

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^a

	Men		Women	
	Subhazard Ratio	95% Confidence Interval	Subhazard Ratio	95% Confidence Interval
Lost-time Injury^b	1.53	1.41-1.66	1.31	1.16 - 1.48
Earnings, Year Before Injury (2007 \$)				
\$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
Industry				
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)	--	--	--	--

^a 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.

^b 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%

^aWe 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.