**This material supplements, but does not replace, the peer-reviewed paper in Drug and Alcohol Dependence**

**Supplemental Tables**

1. Table 1. Heroin Overdose Codes
2. Table 2. Pain Diagnosis Codes
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Table 1. Heroin Overdose Codes

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| --- | --- | --- |
| **ICD Version** | **Diagnosis** | **Description** |
| ICD-9-CM | 965.01 | Poisoning by heroin |
| E850.0 | Accidental poisoning by heroin |
| ICD-10-CM | T40.1X1A | Poisoning by heroin, accidental (unintentional), initial encounter |
| T40.1X4A | Poisoning by heroin, undetermined, initial encounter |

Table 2. Pain Diagnosis Codes

|  |  |  |
| --- | --- | --- |
| **Pain Diagnosis** | **ICD-9-CM Diagnosis Codes** | **ICD-10-CM Diagnosis Codes** |
| Abdominal pain | 530.0-530.83, 530.86-535.71, 536.4x, 536.8-536.9, 537.1-537.4, 537.9-542, 550.x-552.x, 555.0-556.3, 556.5-560.9, 562.01, 562.03, 562.11, 562.13, 564.1, 564.4, 564.7, 565.x-568.x, 569.41-569.42, 569.5-569.83, 571.6, 572.0, 573.4, 574.x-575.2, 575.4, 576.1-576.5, 577.0-577.2, 592.0-592.9, 620.2, 789.0x | J86, K20.0-K22.9, K25.0-K29.91, K30, K31.4-K31.6, K31.89-K31.9, K35.2-K37, K40.0-K46.1, K50.0-K5.9, K55.0-K55.1, K55.9-K56.7, K57.12-K57.33, K58.9, K9.3, K60.2-K63.3, K65.0-K68.9, K74.3-K75.0, K80.00-K80.71, K81.0-K82.0, K82.2, K83.0-K83.4, K85, K86.1-K86.3, K91.850, K81.858, K91.81, K94.0, K94.20-K94.33, K95.01, K95.09, K96.81, K95.89, L76.3, N20.0, R10.10-R10.13, R10.2, R10.30-R10.33, R10.84, R10.9, R18.8 |
| Back and neck pain | 720.x-724.x, 737.0-737.43, 737.8, 737.9, 738.4-738.5, 739.1-739.3 | A18.01, M08.1, M25.78, M40.0-M40.15, M40.202-M40.299, M40.30-M40.57, M41.00-M41.9, M43.00-M46.28, M43.6, M43.8-M43.9, M45.0-M46.99, M47.011-51.9, M53.0-M54.9, M62.830, M67.88, M95.3, M96.1-M96.5, M99.01-M99.84 |
| Cancer and cancer pain | 140.x-239.x, 338.3 | C00.x-D49.x, G89.3 |
| Chest pain | 413.0-413.9, 786.50-786.59 | I20.1, I20.8, I20.9, R07.1, R07.2, R07.81-R07.9 |
| General chronic pain | 307.89, 338.29, 338.4 | F45.42, G89.29, G89.4 |
| Headache | 307.81, 339.x, 346.x, 784.0 | G43.x-G44.x, R51 |
| Injuries and acute pain | 338.11-338.28, 733.81-733.82, 733.93-733.98, 800.0-908.9, 909.2-909.9, 910.0-949.9, 950.0-951.9, 952.0-957.9, 958.0-958.3, 958.6-958.8, 959.91-959.99 | G89.11-G89.18, G89.21-G89.28, M80.00-M80.88, M84.30-M84.68, R52, S00.0-S04.0, S04.3, S04.5, S04.8, S04.9, S05.0-S99.9, T07, T14-T34, T79.0-T79.3, T79.6-T79.9, T80-T88.6, T88.7XXA, T88.7XXD, T88.8-T88.9 |
| Other musculoskeletal pain | 710.0-719.99, 725.0-729.99, 731.0-736.9,738.0-738.9 | A18.02-A18.09, A52.16, E08.610, E08.618, E09.610, E09.618, E10.610, E10.618, E11.610, E11.618, E13.610, E13.618, M00.00-M00.29, M00.80-M00.9, M01.X0-M02.9, M05.00-M06.9, M07.60-M07.69, M08.00-M08.99, M11.00-M11.29, M11.80-M13.89, M14.60-M14.69, M14.80-M25.9, M32.0-M36.8, M42.00-M43.5, M48.50-M48.58, M53.2-M54.18, M60.000-M60.28, M60.80-M62.28, M62.3, M62.40-M62.49, M62.81-M63.89, M65.00-M72.9, M75.00-M77.9, M79.0-M80.88, M84.40-M85.9, M87.00-M89.9, M90.50-M95.9, M99.80-M99.9, Q68.6, R25.2, R26.2, R29.4, R29.898 |
| Neuropathic pain | 337.00, 337.09, 337.1, 338.0, 350.2, 354.0, 355.0-357.9, 377.00-377.9, 723.4, 729.2 | A52.15, E08.40-E08.42, E09.40-E09.42, E10.40-E10.42, E11.40-E11.42, E13.40-E13.42, G13.0, G13.1, G50.1, G56.0-G56.42, G57.0-G57.9, G60.0, G60.2-G600.9, G61.1, G61.89, G61.9, G62.0-G62.9, G63.x, G64.x, G65.0-G65.2, G89.0, G90.09, G99.0, H46.x, H47.01x, M05.51-M05.59, M34.83, M54.1, M79.2 |

