

# Carbapenemase-producing Organism in Food

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

Carbapenem antimicrobial drugs are the line of defense against multidrug-resistant gram-negative bacterial infections. The global emergence of carbapenemase-producing organisms is a public health emergency because these enzymes confer resistance to nearly all Beta-lactam drugs and are often associated with multidrug or pandrug resistance. Alarming, reports of carbapenemase-producing organisms from environmental and animal sources, including food animals, are increasing. Recently, clinical isolates of *Salmonella enterica* serotype Kentucky that produce VIM-2 and OXA-48 were reportedly isolated from patients in France with a travel history to Africa and the Middle East, suggesting foodborne transmission of carbapenemase producers.

To the best of our knowledge, before this report no foodborne carbapenemase-producing organisms had been identified in Canada and the United States, although the scope of antimicrobial drug resistance surveillance programs is limited to major agricultural products—poultry, beef, and pork. In our modern, ethnically diverse societies, niche-market meat products, including imported foods, are becoming increasingly common. Worldwide dissemination of the *Klebsiella pneumoniae*, VIM, OXA, and New Delhi metallo-Beta-lactamase type carbapenemases among humans has been facilitated by intercontinental passenger travel, but the role of the global food trade in this dissemination has not been investigated. We describe a carbapenemase-producing organism isolated from a squid purchased from the seafood section of a food store.

Among other items, the squid was purchased from a Chinese grocery store in Saskatoon, Canada, in January 2014 as part of a drug-resistance surveillance pilot study. Although no country-of-origin labeling was available for inspection, the store owner reported that, according to the distributor, this squid originated in South Korea. An organism with 95.5 percent sequence identity to *Pseudomonas fluorescens* was isolated on Mueller-Hinton agar. Although the organism was not extensively resistant, it was resistant to all Beta-lactam drugs tested, including ertapenem. PCR amplification and sequencing confirmed that this organism contained VIM-2 carbapenemase.

The presence of carbapenemase-producing organisms in the food supply is alarming. Although this organism may not be a pathogen, its contribution to the resistance and the potential for lateral gene transfer to clinically relevant bacteria is certainly a cause for concern. This finding indicates that the risk for exposure to carbapenemases extends beyond persons with particular travel histories, previous antimicrobial drug use, or hospitalization and into the general public. There is an urgent need for expanded resistance surveillance for carbapenemase-producing organisms and their resistance plasmids in food products that are not captured under current programs.

I'm Dr. Mike Miller, for Emerging Infectious Diseases, and I've been reading the letter Carbapenemase-producing Organism in Food. You can read the entire article online and in the July 2014 issue of Emerging Infectious Diseases at [cdc.gov/eid](http://cdc.gov/eid).

If you'd like to comment on this podcast, send an email to [ededitor@cdc.gov](mailto:ededitor@cdc.gov).

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