

Injection of opioids linked to significant increase in bacterial heart infections

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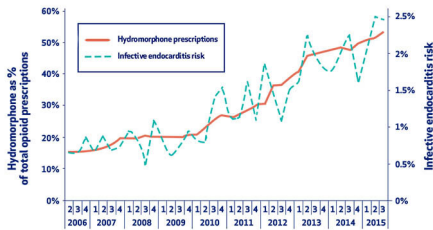
Findings suggest that rising risk of infective endocarditis among people who inject drugs parallels the timing of increased prescriptions for the opioid hydromorphone.

Researchers looked at de-identified Ontario health data for 60,500 hospital admissions related to injection drug use between 2006 and 2015.

Infective endocarditis is an infection of the inner lining of the heart that can be life-threatening. It can occur from re-using or sharing injection equipment.



ONTARIO RATES OF HYDROMORPHONE PRESCRIPTION AND INFECTIVE ENDOCARDITIS RISK



Weir MA et al. CMAJ. 2019.

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Findings suggest that rising risk of infective endocarditis among people who inject drugs parallels the timing of increased prescriptions for the opioid hydromorphone. Credit: ICES

People who inject drugs are at a high risk for a number of health issues. In a new study from ICES, Lawson Health Research Institute and Western University, researchers discovered a significant rise in the risk of infective endocarditis, a serious heart infection, among Ontarians who inject drugs. When examining opioid prescriptions in the province, the research team discovered the increased risk of infective endocarditis may be related to the growing use of a specific opioid, hydromorphone.

The researchers looked at de-identified Ontario health data for 60,529 hospital admissions related to injection drug use between 2006 and 2015. Of the 60,529 admissions, 733 patients had infective endocarditis. Although hospital admission rates in people who inject drugs were stable over the study period, the risk of infective endocarditis increased from 13.4 admissions to 35.1 admissions every three months.

"Rates of infective endocarditis in people who inject drugs have been increasing around the world and our study shows this is true in Ontario," says Dr. Matthew Weir, adjunct scientist at ICES, associate scientist at Lawson and assistant professor at Schulich School of Medicine & Dentistry, Western University. "We wondered if a change in the types of drugs people inject was responsible for this higher risk."

Through further analysis of Ontario health data, the team discovered the increasing risk of infective endocarditis may be linked to a rise in prescriptions of the opioid hydromorphone. The number of hydromorphone prescriptions in Ontario increased from 16 per cent of all opioid prescriptions in 2006 to 53 per cent by 2015. This parallels the timing for increased risk of infective endocarditis among people who inject drugs.

The researchers initially suspected the increased risk for infective endocarditis would begin when controlled-release oxycodone was removed from the market in 2011.



Equipment used by people who inject drugs. Credit: Lawson Health Research Institute

"We thought hydromorphone prescriptions would increase when controlled-release oxycodone was removed from the market, leading to increased risk of heart infection," says Dr. Michael Silverman, associate scientist at Lawson and associate professor at Schulich Medicine & Dentistry. "However, while the study did show a substantial increase in risk for infective endocarditis, it began in 2010."

Traditional controlled-release oxycodone was easily dissolvable and people who inject drugs did not save or reuse their injection equipment. Controlled-release hydromorphone, the more common form of the drug, is more difficult to dissolve. Since residue of the drug gets left in injection equipment, injection drug users save the equipment for future use or to share with others. Reusing injection equipment allows multiple opportunities for bacterial contamination, increasing the chances that bacteria will be injected when the equipment is next used.

Infective endocarditis occurs when the inner lining of the heart becomes infected. It can be a life-threatening illness and research suggests it can be caused by sharing or re-using injection equipment, possibly through the injection of bacteria.

"While the timing was not what we expected, we did find a correlation between the rise in infective endocarditis and hydromorphone prescriptions," says Dr. Sharon Koivu, Lawson scientist and associate professor at Schulich Medicine & Dentistry. "Our research is now focused on better understanding the potential relationship between the injection of hydromorphone and risk of infective endocarditis."

The team is conducting ongoing studies that are looking at whether bacteria that cause infective endocarditis are more likely to survive in equipment used to prepare hydromorphone compared to other drugs.

"The opioid crisis is one of the most pressing health issues of our time. Our findings not only confirm an increasing risk of infective endocarditis in persons who inject drugs but also offer the first evidence for why it might be happening," says Dr. Weir. "Through research and collaboration, we hope to

further collect the evidence needed to address this global problem."

More information: Matthew A. Weir et al, The risk of infective endocarditis among people who inject drugs: a retrospective, population-based time series analysis, *CMAJ* (2019). www.cmaj.ca/lookup/doi/10.1503/cmaj.180694

Provided by Lawson Health Research Institute

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