Table 3. Medical and Psychiatric Diagnosis Codes

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| --- | --- | --- |
| **Diagnosis** | **ICD-9-CM Diagnosis Codes** | **ICD-10-CM Diagnosis Codes** |
| **Mental health disorders** |  |  |
| Anxiety disorder | 300.0x | F41.x-F42.x |
| Mood disorder | 296.x, 300.4, 311 | F30.x-F39 |
| Schizophrenic disorder | 295.x | F20.x, F21, F25.x |
| Other nonpsychotic mental health disorders | 300.1x-300.3, 300.5-300.9 | F40.x, F44.x-F48.x |
| **Physical health diseases** |  |  |
| Infectious diseases | 042, 070.41, 070.44, 070.51, 070.54, 070.70-070.71 | B17.1x, B18.2, B19.2x, B20, B97.35 |
| Obstructive pulmonary disorder | 491.22, 493.21, 491.21, 493.22, 491.20, 493.20, 496 | J44.x |
| Renal failure | 586, 539.3, 669.30-669.34 | N17.0-N19.9, N19, O03.32, O03.82, O04.82, O07.32, O08.4, O90.4, P96.0 |
| Sleep apnea | 327.20-327.21, 327.23, 327.27, 327.29, 780.51, 780.53, 780.57 | G47.30-G47.31, G47.33, G47.37-G47.39 |
| **Substance use disorders** |  |  |
| Alcohol use disorder | 303.x, 305.0x | F10.1x-F10.2x, |
| Cannabis use disorder | 304.3x, 305.2x | F12.1x-F12.2x |
| Cocaine use disorder | 304.2x, 305.6x | F14.1x-F14.2x |
| Opioid use disorder | 304.0x, 304.7x, 305.5x | F11.1x-F11.2x |
| Sedative, hypnotic or anxiolytic substance use disorder | 304.1x, 305.4x | F13.1x-F13.2x |
| Other substance use disorder | 304.4x-304.6x, 304.8x-304.9x, 305.3x, 305.7x-305.9x | F15.1x-F15.2x, F16.1x-F16.2x, F18.1x-F18.2x, F19.1x-F19.2x, |
| **Non-heroin overdoses** |  |  |
| Non-heroin opioid overdose | 965.00, 965.02, 965.09, E850.01-E850.02 | T40.0X1, T40.0X4, T40.2X1, T40.2X4, T40.3X1, T40.3X4, T40.4X1, T40.4X4, T40.601A, T40.604A, T40.691A, T40.694A |
| Other and unspecified overdoses | 960.0-964.9, 965.1-979.9, E850.03-E858.9, E980.1-E980.5 | T36.0-T39.0 with 6th character = 1 or 4; T40.5 with 6th character = 1 or 4; T47.0-T50.0 with 6th character = 1 or 4 |
| **Suicidality** |  |  |
| Suicidal ideation | V62.84 | R45.851 |
| Suicide or self-harm | E950.0-E959 | X71-X83; T36.0-T36.8, T37.0-T39.8, T40.0-T41.3, T41.5-T42.6, T42.8-T43.8, T44.0-T45.8, T46.0-T47.8, T48.0-T49.8 with 6th character = 2; T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, T49.9 with 5th character = 2; T51.0-T51.8, T52.0-T52.8, T53.0-T53.8, T54.0-T54.8, T55.0-T56.8, T57.0-T57.8, T58.2-T58.8, T59.0-T59.8, T60.0-T60.8, T61.2-T61.8, T62.0-T62.8, T63.0-T63.8, T64.1-T64.7, T64.9-T65.8 with 6th character = 2; T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0, T61.1, T61.9, T62.9, T63.9, T64.0, T64.8, T65.9 with 5th character code = 2 T71 with 6th character = 2;  T14.91 |

