



HIV testing in St. Petersburg, Russia

**CIRA AIDS Science Day
April 16, 2007**

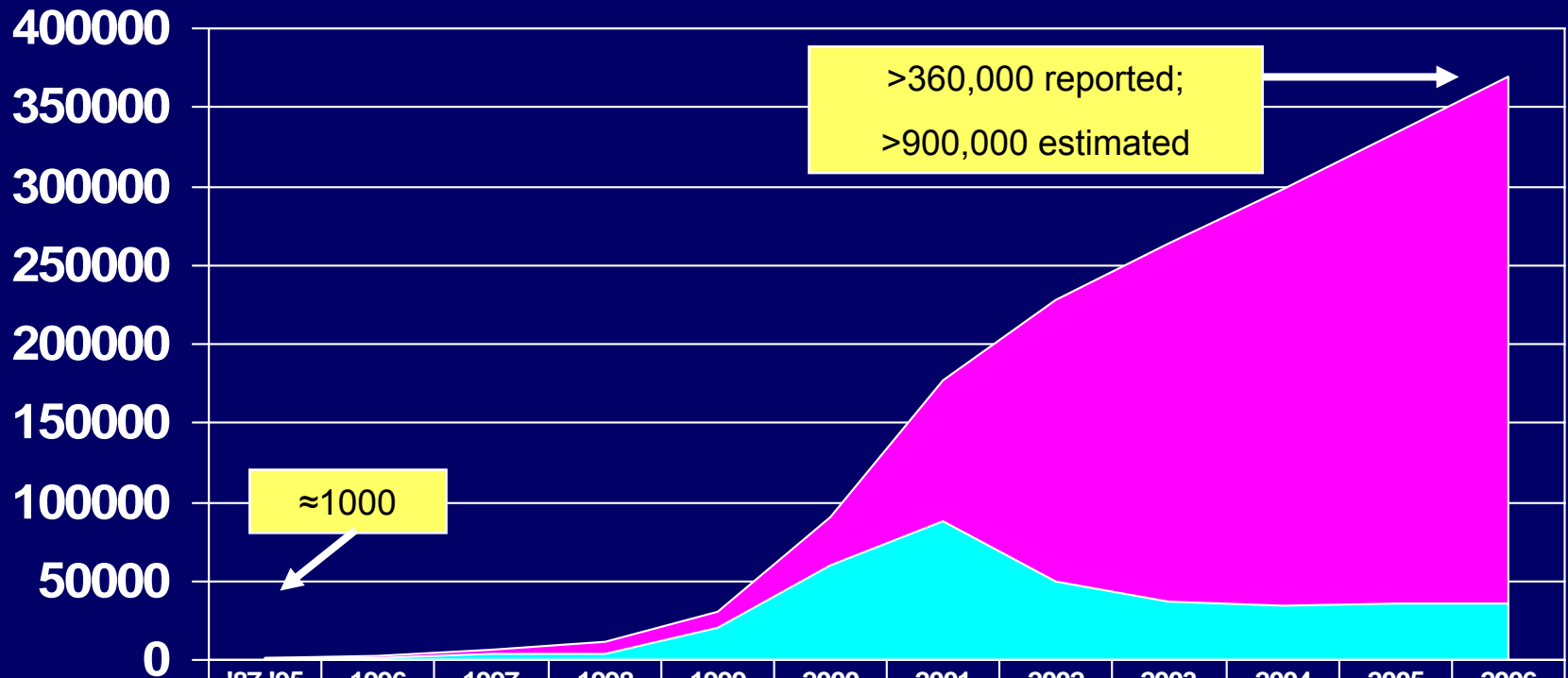
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Overview

- Background on HIV epidemic in Russia
- Overview of the Sexual Acquisition and Transmission of HIV Cooperative Agreement Project (SATHCAP)
- Research questions, methods, and results for a SATHCAP sub-study
 - Patterns of HIV testing and correlates
 - Accuracy of knowledge of positive HIV serostatus
- Implications and challenges for future research and prevention

