

Finding the source of community-acquired Clostridium difficile

Researchers at the University of Guelph are leading a study to find out whether the community-acquired strain of this potentially lethal cause of infection is food-borne or environmentally spread

BY
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A new strain has been detected that infects people who have not been to hospital and have not taken antibiotics.

Scott Weese, left, and Keith Warriner.

Clostridium difficile (CDI), the most common cause of hospital-acquired gastrointestinal infections in North America, has moved beyond hospital and nursing home settings to the wider community. University of Guelph researchers are trying to find out whether CDI is spread in the environment or is food-borne.

Worldwide, CDI is responsible for thousands of deaths each year. In hospital and other health care settings, it grows when antibiotics kill good bowel bacteria and allow the CDI to thrive. In those settings, spread is usually through stool bacteria, which contaminate surfaces such as toilets, handles and chairs and are picked up through hand-mouth contact.

However, in recent years, a new strain has been detected that infects people who have not been to hospital and have not taken antibiotics. The new strain is called community-acquired CDI. It has been found in pig manure and, in small amounts, on pork itself, as well as other meat types.

Keith Warriner and Scott Weese, both associate professors at the University of Guelph, are leading a study to find out whether the community-acquired strain is food-borne or environmentally spread.

“What’s happened in the last two or three years,” Warriner says, “is that you’re getting an increase in community-acquired CDI where people have no history of antibiotic usage over the last few months and have not been to a health care centre. So they must be picking it up through person-to-person contact, environmental contact and/or via foods.”

To determine prevalence, distribution of ribotypes (strains) and toxin production of CDI associated with Ontario pig farms, researchers collected manure samples from 20 Ontario farms between June 2008 and March 2009. Thirty per cent of those samples tested positive for CDI. From those samples, five distinctive strains were identified, the majority being ribotype 078, which is implicated in community-acquired CDI.

The next step, Warriner says, is to find out whether the spread of CDI is food-borne or is spread through the environment via, for example, water. “We know the 078 strain is out there, but whether it is transmitted in the food remains open to speculation,” Warriner says.

To find the answer, researchers are collecting samples from fields where manure has been spread, from manure-spreading equipment and slaughter plants. Warriner says, it is a high probability that CDI is not transmitted by food with the environment being a more significant source. This question must be answered if we have a hope to controlling the rising incidence of CDI, Warriner added.

The research will continue through 2011 with results expected in early 2012. 

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