it's not your usual idea of a painting that's just a static portrait of somebody looking out into the distance. There's activity and there's things going on all the way around. And yet, for public health and for emerging infectious diseases, at the heart of this painting, we see both the risk and also the potential benefits of understanding the risk from foodborne diseases and what we can do about it. So, it is energy and also there's a lesson to be learned from it.

[Deanna Altomara] Byron, while doing research for this cover essay, did you find out anything that particularly surprised you?

[Byron Breedlove] I did find out something, and it was interesting to me that kitchens themselves were never the focus of paintings until the middle of the 16th century. I just found it amazing that, up until then, you would maybe have a kitchen just as part of the scene, but it was never the focus of a painting.

[Deanna Altomara] You both contributed to this cover story. What drew each of you to the topic?

[Byron Breedlove] This issue's about zoonotic infections, but it also had in it a number of stories about foodborne illnesses. This particular painting brought together both of those themes, and I thought it would make for not only a good cover, but also an interesting essay.

[Martin Meltzer] Well, this topic, and particularly this painting, is all about, as far as I'm concerned, foodborne illnesses. And foodborne illnesses is and always will be an intense interest to Emerging Infectious Diseases, as a journal. In fact, one of our most referenced and cited papers is about the burden of foodborne illnesses in the U.S. And this cover story and this topic directly relates to. . . It's not something that just happened in the 1500s, it is a problem that exists

today. Foodborne illness is still a problem and still a risk to us, even though we're talking about a painting that was painted several hundred years ago.

[Deanna Altomara] Martin, how does this painting relate to your job at the CDC?

[Martin Meltzer] Well, as an applied health economist here at CDC, my job is to take different buckets of data, like epidemiology, which tells us who gets ill, and where and why and how, and clinical data about what happens when they get ill, and then also about the interventions—what can we do to prevent that. And in this painting, we see at least two of those three elements we want. We see the absolute risk that Byron mentioned a little earlier, which is we've got people dealing with carcasses and entrails and cats and dogs in the kitchen and people just touching raw meat and vegetables without any sort of indication of water or soap or anything to remove the risk or reduce the risk of foodborne illness. And what's missing, therefore, in the painting, and what makes it so unique. . . means of lessons, is what's missing from this painting that we could employ so that we would reduce the risk, and what then have we got in the modern kitchen that reduces the risks of foodborne illnesses that we see in the painting. And so my job then at CDC is to look at all those variables and add them up and compare and contrast and see what works and what makes sense to employ to reduce that risk.

[Deanna Altomara] How are modern cooking practices related to outbreaks of diseases, like Ebola?

[Martin Meltzer] Well, Ebola's perhaps an extreme example, but the whole idea of modern cooking practices, if you want to use that term, is that it's meant to reduce the risk of onward transmission. But, you know, it's not just the cooking, it's also how you handle the food before you cook it and how you handle things that you might cook, such as the raw chicken that you see in the picture, and do you wash your hands before you touch, say, the vegetables and salads, which you won't cook. Cooking, of course, removes, if it's done properly, will remove and reduce the risk of foodborne disease. Of course, if you undercook your meat, like raw hamburger, you will not reduce sufficiently the risk of foodborne diseases. But assuming you cook, then you remove the risk, but if you haven't washed your hands, in between touching the raw meat and then touching the foods, say the vegetables or the fruit or anything else, you actually have not sufficiently reduced the risk of disease. So, cooking is part of the practices that we need to conduct properly in order to reduce the risk, but it's not the end-all and be-all of modern practices that will reduce the risk. What really reduces the risk is understanding how foodborne diseases are transmitted and then interfering or isolating those risks and making sure they don't actually transmit disease from, say, the raw meat to the raw vegetables that'll be part of the salad.

[Deanna Altomara] Martin, would you like to read us your essay now?

[Martin Meltzer] Certainly, thank you.

A Tale of Two Kitchens, Meals and Microbes.

Kitchen, a painting completed in 1580 by Italian artist Vincenzo Campi, celebrates the chaotic workspace that was devoted to keeping a noble family's house supplied with food and drink. The kitchen workers are preparing an assortment and quantity of meats, pies and breads, sauces, and side dishes as a special meal for a celebration or holiday.

Invisible to the viewer and unknown to Campi, his subjects, or his patrons, this kitchen would have been permeated by numerous unwelcome microorganisms that could cause zoonotic foodborne diseases. Such a setting would provide many opportunities for transmission of potentially pathogenic bacteria, viruses, and parasites in the raw meat and poultry, in the blood and viscera spattered on the workers' skin and clothing, on the floors and shared work surfaces, knives, and other utensils, and from domestic pets, rodents, and insects.

