

## **Age- and chronic disease-specific associations between opioid agonist treatment and opioid overdose death: Cohort study using linked administrative health data in New South Wales, Australia, 2001-2018**

### **Authors:**

Larney S,<sup>1</sup> Jones N,<sup>2</sup> Nielsen S,<sup>3</sup> Hickman M,<sup>4</sup> Ali R,<sup>5</sup> Dobbins T,<sup>6</sup> Degenhardt L<sup>2</sup>

<sup>1</sup>Department of Family Medicine and Emergency Medicine, Université de Montréal

<sup>2</sup>National Drug and Alcohol Research Centre, University of NSW

<sup>3</sup>Monash Addiction Research Centre, Monash University

<sup>4</sup>Bristol Medical School, University of Bristol

<sup>5</sup>Medical Sciences, University of Adelaide

<sup>6</sup>School of Population Health, University of NSW

**Background:** Opioid agonist treatment (OAT) protects against opioid overdose mortality. In many countries, the OAT population is aging, with concomitant increases in chronic diseases that may increase overdose risk. We tested whether OAT protects against overdose death for clients who are older or have chronic diseases.

**Methods:** The sample included all people prescribed OAT, 2001-2018, with linkage of OAT, mortality, and hospitalisation records. Age groups were <30 years, 30-39 years, 40-49 years, and ≥50 years. Opioid overdose deaths and hospitalisations for chronic respiratory, circulatory, kidney, and liver diseases were defined using ICD-10 codes. We developed generalised estimating equation models of overdose mortality rates in and out of treatment, and compared buprenorphine and methadone, for different age groups and in people with each category of disease.

**Results:** Among 45,664 OAT clients, there were 1,279 opioid overdose deaths. For all age groups, being in OAT was associated with reduced risk of opioid overdose death relative to no OAT, with no evidence of a difference between methadone and buprenorphine, including in older age groups (adjusted RR buprenorphine relative to methadone ≥50 years: 0.59, 95% CI: 0.27, 1.30). Among people with systemic diseases, being in OAT was safer than not being in OAT. During OAT, fatal overdose was significantly lower during treatment with buprenorphine relative to methadone for people with circulatory (adjusted RR: 0.47, 95% CI: 0.23, 0.97) and respiratory (adjusted RR: 0.32, 95% CI: 0.12, 0.84) diseases. For people with liver or kidney disease, there was no evidence of a significant difference between buprenorphine and methadone in overdose mortality rates.

**Conclusion:** OAT produces significant reductions in opioid overdose mortality risk in older clients, but comorbidities should be taken into account in determining the appropriate treatment. Buprenorphine may be preferable to methadone for reducing opioid overdose mortality in clients with respiratory or circulatory disease.

### **Disclosure of Interest Statement:**

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