Table 4:

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| --- | --- | --- | --- | --- | --- | --- |
| **Table 4. Sociodemographic Characteristics of Patients Treated for Heroin Overdose, U.S.**  **(January 2010 – June 2017)** | | | | | | |
| **Characteristic** | **All patients with an overdose event** | | **Patients with 1 year of continuous enrollment prior to overdose event** | | **Patients with less than 1 year of continuous enrollment prior to overdose event** | |
| **N (%)** | **Rate per 100,000 person-years (95% CI)** | **N (%)** | **Rate per 100,000 person-years (95% CI)** | **N (%)** | **Rate per 100,000 person-years (95% CI)** |
| Overall | 5460 | 5.72 (5.66-5.78) | 3183 | 4.20 (4.13-4.27) | 2277 | 32.68 (32.64-32.73) |
| Sex |  |  |  |  |  |  |
| Male | 3856 (70.6) | 8.32 (8.23-8.41) | 2228 (70.0) | 6.11 (6.01-6.22) | 1628 (73.1) | 46.50 (46.42-46.57) |
| Female | 1604 (29.4) | 3.27 (3.18-3.36) | 955 (30.0) | 2.43 (2.33-2.53) | 649 (29.1) | 18.73 (18.68-18.77) |
| Age, years |  |  |  |  |  |  |
| 18 to 25 | 2618 (47.9) | 28.81 (28.61-29.02) | 1694 (53.3) | 21.3 (21.08-21.52) | 924 (41.5) | 86.81 (86.63-86.99) |
| 26 to 35 | 1119 (20.5) | 8.67 (8.18-9.19) | 471 (14.8) | 3.67 (3.35-4.02) | 648 (29.1) | 35.44 (35.35-35.53) |
| 36 to 45 | 561 (10.3) | 4.12 (3.79-4.48) | 291 (9.1) | 2.15 (1.92-2.41) | 270 (12.1) | 20.76 (20.68-20.84) |
| 46 to 55 | 531 (9.7) | 3.66 (3.36-3.98) | 309 (9.7) | 2.13 (1.91-2.39) | 222 (10.0) | 19.86 (19.78-19.95) |
| Over 55 | 631 (11.6) | 1.87 (1.73-2.02) | 416 (13.1) | 0.69 (0.60-0.78) | 215 (9.7) | 15.20 (15.14-15.27) |
| Mean (SD) | 33.49 (14.46) |  | 33.42 (15.12) |  | 33.55 (13.53) |  |
| Race |  |  |  |  |  |  |
| Asian | 38 (0.7) | 0.92 (0.62-1.23) | 27 (0.8) | 0.81 (0.47-1.15) | 11 (0.5) | 3.98 (3.90-4.05) |
| Black | 400 (7.3) | 4.86 (4.65-5.08) | 265 (8.3) | 3.98 (3.74-4.22) | 135 (6.1) | 19.91 (19.80-20.02) |
| Hispanic | 376 (6.9) | 3.73 (3.54-3.93) | 232 (7.3) | 2.9 (2.68-3.12) | 144 (6.5) | 17.95 (17.86-18.05) |
