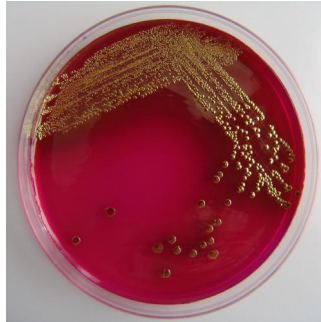




Hospital Superbug Debugged



An international team of scientists led by Monash University researchers has uncovered how a common hospital bacterium becomes a deadly superbug that kills increasing numbers of hospital patients worldwide and accounts for an estimated \$3.2 billion each year in health care costs in the US alone. Their findings appear October 13th in the Open Access journal PLoS Pathogens.

Team leader Dr Dena Lyras and lead author Dr Glen Carter, from the Monash University School of Biomedical Sciences, have linked a naturally occurring mutation in the microorganism *Clostridium difficile* to severe and debilitating diarrhea in hospital patients undergoing antibiotic therapy. These antibiotics destroy the 'good' bacteria in the gut, which allows this 'bad' bacterium to colonise the colon, where it causes bowel infections that are difficult to treat.

"This mutation effectively wipes out an inbuilt disease regulator, called anti-sigma factor TcdC, producing hypervirulent strains of *C. difficile* that are resistant to antibiotics and which have been found to circulate in Canada, the US, UK, Europe and Australia," Dr Lyras says.

The results suggest that bacterial strains carrying this mutation have the potential to produce more of the harmful toxins that cause disease in susceptible individuals -- commonly patients aged 65 years or over.

Dr. Carter adds, "As we now have a better understanding of these strains, we can design new strategies to prevent, control and treat these infections."

The above story is reprinted (with editorial adaptations by ScienceDaily staff) from materials provided by Public Library of Science, via EurekAlert!, a service of AAAS.

Journal Reference:

Glen P. Carter, Gillian R. Douce, Revathi Govind, Pauline M. Howarth, Kate E. Mackin, Janice Spencer, Anthony M. Buckley, Ana Antunes, Despina Kotsanas, Grant A. Jenkin, Bruno Dupuy, Julian I. Rood, Dena Lyras. The Anti-Sigma Factor TcdC Modulates Hypervirulence in an Epidemic BI/NAP1/027 Clinical Isolate of *Clostridium difficile*. PLoS Pathogens, 2011; 7 (10): e1002317 DOI: 10.1371/journal.ppat.1002317

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