Fastest growing HIV epidemic in the world

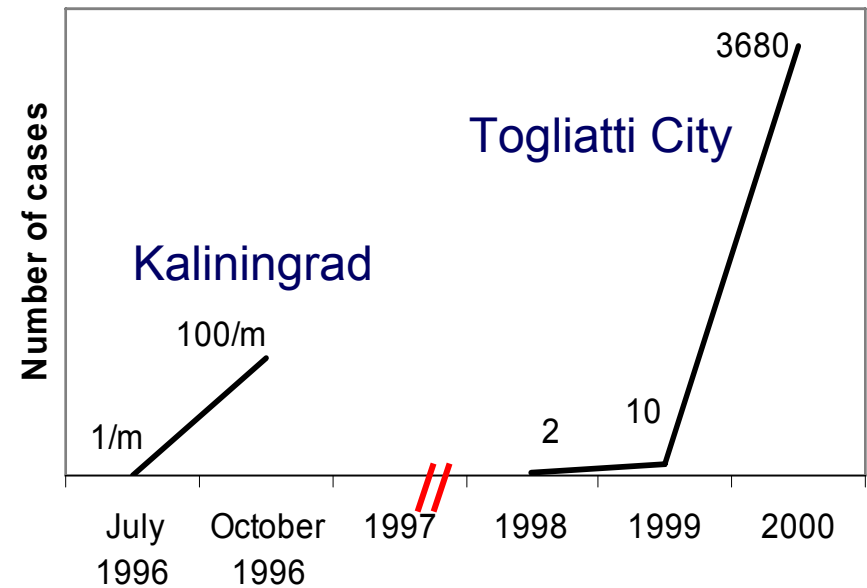
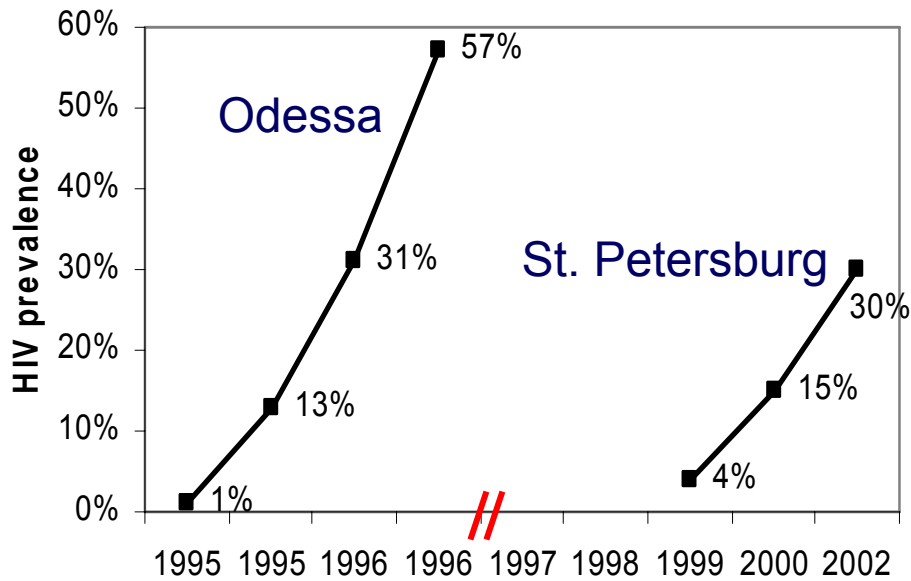
Officially registered HIV cases in Russian Federation, 1987-2006



| | '87-'95 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|------------------------|---------|------|------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| ■ Cumulative HIV Cases | 1090 | 2603 | 6918 | 10889 | 30647 | 89908 | 177579 | 227502 | 263898 | 298204 | 333730 | 368868 |
| ■ New HIV Cases | 1090 | 1513 | 4315 | 3971 | 19758 | 59261 | 87671 | 49923 | 36396 | 34305 | 35526 | 35138 |

■ Cumulative HIV Cases ■ New HIV Cases

Epidemic is concentrated among injection drug users (IDU)



Injection drug use accounts for $\approx 85\%$ of all current HIV cases.

