

Finding Could Reduce Antibiotic Use in Critically Ill Patients



Measuring the levels of a natural body chemical may allow doctors to reduce the duration of antibiotic use and improve the health outcomes of critically ill patients.

"Infection is a common and expensive complication of critical illness and we're trying to find ways to improve the outcomes of sick, elderly patients and, at the same time, reduce healthcare costs," says Daren Heyland, a professor of Medicine at Queen's, director of the Clinical Evaluation Research Unit at Kingston General Hospital, and scientific director of the Technology Evaluation in the Elderly Network.

Prolonged antibiotic exposure is associated with an increase in drug-resistant pathogens. It makes sense, according to Dr. Heyland, to examine ways in which we might make the duration of antibiotic treatment more precise without compromising patient outcome. Dr. Heyland and Queen's research colleagues John Muscedere (School of Medicine) and Ana Johnson (Department of Community Health and Epidemiology) conducted a review of five different studies and found that measuring levels of the chemical procalcitonin (PCT) may be an effective way to monitor the presence of an infection and guide the duration of antibiotic treatment. This is because levels of PCT in the body rise in response to an infection and fall in response to sufficient antibiotic treatment.

The researchers found that using PCT levels to guide antibiotic use means that a course of antibiotics can, on average, be reduced by two days without affecting patient health or length of stay in the intensive care unit. This reduction was also found to be associated with a \$470 saving per treatment course (\$CDN, 2009). Since infections like ventilator-associated pneumonia are fairly common in hospital intensive care units, this saving on individual treatment courses could translate into significant savings in overall health care costs. "This study is an example of the kind of technology evaluation that is so important to do, to inform clinicians and health care decision makers how to achieve best patient outcomes with the least costs," adds Dr. Johnson.

These findings were recently published in *Critical Care Medicine*. Dr. Heyland, Dr. Muscedere, and Dr. Johnson are leading a new initiative called the Technology Evaluation in the Elderly Network (TECH VALUE NET). More than 40 researchers from across Canada have come together to improve the care of seriously ill, elderly patients and their families through the development, evaluation and ethical implementation of a broad range of healthcare technologies.

The above story is reprinted (with editorial adaptations by ScienceDaily staff) from materials provided by Queen's University.

PHOTO: Daren Heyland is the scientific director of the Technology Evaluation in the Elderly Network (TECH VALUE NET) and is the lead author of a recent paper that suggests measuring the levels of a natural body chemical may allow clinicians to better guide antibiotic use. (Credit: Image courtesy of Queen's University)

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