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### Research News

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#### Sniffing Out *C. difficile*

Rapid detection of *C. difficile* could be on its way with the development by UK scientists of an 'electronic nose.'

Using a mass spectrometer, the researchers have shown that it is possible to identify the unique 'smell' of *C-diff*, which would lead to rapid diagnosis.

In addition, the scientists say it could be possible to identify different strains of the disease simply from their smell – a chemical fingerprint.

The team have measured the Volatile Organic Compounds (VOCs) given out by different of strains of *Clostridium difficile*, and have shown that many of them have a unique 'smell'. In particular, different strains show different chemical fingerprints, which are detected by a mass spectrometer.

University of Leicester chemists developed the 'electronic nose' for sniffing volatiles and collaborated with a colleague in microbiology who has a large collection of well characterised strains of *Clostridium difficile*. The work suggests that the detection of the chemical fingerprint may allow for a rapid means of identifying *C. difficile* infection, as well as providing markers for the way the different strains grow.

Professor Paul Monks, from the Department of Chemistry, said: "The rapid detection and identification of the bug *Clostridium difficile* (often known as *C-diff*) is a primary concern in healthcare facilities. Rapid and accurate diagnoses are important to reduce *Clostridium difficile* infections, as well as to provide the right treatment to infected patients.

"Delayed treatment and inappropriate antibiotics not only cause high morbidity and mortality, but also add costs to the healthcare system through lost bed days. Different strains of *C. difficile* can cause different symptoms and may need to be treated differently so a test that could determine not only an infection, but what type of infection could lead to new treatment options."

Professor Monks added: "Our approach may lead to a rapid clinical diagnostic test based on the VOCs released from faecal samples of patients infected with *C. difficile*. We do not underestimate the challenges in sampling and attributing *C. difficile* VOCs from faecal samples."

#### Life After Sepsis

A survey about the problems that sepsis survivors face starts on World Sepsis Day, 13 September. Open for participation for 1 year, the survey will be available initially in English, French and German, with additional languages to follow. For more information, visit the World Sepsis Day website <http://www.world-sepsis-day.org>

#### Experts Gather to Discuss Glucose Control in the Critically Ill

On Monday, September 29, 2014, global experts will convene for a symposium to discuss the practicalities and economic implications of implementing glucose control for critically ill patients. Held from 12:30-14:00, and supported by Edwards Lifesciences, the symposium forms part of the 27th annual conference of the European Society of Intensive Care Medicine (ESICM), held in Barcelona, Spain.

Titled "Further advancements in making improved glucose control a reality," the event will be chaired by Valentin Fuhrmann (Hamburg, Germany) and Michael Hiesmayr (Vienna, Austria). Speakers include Jean-Charles Preiser (Brussels, Belgium), Hazra Moeniralam (Nieuwegein, The Netherlands) and James Krinsley (Stamford, USA).

Linked as an independent predictor of mortality, dysglycemia is a common, serious, and potentially costly healthcare problem in critically ill

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patients.<sup>1</sup> Studies have suggested a potential benefit to customizing target glycemic levels based on patient diagnosis, diabetic status and pre-admission diabetic management.<sup>2,3,4,5</sup> New tools, including continuous glucose monitoring, can provide the data needed to raise standards of care.

Dr Martha Clokie, from the Department of Microbiology and Immunology, added: "Current tests for *C. difficile* don't generally give strain information - this test could allow doctors to see what strain was causing the illness and allow doctors to tailor their treatment."

Professor Andy Ellis, from the Department of Chemistry, said: "This work shows great promise. The different strains of *C-diff* have significantly different chemical fingerprints and with further research we would hope to be able to develop a reliable and almost instantaneous tool for detecting a specific strain, even if present in very small quantities."

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