High HIV prevalence among IDU in select Russian cities



Research Questions for SATHCAP Study

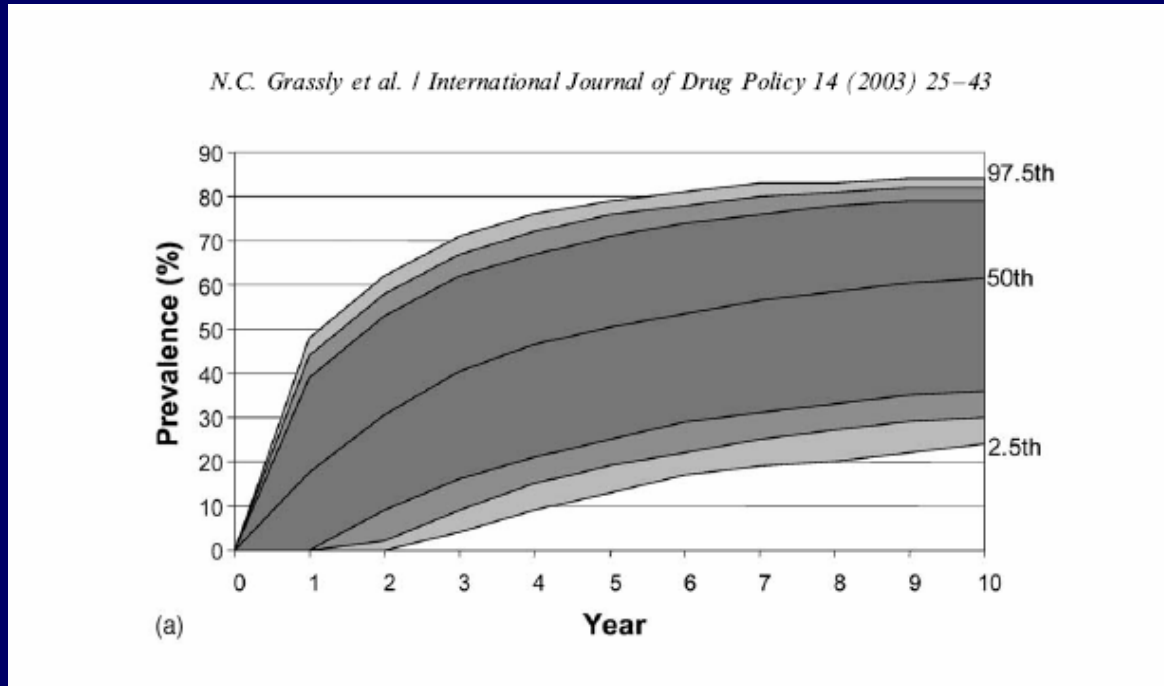
In this setting of recent explosive growth of HIV epidemic among the high-risk core group of IDU, we seek to better understand transmission dynamics of HIV, including:

1. Likelihood of spread of HIV from IDU to general population via sexual activity; and
2. Future course of the epidemic.

1. Is HIV spreading from core population of IDU to general population via sex?

- Reported cases among pregnant women:
 - 125 in 1998
 - 3531 in 2003
 - Proportion of heterosexually acquired cases:
 - 5% in 2000
 - 20% in 2003
- Indication of increasing generalized spread

2. Where on the epidemic curve are we?



- HIV prevalence among IDU predicted to be 25%-85% at the .05 significance level.
- There is much uncertainty about the future course of the epidemic.

Study Overview for SATHCAP Study

- Study sites include St. Petersburg Russia, Los Angeles CA, Chicago IL, and North Carolina
- Multidisciplinary approach includes behavioral epidemiology, psychology, molecular virology, mathematical modeling, medical sociology, geographic information systems
- Study design is serial cross-sectional, 3 waves planned for 2005-2008
- Focus on 2 core groups at high risk for HIV, including IDU and men who have sex with men, and their sex partners

Research Questions for Today's Talk

A SATHCAP sub-study

To begin examining transmission dynamics of HIV among IDU in St. Petersburg, Russia, we describe:

1. Patterns of HIV testing and correlates, and
2. Accuracy of knowledge of positive HIV serostatus.

Theoretical rationale

- Understanding HIV testing patterns can help us to:
 - Ensure coverage of high-risk populations;
 - Provide linkages to care, support, and treatment for those who are HIV+; and
 - Understand potential impact of secondary prevention; that is, the degree to which HIV+ individuals adopt risk reduction strategies to prevent transmission to sex and drug partners.

HIV testing in Russia

- Russian federal law guarantees access to anonymous and confidential HIV testing and pre- and post-test counseling.
- HIV testing is available on a large scale.
 - 20 million tests conducted annually (tot pop: 143 million)
- However:
 - Mandatory HIV testing widespread
 - Lack of informed consent, counseling, and confidentiality
 - Virtually no anonymous testing
 - Rapid testing not approved

Methods

- Study design
 - Cross sectional data collected Nov 2005 – Dec 2006
- Study sample
 - Injection drug users (ever)
- Recruitment
 - Respondent Driven Sampling (RDS) is a modified form of chain-referral sampling using a dual incentive structure that reduces biases typically inherent to this method to produce a representative sample.

