| **Study, Year** | **Study design** | **Target population** | **Population characteristics** | **Sample size** | **Acquired HIV****infection** | **Screening instrument items** |
| --- | --- | --- | --- | --- | --- | --- |
| Beymer, 2017129 | Retrospective cohortMSM who were negative at baseline and had at least one subsequent test; no formal testing protocol | MSM | Derivation cohort: Los Angeles LGBT center (2009 to 2014) cohortAge <25 years: 26%Ages 25 to 29 years: 26%Ages 30 to 39 years: 28% Age ≥40 years: 21% White: 48%Hispanic: 32%Black: 7.8% | Derivation cohort: 9,481 | Derivation cohort: 3.9% (370/9,481) | 1) Race/ethnicity2) History of any STI3) Condom use during receptive anal sex, last partner4) Race/ethnicity, last partner5) Age difference, last partner6) Number sex partners, last 3 months7) Intimate partner violence8) Ecstasy use, prior 12 months9) Methamphetamine use, prior 12 months10) Nitrates use, prior 12 months Scoring of items unclear, total |
| Hoenigl, 2015130SDET score | Retrospective cross-sectionalMSM who underwent HIV testing and classified as EAH or no EAH | MSM | San Diego "Early Test" (2008 to 2014) cohortAge (median, years): 30 in acute and early HIV infection, 33 in those who remained uninfectedWhite: 67%Asian: 8%Black: 6%Hispanic ethnicity: 27%Cohort randomly split in 2:1 ratio into derivation and validation cohorts | Derivation cohort: 5,568Validation cohort: 2,758 | Entire cohort:2.4% (200/8,326) for acute and early HIV infection | 1) ≥10 male partners (0 or 2)2) Condomless receptive anal intercourse and ≥5 male partners (0 or 3)3) Condomless receptive anal intercourse with HIV-infected partner (0 or 3)4) Bacterial STI (0 or 2) |
| Jones, 2017135A: ARCH-MSMB: MenzaC: SDET | CohortNon-Hispanic, black and white MSM who were HIV-negative at baseline and had HIV testing every 6 months or until HIV-infected for 24 months | MSM | Involve[men]t study cohortAge (mean, years): 27White: 54%Black: 46% | 562 | 5.7% (32/562); 6 were determined to be acutely infected at baseline (included in analysis) | A: ARCH-MSM: See Smith 2012 (drug use questions modified from last 6 to last 12 months)B: SDET: See Hoenigl 2015C: Menza: See Menza 2009 (drug use question modified from last 6 to last 12 months) |
| Lancki, 2018134A: ARCH-MSMB: CDC criteriaC: Gilead indications | CohortSelf-identiified as African American or black, ages 16 to 29 years, oral or anal intercourse with a man within the past 24 months, located on South Side of Chicago, HIV-uninfected, testing at baseline and at 9-month intervals over 18 months | MSM | uConnect study cohortAge (mean, years): NRWhite: 0%Black: 100% | 300 | 11% (33/300) | A: ARCH-MSM: See Smith 2012 (drug use questions modified from last 6 to last 12 months)B: CDC criteria: Any male sex partner in past 6 months, not in a monogramous partnership with a recently tested, HIV-uninfected man and one of the following:a) Any anal sex without condoms (receptive or insertive)b) Any STI diagnosed or reported in past 6 monthsc) In an ongoing sexual partnership with an HIV-positive male partnerC: Gilead indications:a) Inconsistent or no condom useb) Diagnosis of STIc) Exchange of sex for commoditiesd) Use of illicit drugs or alcohol dependence (excluding marijuana)e) Incarcerationf) Partners of unknown HIV-1 status with any of the factors listed above |
