

Controlled-release opioid may be leading to heart infections in persons who inject drugs

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

A new study from ICES, Lawson Health Research Institute and Western University suggests that injection drug users prescribed controlled-

release hydromorphone are three times more likely to develop endocarditis, a serious bacterial heart infection, when compared to those prescribed other opioids. The findings, published today in *The Lancet Infectious Diseases*, build on growing evidence that some controlled-release opioids may lead to higher risk of infectious disease among persons who inject drugs.

The researchers looked at de-identified Ontario health data for hospital admissions related to [injection drug use](#) between 2006 and 2015. Of 60,529 admissions, 733 patients had infective endocarditis. The team found that regions with high [hydromorphone](#) prescription rates had more than double the cases of infective endocarditis (254 cases) when compared to regions with low prescription rates (113 cases).

The study also analyzed individual prescription records and found that among persons who inject drugs, those prescribed controlled-release hydromorphone were three times more likely to develop infective endocarditis when compared to those prescribed any other [opioid](#). There was no increased risk for those prescribed the immediate-release form of hydromorphone.

"Added to the existing data, these findings make a compelling argument for the role of controlled-release hydromorphone in the growing risk of [infective endocarditis](#) among persons who inject drugs," says Dr. Matthew Weir, Adjunct Scientist at ICES, Associate Scientist at Lawson and Assistant Professor at Western's Schulich School of Medicine & Dentistry.

Opioids are often manufactured as controlled-release or 'slow-release' capsules to prevent rapid absorption of the drug. Properties in the capsules help to spread pain relief over a longer period of time.

This is the latest in a series of studies from the research team that

suggest some controlled-release opioids may be leading to [increased risk](#) of infectious disease among persons who inject drugs.

In one study, they demonstrated that polymer-coated beads used to provide the slow-release property make controlled-release hydromorphone difficult to dissolve. They found equipment used to dissolve the drug retains up to 45 per cent of the initial dose, leading injection drugs users to save and reuse equipment.

With frequent re-handling of equipment, there are multiple opportunities for bacterial and viral contamination. The team found that HIV and a dangerous bacterium called *Staphylococcus aureus* are more likely to survive in equipment used to prepare controlled-release hydromorphone since added chemicals that make the drug slow-release promote survival of bacteria and viruses.

"There's been a global increase in infectious diseases among persons who inject drugs and our research suggests that controlled-release prescription opioids may be a major culprit," says Dr. Michael Silverman, Associate Scientist at Lawson and Associate Professor at Schulich Medicine & Dentistry. "We now have evidence that suggests the injection of controlled-release hydromorphone is increasing the spread of HIV, hepatitis C and endocarditis in Canada."

The team believes these findings could also explain the increase in infectious complications in the USA and other countries where controlled-release hydromorphone is not on the market. There are other controlled-release opioids, such as controlled-release morphine, that use a similar slow-release mechanism and may carry similar risks.

"It's important that people are aware of the infectious risks of injecting opioids and, if necessary, practice harm reduction techniques," says Dr. Silverman. "We've found you can use a cigarette lighter to destroy

bacteria and viruses by heating the cooker used to prepare the [drug](#) for about 10 seconds or until the mixture bubbles. We've termed the technique 'cook your wash.'"

More information: *Lancet Infectious Diseases* (2020). [DOI: 10.1016/S1473-3099\(19\)30705-4](#)

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