# New study clarifies concerns regarding commonly used anti-nausea drug ondansetron

December 9 2013

For the past two years, warnings regarding the possible link between a commonly used anti-nausea and vomiting drug ondansetron and heart arrhythmias have been a source of uncertainty in emergency departments. New research from The Hospital for Sick Children (SickKids) and the University of Calgary's Alberta Children's Hospital Research Institute helps to clarify the actual risk of ondansetron administration and cardiac arrhythmias in both children and adults. The study is published in the December issue of *Annals of Emergency Medicine*.

In 2011, the Food and Drug Administration notified health-care professionals and patients of an ongoing safety review and labelling changes for the anti-nausea drug linking its use to the possibility of inducing abnormal and potentially fatal arrhythmias. The warning also implied that doctors needed to rule out conditions that might place patients at risk for developing an abnormal heart rhythm prior to giving patients the drug. Screening all patients for such conditions requires ECG monitoring and blood testing, which are associated with discomfort, delayed care and may lead to additional unnecessary investigations and anxiety. In 2012, the FDA issued an update linking the risk only to the administration of the drug in high doses intravenously. However, there was no change in the universal screening recommendations to all patients before receiving ondansetron, in any dose or route.

Following the FDA, Health Canada issued a similar communication (October 9, 2012), warning health professionals about the risk of high-dose intravenous ondansetron and recommending that physicians assess patients for risk factors before administering the drug.

Through an in-depth post-marketing analysis which included a systematic review of published literature, the FDA Adverse Events Reporting System and the World Health Organization Individual Safety Case Reports Database, Drs. Yaron Finkelstein and Stephen Freedman explored this association. They did not find any reports of arrhythmia related to the administration of a single oral dose of ondansetron, the most common administration route, employed in over 85 per cent of doses given to children in emergency departments.

"The non-targeted screening recommendations have potential for patient harm on multiple levels, including withholding an effective treatment, delay of care, additional unnecessary procedures and misdiagnoses," says the study's principal investigator, Dr. Yaron Finkelstein, staff physician in Paediatric Emergency Medicine and Clinical Pharmacology and Toxicology and Associate Scientist at SickKids. "Despite more than 22 years of use and hundreds of millions of ondansetron doses administered worldwide, we did not find evidence to support screening of patients without known risk factors before administering a single oral ondansetron dose." Dr. Finkelstein is also an Associate Professor of Paediatrics, Pharmacology and Toxicology at the University of Toronto.

Dr. Stephen Freedman, lead author and physician in Pediatric Emergency Medicine and Gastroenterology at the Alberta Children's Hospital and researcher at the University of Calgary Alberta Children's Hospital Research Institute. "This issue has caused significant uncertainty in the emergency medicine community where single oral dose of ondansetron administration is a routine event. I think these findings add significant clarity to the warnings issues by regulatory

authorities and can be employed to support current practice which does not include routine screening to search for high-risk patients." Dr. Stephen Freedman is also an associate professor at the University of Calgary.

The authors concluded that ECG screening and electrolyte testing should be targeted to patients with known risk factors such as patients with cardiac diseases or those concomitantly receiving other arrhythmia-inducing medications and those receiving ondansetron intravenously or repeated doses, while it is not warranted in low-risk individuals who are receiving a single oral dose.

Provided by University of Calgary