**Supplemental Appendix for:**

**Characterizing initiation, use, and discontinuation of extended-release buprenorphine in a nationally representative United States commercially insured cohort**

MORGAN Jake R., PhD a

WALLEY Alexander Y., MD, MSc b

MURPHY Sean M., PhD c

CHATTERJEE Avik, MD b

HADLAND Scott E., MD, MPH d e

BAROCAS Joshua, MD b

LINAS Benjamin P., MD, MPH b f

ASSOUMOU, Sabrina A, MD, MPH b g

a Department of Health Law, Policy, and Management, Boston University School of Public Health, Boston, MA, USA;

b Grayken Center for Addiction, Clinical Addiction Research and Education Unit, Section of General Internal Medicine, Department of Medicine, Boston Medical Center and Boston University School of Medicine, Boston, MA, USA;

c Department of Population Health Sciences, Weill Cornell Medical College, New York, NY, USA;

d Grayken Center for Addiction, Division of General Pediatrics, Department of Medicine, Boston Medical Center, Boston, MA, USA;

e Division of General Pediatrics, Department of Pediatrics, Boston University School of Medicine, Boston, MA, USA;

f Department of Epidemiology, Boston University School of Public Health, Boston, MA, USA.

g Department of Medicine, Section of Infectious Diseases, Boston University School of Medicine, Boston, MA, USA;

**Defining medications for opioid use disorder**

|  |  |  |
| --- | --- | --- |
|  | NationaL drug codes | Current Procedural Terminology or Healthcare Common Procedural Coding System codes |
| Extended-release buprenorphine | 12496030001, 12496030002, 12496030005, 12496010001, 12496010002, 12496010005 | Q9991, Q9992 |
| Extended-release naltrexone | 65757030001, 63459030042 | J2315 |
| Methadone |  | H0020 |
| Buprenorphine with or without  naloxone | 59385001201, 59385001401, 59385001630, 59385001601, 59385001230, 59385001430, 54569640800, 00228315403, 00228315503, 00228315473, 00228315573, 53217013830, 65162041603, 65162041503, 42291017530, 42291017430, 60429058730, 60429058630, 50383028793, 50383029493, 00406192403, 00406192303, 55700018430, 00093572156, 00093572056, 00054018813, 00054018913, 54569639900, 54569549600, 54569573901, 54569573900, 54569573902, 63874108403, 63874108503, 63629403403, 63629403402, 63629403401, 55887031204, 55887031215, 55045378403, 68258299903, 66336001530, 66336001630, 12496120203, 12496120803, 12496120801, 12496120201, 12496120403, 12496121201, 12496121203, 12496120401, 68071151003, 68071138003, 23490927009, 23490927006, 23490927003, 43063018407, 43063018430, 52959074930, 52959030430, 54868570704, 54868570701, 54868570702, 54868570703, 54868570700, 54868575000, 35356000407, 55700014730, 35356000430, 49999039530, 49999039515, 49999039507, 12496128302, 12496130602, 00490005160, 00490005130, 00490005190, 00490005100, 16590066630, 16590066790, 16590066705, 16590066730, 16590066605, 54123098630, 54123092930, 54123011430, 54123095730, 54123091430, 59385001230, 59385001201, 59385001430, 59385001401, 59385001630, 59385001601, 54569640800, 53217013830, 50383028793, 50383029493, 47781071203, 52427069411, 47781071211, 52427069203, 52427069211, 52427069403, 52427069803, 52427069811, 47781035803, 47781035603, 47781035703, 47781035503, 65162041603, 65162041609, 65162041509, 65162041503, 60846097003, 42291017430, 50268014511, 42291017530, 63629727002, 63629507401, 63629727001, 43598058130, 43598057930, 43598057901, 43598058230, 43598058201, 43598058001, 43598058101, 43598058030, 60429058730, 60429058733, 60429058633, 60429058630, 00054018813, 00054018913, 62175045832, 62175045232, 00378876793, 00378876716, 00378876893, 00378876816, 00781723864, 00781722764, 00781724964, 00781723806, 00781721664, 00406192303, 00406192403, 00406802003, 00406800503, 00406192409, 62756097083, 62756097064, 62756096964, 62756096983, 00228315573, 00228315567, 00228315473, 50268014415, 50268014515, 50268014411, 54569639900, 12496120401, 12496121203, 12496121201, 12496120801, 12496120803, 12496120403, 12496120201, 12496120203, 55700014730, 54123011430, 54123092930, 54123098630, 54123091430, 54123095730, 54123090730 |  |

