

Appendix 1 (as supplied by the authors): Supplementary tables

Supplementary Table S1. Description of Ontario health administrative data sources included in this study

Database	Description
Continuing Care Reporting System Long-Term Care (CCRS-LTC) database	The CCRS-LTC database is comprised of mandatory, clinical assessments performed on all nursing home residents in Ontario. Nursing home assessments are made using the Resident Assessment Instrument Minimum Data Set (RAI-MDS) version 2.0, a previously validated tool. ^{1,2} Full assessments are completed on admission, annually, and following a significant health status change by trained medical personnel.
Ontario Drug Benefit (ODB) program database	The ODB database contains prescription medication claims for those covered under the provincial drug program, mainly those aged 65 years and older, nursing home residents, and those receiving social assistance. Each medication claim has an associated prescriber identifier which indicates the health practitioner who wrote the prescription. A special flag in the ODB database indicates whether the prescription was dispensed in the community or nursing home setting. An audit of 5,155 randomly selected prescriptions dispensed from 50 Ontario pharmacies determined that the ODB had an error rate of 0.7% and none of the pharmacy characteristics examined (locations, owner affiliation, productivity) were associated with coding errors. ³
Registered Persons Database (RPDB)	The RPDB provides basic demographic information (age, sex, area of residence, date of birth, and date of death for deceased individuals) about anyone who has ever received an Ontario health card number (e.g., been enrolled in the province's publicly funded health insurance system).

References

1. Kim H, Jung YI, Sung M, Lee JY, Yoon JY, Yoon JL: Reliability of the interRAI Long Term Care Facilities (LTCF) and interRAI Home Care (HC). *Geriatr Gerontol Int* 2015; 15: 220-8
2. Mor V: A comprehensive clinical assessment tool to inform policy and practice: applications of the minimum data set. *Med Care* 2004; 42: III50-III59
3. Levy AR, O'Brien BJ, Sellors C, Grootendorst P, Willison D: Coding accuracy of administrative drug claims in the Ontario Drug Benefit database. *Can J Clin Pharmacol* 2003; 10: 67-71

Morphine Sulfate	Long-acting	50mg 10mg 15mg 20mg 30mg 50mg 60mg 100mg 200mg
Oxycodone		
Oxycodone HCL	Short-acting	5mg 10mg 20mg
Oxycodone HCL + Acetaminophen	Short-acting combination	5mg
Oxycodone HCL + Acetylsalicylic Acid	Short-acting combination	5mg
Oxycodone HCL	Long-acting	10mg 15mg 20mg 30mg 40mg 60mg 80mg
Other		
Meperidine HCL	Short-acting	50mg 75mg 100mg
Methadone HCL ^a		1mg 5mg 10mg 25mg

Abbreviations: mg = milligrams; mcg/hr = micrograms per hour

a - Prescribed for pain purposes

Supplementary Table S3. Morphine conversion ratios^a used to express opioid prescriptions into milligrams of morphine equivalents (MMEs)

Opioid medication	Morphine conversion ratio (Opioid : MME)
Codeine	1mg : 0.15mg
Hydromorphone	1mg : 5mg
Morphine	1mg : 1mg
Oxycodone	1mg : 1.5mg
Fentanyl ^b	If 25 mcg/hr prescribed : 97mg If 50 mcg/hr prescribed : 202mg If 75 mcg/hr prescribed : 292mg If 100 mcg/hr prescribed : 382mg
Meperidine	1mg : 0.1mg
Methadone ^c	Dose conversions have not been reliably established and users for this medication would not receive a MME estimate. However, this medication comprised less than 0.1% of all opioid medications prescribed to the study population

Abbreviations: mg = milligrams; mcg/hr = micrograms per hour; MME = Milligrams of Morphine Equivalents

a – Adapted from: National Opioid Use Guideline Group. *Canadian guidelines for safe and effective use of opioids for chronic non-cancer pain*. Hamilton, ON: McMaster University; 2010. Available: http://nationalpaincentre.mcmaster.ca/opioid_2010/ (accessed 2017 December 15).

b – By using the days supplied and quantity field in ODB, we can estimate the length of time that an individual was wearing a fentanyl patch. This is calculated as the days supplied by the quantity field. If this value equals 2, we assume that the individual is using a patch for 2 days. In all other cases, we assume an individual is using a patch for 3 days.

c - Prescribed for pain purposes