Data collection: Survey interviewing

- Computer assisted survey interview (CASI) to measure:
 - Demographics: sex, age
 - Drug use behaviors: use in past 30 days, substances used, age at first use, duration of use, number of IDU partners, new IDU partner, and unsafe injections
 - Sex behaviors: age at first sex, number of sex partners past 6 months, new sex partner past 6 months, male who has sex with men, trade partners
 - HIV testing histories: ever been tested, number of times tested, date of most recent test, self-reported result of most recent test

Data collection: HIV and STI testing

- HIV testing on blood specimens using 2 tests
 - ELISA and Western Blot
- STI testing
 - Current chlamydia and gonorrhea infections using PCR on urine
 - Ever syphilis infection using TPPA on blood

Statistical analyses

- Sample described using means, medians, frequencies and proportions
- Correlates of HIV testing determined using likelihood ratio chi-square test statistics
- Accuracy of knowledge of positive HIV serostatus using sensitivity measures

Results: sample characteristics (n=386)

DEMOGRAPHICS

- 74% male, 26% female
- Mean age 28.8 ± 6.5 years

DRUG USE BEHAVIORS

- 90% reported IDU in past 30 days
- 80% reported injecting heroin
- Mean duration of IDU 8.8 ± 5.9 years
- 65% reported unsafe injection in past 30 days

SEX RISK BEHAVIORS

- Mean age at first sex 15.3 ± 3.3 years
- 38% had multiple partners in past 6 months
- 49% had new sex partner in past 6 months
- 17% had STI

Patterns of HIV testing

| | |
|--|--|
| Ever tested: | 76% (294/386) |
| Number of tests among those ever tested: | Mean = 3.2 ± 4.3 Median = 2 Range = 1 – 55 |
| Distribution of number of tests: | 36% 1 test (n=105) 20% 2 tests (n=60) 44% 3+ tests (n=129) |

Patterns of HIV testing (cont.)

| | |
|--|---|
| Time since last test: (in months) | Mean = 16.5 ± 18.9 Median = 9 Range = 0 – 96 |
| Distribution of time since last test: (in months) | 0-3: 28% (n=82) 3-6: 19% (n=57) 6-12: 23% (n=68) 12+: 30% (n=87) |
| Did not get result after last test: | 17% (n=49) |

Primary outcome: recent HIV test

- Among those who did not self-report as HIV-positive (n=314), we defined recent HIV test as:
 - Ever tested in past year &
 - Received test result
- N = 69 (22%)

Correlates of recent HIV test

| | n | Recent HIV test | P-value |
|------------------|-----|-----------------|---------|
| Total | 314 | 69 (22%) | -- |
| Sex | | | |
| Male | 237 | 48 (20%) | .20 |
| Female | 77 | 21 (27%) | |
| Age | | | |
| ≤ 25 | 106 | 23 (22%) | .93 |
| > 25 | 208 | 46 (22%) | |
| IDU past 30 days | | | |
| Yes | 275 | 61 (22%) | .59 |
| No | 33 | 6 (18%) | |
| Age at first IDU | | | |
| ≤ 18 years | 143 | 35 (25%) | .28 |
| > 18 years | 170 | 33 (19%) | |

Correlates of recent HIV test (continued)

| | n | Recent HIV test | P-value |
|---------------------|-----|-----------------|---------|
| Duration of IDU | | | |
| ≤ 5 years | 99 | 21 (21%) | .88 |
| > 5 years | 214 | 47 (22%) | |
| Frequency IDU | | | |
| < 30 / m | 213 | 43 (20%) | .32 |
| ≥ 30 / m | 95 | 24 (25%) | |
| Number IDU partners | | | |
| ≤ 2 | 190 | 41 (22%) | .83 |
| >2 | 124 | 28 (23%) | |
| New IDU partner | | | |
| Yes | 91 | 19 (21%) | .76 |
| No | 223 | 50 (22%) | |
| Unsafe injections | | | |
| Yes | 197 | 40 (20%) | .36 |
| No | 117 | 29 (25%) | |

Correlates of recent HIV test (continued)

| | n | Recent HIV test | P-value |
|------------------------|-----|-----------------|---------|
| Age at first sex | | | |
| ≤ 15 years | 151 | 33 (22%) | .94 |
| > 15 years | 135 | 29 (22%) | |
| Number of sex partners | | | |
| ≤ 1 | 170 | 38 (22%) | .95 |
| >1 | 109 | 24 (22%) | |
| New sex partner | | | |
| yes | 140 | 26 (20%) | .55 |
| no | 131 | 32 (23%) | |
| STI | | | |
| yes | 54 | 12 (22%) | .96 |
| no | 260 | 57 (22%) | |
| MSM (n=210) | | | |
| yes | 7 | 1 (14%) | .69 |
| no | 203 | 41 (20%) | |

Correlates of recent HIV test: Summary

- None of the demographic, drug or sex behavior variables were correlated with recent testing.
 - $p > .20$ for all examined covariates

Accuracy of knowledge of HIV+ serostatus

Previous HIV test:
(n=386)

Yes

294/386 (76%)

No

92/386 (24%)

Accuracy of knowledge of HIV+ serostatus

Previous HIV test:
(n=386)