**Characteristics of those retained or discontinued 3 months after initiation in a 2018 commercially insured cohort**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Retained at 3 months | | Discontinued by 3 months | | | | Chi-square p-value | |
|  | n | % | n | | % | |
| Total | 6,992 | 100% | 4,682 | | 100% | |  | |
| Sex |  |  |  | |  | |  | |
| Male | 4467 | 64% | 2,881 | | 62% | | 0.01 | |
| Female | 2525 | 36% | 1,801 | | 38% | |
| Age |  |  |  | |  | |  | |
| <30 | 1917 | 27% | 1,829 | | 39% | | <0.01 | |
| 30 or older | 5075 | 73% | 2,853 | | 61% | |
| Region |  |  |  | |  | |  | |
| Northeast | 1,578 | 23% | 1,082 | | 23% | | <0.01 | |
| Midwest | 1,384 | 20% | 870 | | 19% | |
| South | 3,142 | 45% | 1,947 | | 42% | |
| West | 885 | 13% | 776 | | 17% | |
| Unknown | 3 | 0% | 7 | | 0% | |
| Concurrent substance use at initiation\* |  |  |  | |  | |  | |
| Alcohol | 1,462 | 21% | 1,699 | | 36% | | <0.01 | |
| Amphetamines | 486 | 7% | 729 | | 16% | | <0.01 | |
| Marijuana | 488 | 7% | 526 | | 11% | | <0.01 | |
| Cocaine | 566 | 8% | 790 | | 17% | | <0.01 | |
| Hallucinogens | 45 | 1% | 77 | | 2% | | <0.01 | |
| Sedatives | 717 | 10% | 954 | | 20% | | <0.01 | |
| Elixhauser comorbidities |  |  |  | |  | |  | |
| 0 | 4,386 | 63% | 2,576 | | 55% | | <0.01 | |
| 1 | 1,513 | 22% | 1,113 | | 24% | |
| 2 | 618 | 9% | 518 | | 11% | |
| 3+ | 475 | 7% | 455 | | 10% | |
| Insurance Coverage |  |  |  | |  | |  | |
| Primary holder | 4006 | 57% | 2,211 | | 47% | | <0.01 | |
| Spouse | 1847 | 26% | 1,102 | | 24% | |
| Dependent | 1139 | 16% | 1,369 | | 29% | |
| \* Diagnosis code in 30 days before first initiation | | | |  | |  | |  |
|  | |  | |  |

**Elixhauser comorbidity components in the 30 days prior to initiation by medication for opioid use disorder type in a 2018 commercially insured cohort**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Extended-release buprenorphine | | Extended-release naltrexone | | Buprenorphine/ naloxone | | Methadone | |
|  | n | % | n | % | n | % | n | % |
| TOTAL | 204 | 100% | 1173 | 100% | 12171 | 100% | 810 | 100% |
|  |  |  |  |  |  |  |  |  |
| Congestive heart failure | 0 | 0% | 6 | 1% | 80 | 1% | 3 | 0% |
| Cardiac arrhythmias | 3 | 1% | 82 | 7% | 403 | 3% | 22 | 3% |
| Valvular disease | 0 | 0% | 11 | 1% | 71 | 1% | 9 | 1% |
| Pulmonary circulation disorder | 1 | 0% | 3 | 0% | 25 | 0% | 4 | 0% |
| Hypertension, uncomplicated | 21 | 10% | 109 | 9% | 1294 | 11% | 73 | 9% |
| Hypertension, complicated | 0 | 0% | 3 | 0% | 66 | 1% | 2 | 0% |
| Paralysis | 0 | 0% | 1 | 0% | 12 | 0% | 1 | 0% |
| Other neurological disorders | 1 | 0% | 54 | 5% | 237 | 2% | 14 | 2% |
| Chronic pulmonary disease | 5 | 2% | 54 | 5% | 567 | 5% | 23 | 3% |
| Diabetes, uncomplicated | 8 | 4% | 16 | 1% | 329 | 3% | 23 | 3% |
| Diabetes, complicated | 4 | 2% | 15 | 1% | 221 | 2% | 16 | 2% |
| Hyperthyroidism | 8 | 4% | 33 | 3% | 370 | 3% | 17 | 2% |
| Renal failure | 0 | 0% | 6 | 1% | 42 | 0% | 2 | 0% |
| Liver disease | 7 | 3% | 62 | 5% | 288 | 2% | 27 | 3% |
| Peptic ulcer disease | 0 | 0% | 1 | 0% | 32 | 0% | 3 | 0% |
| HIV/AIDS | 1 | 0% | 4 | 0% | 34 | 0% | 1 | 0% |
| Lymphoma | 0 | 0% | 1 | 0% | 4 | 0% | 0 | 0% |
| Metastatic cancer | 0 | 0% | 0 | 0% | 9 | 0% | 0 | 0% |
| Solid tumor, no metastasis | 2 | 1% | 3 | 0% | 76 | 1% | 2 | 0% |
| Arthritis | 5 | 2% | 11 | 1% | 298 | 2% | 5 | 1% |
| Coagulopathy | 1 | 0% | 8 | 1% | 59 | 0% | 3 | 0% |
| Obesity | 4 | 2% | 34 | 3% | 406 | 3% | 25 | 3% |
| Weight loss | 1 | 0% | 8 | 1% | 93 | 1% | 3 | 0% |
| Fluid/electrolyte disorder | 6 | 3% | 79 | 7% | 317 | 3% | 14 | 2% |
| Blood loss anemia | 0 | 0% | 1 | 0% | 21 | 0% | 1 | 0% |
| Deficiency anemia | 3 | 1% | 14 | 1% | 123 | 1% | 9 | 1% |
| Psychoses | 4 | 2% | 37 | 3% | 138 | 1% | 8 | 1% |
| Depression | 58 | 28% | 516 | 44% | 2270 | 19% | 75 | 9% |

**Time to medication discontinuation among individuals treated for opioid use disorder in a 2018 United States commercially insured population: comparing individuals under 30 years of age to those 30 and older**

This Kaplan–Meier survival curve displays the time to discontinuation for individuals prescribed injectable buprenorphine, injectable naltrexone, sublingual buprenorphine/naloxone, sublingual buprenorphine, and methadone stratified by age group. The horizontal axis displays the time to discontinuation in days while the vertical axis displays the proportion of the population with a current prescription.