| White | 3605 (66.0) | 5.96 (5.88-6.04) | 2383 (74.9) | 4.81 (4.72-4.89) | 1222 (54.9) | 33.86 (33.79-33.92) |
| Unknown | 1041 (19.1) | 8.33 (8.15-8.50) | 276 (8.7) | 3.35 (3.14-3.57) | 765 (34.4) | 47.76 (47.65-47.87) |
| Census Division |  |  |  |  |  |  |
| East North Central | 1417 (25.9) | 10.43 (10.26-10.59) | 826 (26.0) | 7.69 (7.50-7.88) | 591 (26.5) | 66.38 (66.21-66.55) |
| East South Central | 281 (5.1) | 8.04 (7.71-8.37) | 145 (4.6) | 5.52 (5.13-5.90) | 136 (6.1) | 38.74 (38.53-38.95) |
| Middle Atlantic | 555 (10.2) | 8.46 (8.22-8.7) | 316 (9.9) | 5.97 (5.70-6.24) | 239 (10.7) | 53.88 (53.66-54.1) |
| Mountain | 442 (8.1) | 4.77 (4.57-4.98) | 280 (8.8) | 3.77 (3.54-4.00) | 162 (7.3) | 25.20 (25.08-25.33) |
| New England | 291 (5.3) | 9.56 (9.21-9.92) | 166 (5.2) | 6.61 (6.22-7.00) | 125 (5.6) | 70.90 (70.51-71.3) |
| Pacific | 386 (7.1) | 3.20 (3.02-3.38) | 244 (7.7) | 2.44 (2.25-2.64) | 142 (6.4) | 20.21 (20.10-20.31) |
| South Atlantic | 1181 (21.6) | 5.31 (5.18-5.44) | 669 (21.0) | 3.8 (3.65-3.95) | 512 (23.0) | 30.93 (30.84-31.02) |
| West North Central | 503 (9.2) | 5.22 (5.02-5.42) | 309 (9.7) | 3.99 (3.77-4.22) | 194 (8.7) | 34.85 (34.69-35) |
| West South Central | 391 (7.2) | 2.75 (2.59-2.92) | 220 (6.9) | 2.04 (1.85-2.22) | 171 (7.7) | 12.27 (12.21-12.32) |
| Unknown | 14 (0.3) | 1.03 (0.5-1.56) | 8 (0.3) | 0.74 (0.14-1.33) | 6 (0.3) | 3.87 (3.78-3.97) |
| Plan Type |  |  |  |  |  |  |
| Commercial | 4426 (81.1) | 6.11 (6.04-6.19) | 2551 (80.1) | 4.69 (4.61-4.78) | 1875 (84.2) | 29.81 (29.76-29.85) |
| All Medicare | 1034 (18.9) | 4.57 (4.30-4.86) | 632 (19.8) | 2.80 (2.59-3.03) | 402 (18.1) | 58.22 (58.04-58.40) |
| Medicare, age <65 | 843 (15.4) | 30.33 (29.96-30.7) | 514 (16.1) | 19.78 (19.39-20.16) | 329 (14.8) | 227.94 (227.15-228.73) |
| Medicare, age 65+ | 191 (3.5) | 0.96 (0.82-1.1) | 118 (3.7) | 0.63 (0.48-0.77) | 73 (3.3) | 13.28 (13.18-13.38) |