

Supplementary Materials

Table A.1. ICD Codes for Opioid- and Drug-related Mortality: 3 measures

1. Preferred measure of opioid-related mortality used in this study, including unclassified drug overdoses.

ICD-9 codes:

Underlying cause of death:

- 304.0            Opioid type dependence
- 304.7            Combinations of opioid type drug with any other drug dependence
- 304.9            Unspecified drug dependence
- 305.5            Nondependent opioid abuse
- 305.9            Nondependent other mixed or unspecified drug abuse

- OR -

Contributing cause of death:

- 965.0            Poisoning by opiates and related narcotics
- 977.9            Poisoning by unspecified drug or medicinal substance

Combined with one or more of:

- E850–E858      Accidental poisoning by drugs, medicinal substances, and biologicals
- E950.0–E950.5 Suicide and self-inflicted poisoning by drugs
- E980.0–E980.5 Poisoning by drugs, undetermined whether accidentally or purposely inflicted

**ICD-10 codes:**

Underlying cause of death:

F11            Opioid-related disorders

Or any of:

- X40-X44      Accidental poisonings by drugs
- X60-X64      Intentional self-poisoning by drugs
- Y10-Y14      Drug poisoning of undetermined intent

Combined with one or more of contributing causes

- T40.0-T40.4    Poisoning by, adverse effect of, and underdosing of opium, heroin, other opioids, methadone, and other synthetic narcotics
- T40.6            Poisoning by, adverse effect of, and underdosing of other and unspecified narcotics
- T50.9            Poisoning by, adverse effect of ,and underdosing of other and unspecified drugs, medicaments and biological substances

**2. Preferred measure of opioid-related mortality but excluding unclassified drug overdoses****ICD-9 codes:**

Underlying cause of death:

- 304.0            Opioid type dependence
- 304.7            Combinations of opioid type drug with any other drug dependence
- 305.5            Nondependent opioid abuse

- OR -

Contributing cause of death:

- 965.0            Poisoning by opiates and related narcotics

Combined with one or more of:

- E850–E858    Accidental poisoning by drugs, medicinal substances, and biologicals
- E950.0–E950.5 Suicide and self-inflicted poisoning by drugs
- E980.0–E980.5 Poisoning by drugs, undetermined whether accidentally or purposely inflicted

**ICD-10 codes:**

Underlying cause of death:

F11            Opioid-related disorders

Or any of:

- X40-X44      Accidental poisonings by drugs
- X60-X64      Intentional self-poisoning by drugs
- Y10-Y14      Drug poisoning of undetermined intent

Combined with one or more of contributing causes:

- T40.0-T40.4    Poisoning by, adverse effect of and underdosing of opium, heroin, other opioids, methadone, and other synthetic narcotics
- T40.6            Poisoning by, adverse effect of and underdosing of other and unspecified narcotics

3. All drug-related mortality

ICD-9 codes:

Underlying cause of death:

304.0-304.9	Drug dependence
305.2-305.9	Nondependent abuse of drugs excluding tobacco and alcohol
E850–E858	Accidental poisoning by drugs, medicinal substances, and biologicals
E950.0–E950.5	Suicide and self-inflicted poisoning by drugs
E980.0–E980.5	Poisoning by drugs, undetermined whether accidentally or purposely inflicted

ICD-10 codes:

Underlying cause of death:

F11	Opioid-related disorders
X40-X44	Accidental poisonings by drugs
X60-X64	Intentional self-poisoning by drugs
Y10-Y14	Drug poisoning of undetermined intent

**TABLE A.2. Competing Risks Mortality Estimates, Opioid-related Deaths including Unknown Drugs, Washington State Injured Workers, 1994-2000 Injuries, Before QBA, Stratified by Age<sup>a</sup>**

	Men		Women	
	Subhazard Ratio	95% Confidence Interval	Subhazard Ratio	95% Confidence Interval
<b>Lost-time Injury<sup>b</sup></b>	1.53	1.41-1.66	1.31	1.16 - 1.48
<b>Earnings, Year Before Injury (2007 \$)</b>				
\$0 - \$9,999 (Reference Group)	--	--	--	--
\$10,000 - \$19,999	0.56	0.50 - 0.62	0.54	0.46 - 0.64
\$20,000 - \$29,999	0.22	0.19 - 0.26	0.60	0.51 - 0.71
\$30,000 - \$39,999	0.25	0.21 - 0.29	0.40	0.32 - 0.50
\$40,000- \$49,999	0.31	0.27 - 0.37	0.44	0.34 - 0.58
\$50,000-\$59,999	0.28	0.23 - 0.33	0.20	0.12 - 0.33
\$60,000-\$69,999	0.22	0.18 - 0.29	0.21	0.11 - 0.39
\$70,000 +	0.13	0.10 - 0.18	0.32	0.18 - 0.57
<b>Industry</b>				
Agriculture, Fisheries, Forestry,	0.97	0.77 - 1.22	0.53	0.33 - 0.85
Construction	0.89	0.75 - 1.06	0.69	0.42 - 1.15
Durable Manufacturing	0.82	0.68 - 0.99	1.03	0.74 - 1.43
Finance, Insurance, Real Estate	0.65	0.44 - 0.96	0.91	0.62 - 1.33
Government	1.21	0.96 - 1.51	0.57	0.38 - 0.87
Health Services	1.51	1.16 - 1.97	0.80	0.60 - 1.08
Law, Education, Social Services	0.42	0.31 - 0.57	0.59	0.44 - 0.80
Mining	0.00	0.00 - 0.00	4.15	1.17 - 14.64
Nondurable Manufacturing	0.66	0.53 - 0.81	0.33	0.21 - 0.52
Retail Trade	0.93	0.78 - 1.11	0.62	0.47 - 0.82
Services	1.06	0.89 - 1.28	0.75	0.56 - 1.02
Transportation, Communication, Public Utilities	0.81	0.65 - 1.00	0.68	0.46 - 1.02
Wholesale Trade (Reference group)	--	--	--	--

<sup>a</sup> Stratifying by age allows for a different baseline hazard for each age group, but no hazard ratios are estimated for age groups. All observations are weighted to account for sampling.

<sup>b</sup> Lost-time cases have more than 3 days lost from work or permanent disability benefits. Medical-only cases have 3 or fewer days lost from work and no permanent disability benefits.

**Table A.3. Percent with Pre-injury Extramedical Opioid Use, MarketScan® Data, 2004-2014**

	Men, N=168,875		Women, N=88,493	
	Lost-Time Injury	Medical-only Injury	Lost-Time Injury	Medical-only Injury
Full sample	0.24%	0.28%	0.12%	0.12%
Propensity score matched sample	0.24%	0.14%	0.12%	0.06%

<sup>a</sup>We used 3-to-1 matching of medical-only injuries to lost-time injuries within gender, with propensity scores based on age, industry, and year of injury.