| Menza, 2009131 | Retrospective cohortIn derivation cohort, MSM were HIV-negative at baseline and had at least one subsequent HIV test; no formal testing protocolIn validation cohort, MSM were HIV-negative at baseline and underwent retesting every 6 months | MSM | Derivation cohort: Public Health-Seattle and King County STI Clinic (2001 to 2008) repeat testers cohortAge <40 years: 80% Age ≥40 years: 20%White, Asian, or Pacific Islander: 77% Other race: 23%Gonorrhea on STI testing: 12% Chalmydia on STI testing: 8.8%Methamphetamine use in past 6 months: 6.7% Inhaled nitrites in past 6 months: 8.9% Crack/cocaine in past 6 months: 2.8%Validation cohort: Project EXPLORE (1999 to 2001) RCT, control arm (behavioral intervention trial)Age <40 years: 76%Age ≥40 years: 24%White, Asian, or Pacific Islander: 75% Other race: 25%Gonorrhea on STI testing: 3.0% Chlamydia on STI testing: 4.2% Methampetamine in past 6 months: 11% Inhaled nitrites in past 6 months: 28% Crack/cocaine use in past 6 months: 2.3% | Derivation cohort: 1,903Validation cohort: 2,081 | Derivation cohort: 5.3% (101/1,903)Validation cohort: 6.9% (144/2,081) | 1) Gonorrhea, chlamydia, or syphilis, or a history of these infections (0 or 4 points)2) Used methamphetamine or inhaled nitrites in the past 6 months (0 or 11 points)3) Unprotected anal intercourse with an HIV-infected partner or unknown HIV status in the past year (0 or 1 point)4) 10 or more male sexual partners in the prior year (0 or 3 points) |
| Smith, 2012132HIRI-MSM (now ARCH-MSM) | Retrospective cohortIn derivation and validation cohorts, MSM were HIV-negative at baseline and underwent retesting every 6 months | MSM | Derivation cohort: VAXGEN 004 (1998 to 1999) RCT (HIV vaccine trial)Ages 18 to 28 years: 19%Ages 29 to 49 years: 48%Ages 41 to 48 years: 22% Age ≥49 years: 11%Non-Hispanic white: 86%Amphetamine use: 8.2%Popper use: 27%Validation cohort: Project EXPLORE (1999 to 2001) RCT (behavioral intervention trial)Age ≤25 years: 18% Ages 26 to 30 years: 22%Ages 31 to 35 years: 22% Age ≥36 years: 39%Non-Hispanic white: 75%Amphetamine use: 12%Popper use: 33% | Derivation cohort: 4,386Validation cohort: 3,368 | Derivation cohort: 7.2% (318/4,386)Validation cohort: 4.3% (144/3,368) | 1) Age (0 to 8 points)2) Total number of male partners, prior 6 months (0 to 7 points)3) Total number of infected male partners, prior 6 months (0 to 8 points)4) Times had unprotected receptive anal intercourse with any HIV status partner, prior 6 months (0 or 10 points)5) Used amphetamines, prior 6 months (0 or 5 points)6) Used poppers, prior 6 months (0 or 3 points) |
| Smith, 2015133 ARCH-IDUs | Retrospective cohortPatients who reported drug use in the last 11 years and HIV-uninfected, underwent testing every 6 months | PWID | Derivation cohort: ALIVE (1988 to 2008) cohort Age <30 years: 17%Ages 30 to <40 years: 46%Ages 40 to <50 years: 27%Age ≥50 years: 7.9%Injected heroin: 75%Injected cocaine: 74%Methadone maintenance: 11%MSM: 1.8% | Derivation cohort: 1,904 | Derivation cohort 11% (205/1,904) | 1) Age (0 to 38 points)2) In the last 6 months, in methadone maintenance program (0 or 31 points)Next 5 items receive 0 or 1 points on injection subscore:3) In the last 6 months, inject heroin 1 or more times4) In the last 6 months, inject cocaine 1 or more times5) In the last 6 months, share cooker 1 or more times6) In the last 6 months, share needle 1 or more times7) In the last 6 months, visit shooting gallery 1 or more times Add 5 injection subscores, 0=score 0, 1=score 7, 2=score 21, 3=score 24, 4=score 24, 5=score 31 |

**Abbreviations:** ARCH-IDUs=Assessing the Risk of Contracting HIV in Injection Drug Users; ARCH-MSM=Assessing the Risk of Contracting HIV in Men Who Have Sex With Men; CDC=Centers for Disease Control and Prevention; EAH=early or acute HIV infection; EXPLORE=A Randomized Clinical Trial of the Efficacy of a Behavioral Intervention to Prevent Acquisition of HIV Among Men Who Have Sex With Men; HIRI-MSM=HIV Incidence Risk Index for Men Who Have Sex With Men; LGBT=lesbian, gay, bisexual, and transgender; MSM=men who have sex with men; NR=not reported; PWID=persons who inject drugs; RCT=randomized, controlled trial; SDET=San Diego Early Test; STI=sexually transmitted infection.