**Supplemental Digital Content 1: Table** Multivariable models of recruiting an undiagnosed HIV-infected PWID and their predictive accuracy

|  | Model 1: Logistic predictors only | Model 2: Random forest predictors only | Model 3: Logistic and random forest predictors |
| --- | --- | --- | --- |
| Characteristic | Adjusted odds ratio | 95% CI | Adjusted odds ratio | 95% CI | Adjusted odds ratio | 95% CI |
| Female (reference=male/*hijra*) | -- |  | 1.06 | 0.23 - 5.02 | 1.05 | 0.22 - 4.97 |
| HIV/HCV status |  |  |  |  |  |  |
| HIV and HCV negativeHIV positive/HCV negativeHIV negative/HCV positiveHIV and HCV positive | Reference1.321.241.50 | 0.79 - 2.210.99 - 1.571.14 - 1.98 | Reference1.341.311.59 | 0.80 - 2.241.04 - 1.651.21 - 2.08 | Reference1.301.241.47 | 0.78 - 2.180.98 - 1.561.11 - 1.94 |
| Sexual partners in prior 6 mo. |  |  |  |  |  |  |
| None12 or more | Reference0.870.83 | 0.71 - 1.080.62 - 1.13 | -- | -- | Reference0.860.84 | 0.70 - 1.070.62 - 1.15 |
| Drugs ever injected |  |  |  |  |  |  |
| Heroin onlyBuprenorphine/other pharmaceuticals onlyCombination  | Reference1.861.39 | 1.08 - 3.210.80 - 2.41 | -- | -- | Reference1.791.37 | 1.03 - 3.120.79 - 2.40 |
| *Drugs injected in prior 6 mo.:* |  |  |  |  |  |  |
| Buprenorphine | 1.00 | 0.77 - 1.30 | -- | -- | 1.05 | 0.80 - 1.38 |
| Stimulants | -- |  | 1.55 | 0.44 - 5.45 | 1.88 | 0.53 - 6.70 |
| Sedatives | -- |  | 1.02 | 0.76 - 1.37 | 1.00 | 0.74 - 1.34 |
| *Place injected in prior 6 mo.:* |  |  |  |  |  |  |
| Friend’s house | -- |  | 0.84 | 0.65 - 1.08 | 0.89 | 0.69 - 1.15 |
| Public toilet | -- |  | 0.89 | 0.70 - 1.12 | 0.91 | 0.72 - 1.16 |
| Shooting gallery | 1.20 | 0.96 - 1.50 | 1.18 | 0.94 - 1.48 | 1.14 | 0.90 - 1.44 |
| Other place | -- |  | 0.74 | 0.59 - 0.94 | 0.75 | 0.59 - 0.95 |
| *Injected with in prior 6 mo.:* |  |  |  |  |  |  |
| Spouse/sexual partner | -- |  | 2.39 | 1.25 - 4.58 | 2.44 | 1.27 - 4.66 |
| Multiple other persons | -- |  | 1.12 | 0.91 - 1.37 | 1.10 | 0.89 - 1.35 |
| Needle/syringe exchange program use in prior 6 months | 1.26 | 1.01 - 1.56 | 1.34 | 1.08 - 1.65 | 1.26 | 1.01 - 1.57 |
| Incarcerated in prior 6 mo. | -- |  | 1.06 | 0.75 - 1.50 | 1.06 | 0.75 - 1.51 |
| PWID network size† (by increase in one ln) | 1.09 | 1.02 - 1.17 | -- | -- | 1.09 | 1.01 - 1.17 |
| AUROC | 0.573 | 0.546 - 0.600 | 0.567 | 0.539 - 0.594 | 0.575 | 0.548 - 0.602 |

PWID: people who inject drugs; CI: confidence interval; AUROC: area under the receiver operator curve

**Supplemental Digital Content 2: Table** Characteristics by recruiter’s approach of those with predicted high probability

| Characteristic n (col %)/ median (IQR) | Standard approach recruits with high probability (N=288) | pRDS approach recruits with high probability (N=703) |
| --- | --- | --- |
| Age (years) | 26 (23 - 33) | 27 (23 - 33) |
| Currently married | 94 (37.3)  | 240 (40.8) |
| Education |  |  |
| No/primary schoolSecondary schoolAt least high school graduate | 38 (15.1)157 (62.3)57 (22.6) | 99 (16.8)335 (56.9)155 (26.3) |
| Tested for HIV in prior year | 87 (34.5) | 234 (39.7) |
| HIV/HCV status |  |  |
| HIV and HCV negativeHIV positive/HCV negativeHIV negative/HCV positiveHIV and HCV positive | 148 (58.7)4 (1.6)75 (29.8)25 (9.9) | 196 (50.3)9 (1.5)214 (36.3)70 (11.9) |
| Undiagnosed HIV infection (among all) | 20 (7.9) | 53 (9.0) |
| Undiagnosed HIV infection (among HIV positives) | 20 (69.0) | 53 (67.1) |
| HIV viremic1 (among all) | 30 (10.4) | 74 (10.5) |
| HIV viremic1 (among HIV positives) | 30 (85.7) | 74 (85.1) |
| Undiagnosed HCV infection (among HCV positives) | 89 (89.0) | 254 (89.4) |
| Injection drug use frequency in prior 6 mo. |  |  |
| NoneLess than dailyDaily | 50 (19.8)148 (58.7)54 (21.4) | 121 (20.5)351 (59.6)117 (19.9) |
| Drugs injected in prior 6 mo. (among active injectors) |  |  |
| Buprenorphine onlyHeroin onlyCocaine onlyPharmaceuticals onlyCombination use | 16 (7.9)56 (27.7)1 (0.5)2 (1.0)127 (62.9) | 44 (9.4)85 (18.2)4 (0.9)5 (1.1)330 (70.5) |
| Shared needle/syringe in prior 6 mo. (among active injectors) | 62 (30.7) | 127 (27.1) |
| Needle/syringe exchange program use in prior 6 mo. | 84 (33.3) | 216 (36.7) |
| Opioid agonist therapy in past 6 mo. | 65 (25.8) | 184 (31.2) |
| Sexual partners in prior 6 mo. |  |  |
| None12 or more | 124 (49.2)108 (42.9)20 (7.9) | 254 (43.1)307 (52.1)28 (4.8) |
| Incarcerated in prior 6 mo. | 6 (2.4) | 12 (2.0) |
| PWID network size2  |  |  |
| 10 or less11 to 2021 to 5050 or more | 110 (43.7)105 (41.7)33 (13.1)4 (1.6) | 246 (41.8)221 (37.5)113 (19.2)9 (1.5) |

PWID: people who inject drugs; RDS: respondent-driven sampling

1: Viremia defined as HIV viral load ≥ 150 copies/mL; 2: Number of PWID they personally know in their city