Campi's *Kitchen* is alive with activity. Near the top of the painting, demonstrating the artist's mastery of the technique of perspective, the viewer sees a dining room containing a long table festooned with a white tablecloth and tended by a young girl. Half a dozen colorfully dressed women are busy preparing the food, seemingly using every available surface. An older woman is working on the floor and appears to react negatively to the taste or smell of whatever is covering the bottom of a large pestle. A small child is sitting on a colander, amusing himself by inflating an animal's stomach. On the upper left periphery, a pair of men are butchering a deer carcass, while across the kitchen, a young man is carefully skewering raw, uncooked game birds on a spit. A cat and dog scrap for entrails plucked from the poultry carcass in the foreground, cooking pans dangle near rows of stacked plates in the upper right, and a small fire smolders in the fireplace near the center.

In the second half of the 16th century, Vincenzo Campi and his brothers, Giulio and Antonio, were considered amongst the finest artists in northern Italy town of Cremona. Specific details about Campi's homelife and education during the early years of his life are scarce. His father, Galeazzo Campi, also an artist of note, had been a pupil of the painter Boccaccio Boccaccini and helped educate his trio of sons in the arts. Giulio, the eldest brother, was a noted architect and artist who also instructed his younger siblings.

A short biography from the Museo Del Prado notes that Campi's earliest collaborations with his brothers showed little originality. His initial efforts were chiefly portraits of members of the upper class and various Catholic saints. Although throughout his career Campi continued to paint religious iconography and portraits for wealthy patrons, he is remembered more for his realistic paintings that captured the bustle of everyday life amongst the lower economic classes, food merchants, poultry and fish vendors, butchers, cooks, and kitchen workers.

Sheila McTighe, senior lecturer at the Courtauld Institute of Art, stated that Campi "is best known for his significant contribution to the birth of northern Italian genre painting. The style appeared quite suddenly between 1580 and 1585 in Cremona and Bologna, and its development was heavily influenced by similar genre paintings by Flemish artists Pieter Aertsen and Joachim Beuckelaer." Wealthy merchants and bankers, some of whom were no doubt the subjects of Campi's portraiture, imported examples of those Flemish genre paintings to northern Italy and Campi would have had ready access to them. Exactly what drove the sudden demand for representational art is not clear.

Art scholar Deborah Krohn notes that "Kitchens, along with foodstuffs, do not appear as a significant focus in paintings until the middle of the sixteenth century. First in the low countries, and then in Italy, we find kitchens as the settings for a variety of activities, from cooking and food preparation, to fighting, eating, flirting, and sleeping, as in Vincenzo Campi's *Kitchen* in the 1580s."

Missing from Campi's detailed painting, however, is any depiction of a bucket, sink, or soap for handwashing and cleaning the utensils, knives, or tables. The provision and frequent use of such cleaning materials would have reduced the risk of infection from foodborne pathogens. If kitchen workers or their employers experienced gastrointestinal or skin infections, they would have been unlikely to blame their working conditions. They could not have heard about shiga-toxin producing *E. coli*, *Shigella*, *Salmonella*, *Campylobacter*, or *Cyclospora* as causes of foodborne illness or infections. It was not until the second half of the 1600s that scientists, such as Robert Hooke and Anton van Leeuwenhoek, built microscopes and observed and recorded microorganisms. It then took more than 150 years after those observations that causal links were made between such microorganisms and diseases.

Contemporary kitchens with their gleaming counters, appliances for storing and cooking food, and sinks and cleaning products are not likely to inspire artists to depict such a rich, colorful scene as the one Campi captured on this canvas. Nonetheless, while we may think our kitchens are free from all unseen hazards in Campi's *Kitchen*, we still face the same risks for zoonotic infections innocently depicted by Campi. Even with our modern kitchen appliances and comparatively advanced knowledge regarding risk for disease, it is still possible to become ill from eating contaminated or unsafe foods and by inappropriately storing and preparing food.

[Deanna Altomara] Thank you, Byron and Martin. Listeners can read their essay, "A Tale of Two Kitchens, Meals and Microbes," online at cdc.gov/eid.

I'm Deanna Altomara for *Emerging Infectious Diseases*.

[Announcer] For the most accurate health information, visit cdc.gov or call 1-800-CDC-INFO.