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Rapid test to diagnose severe sepsis

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A new test, developed by University of British Columbia researchers, could help physicians predict within an hour if a patient will develop severe sepsis so they can begin treatment immediately.

Sepsis, a syndrome caused by infection, leads to organ failure and is responsible for up to five million deaths annually. There are 18 million cases of sepsis worldwide every year.

The discovery could cut back on the lengthy diagnostic time usually required to confirm if a patient is suffering from sepsis and increase the odds that they will respond to treatment.

"We identified a gene signature that is associated with the eventual diagnosis of sepsis and subsequent organ failure," says Bob Hancock, a professor in UBC's Dept. of Microbiology and Immunology who co-authored this study with John Boyd, a physician at St Paul's Hospital and an assistant professor at UBC. "We can test for this genetic signature as soon as the patient arrives in the emergency ward."

A typical diagnosis can take 24 to 48 hours but with this new test, physicians could start treating patients almost immediately.

The new test for the genetic signature, published recently in the journal EBioMedicine, would take as little as one hour and identified 96 per cent of patients who were at the very early stages of sepsis.

"With sepsis, every hour counts," says Hancock. "The treatment involves

aggressive antibiotics but the most potent drugs can't be administered until a diagnosis is confirmed because of the risk of antibiotic resistant bacteria."

The findings also reveal a potential misunderstanding about the disease. Until now sepsis has been treated as an inflammatory disease but more than 30 clinical trials of anti-inflammatory drugs for sepsis have failed. The gene signature identified by Hancock and his colleagues relates to a special type of immune suppression called cellular reprogramming and suggests that treating inflammation in sepsis is a bad idea.

More information: "An Endotoxin Tolerance Signature Predicts Sepsis and Organ Dysfunction at Initial Clinical Presentation," Olga M. Pena, David G. Hancock, Ngan H. Lyle, Adam Linder, James A. Russell, Jianguo Xia, Christopher D. Fjell, John H. Boyd, Robert E.W.Hancock, PII: S2352-3964(14)00005-X, DOI: DOI: 10.1016/j.ebiom.2014.10.003, Reference: EBIOM 4, To appear in: *EBioMedicine*

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