Yes
294/386 (76%)

No
92/386 (24%)

Self-reported status:

Positive
72/294 (25%)

Negative
173/294 (59%)

Don't know
49/294 (17%)



Accuracy of knowledge of HIV+ serostatus

Previous HIV test:
(n=386)

Yes
294/386 (76%)

No
92/386 (24%)

Self-reported status:

Positive
72/294 (25%)

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173/294 (59%)

Don't know
49/294 (17%)

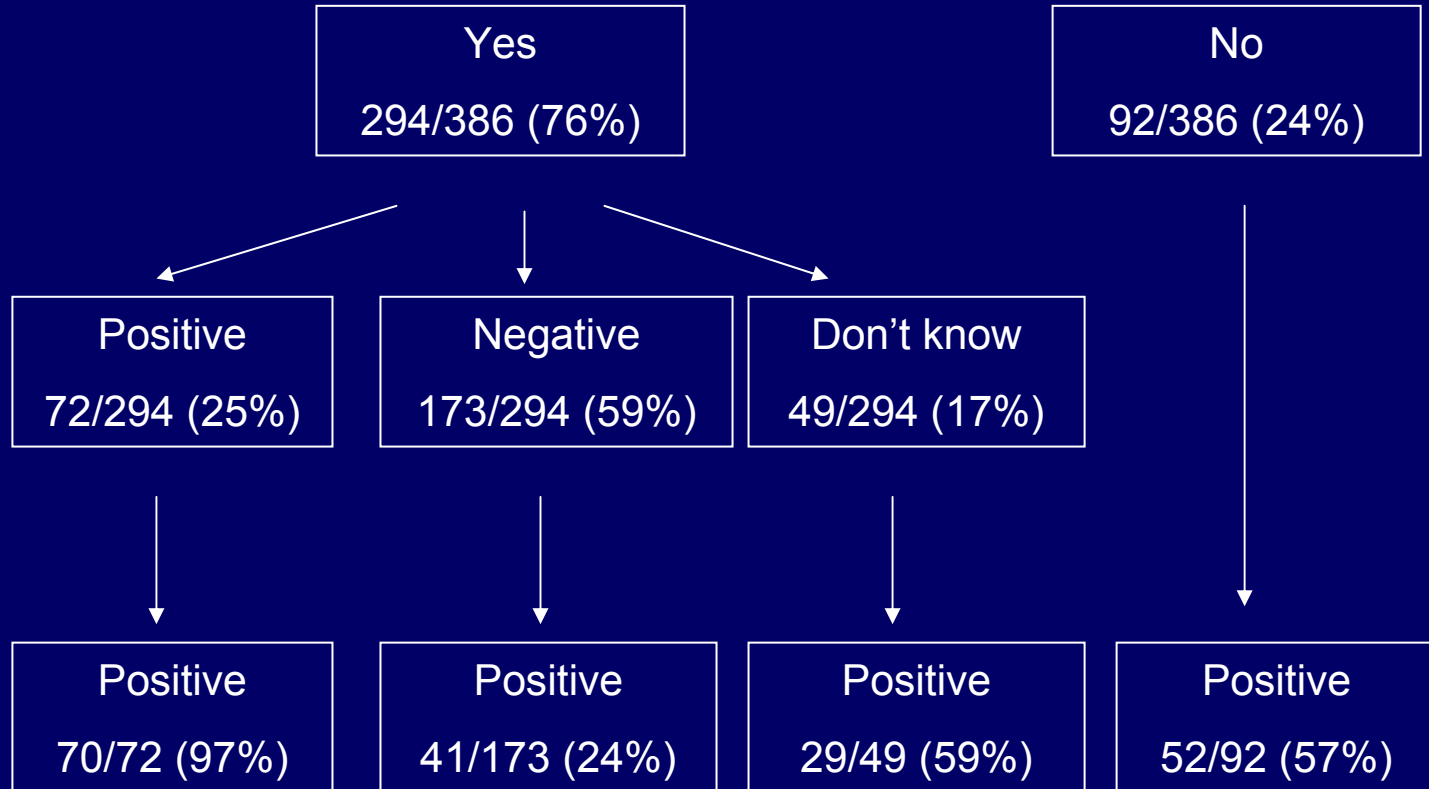
HIV+ by serology:
(n=192)

Positive
70/72 (97%)

Positive
41/173 (24%)

Positive
29/49 (59%)

Positive
52/92 (57%)



Accuracy of knowledge of HIV+ serostatus

AMONG THOSE EVER TESTED:

| | T+ | T- | |
|--------|-----|-----|-----|
| SR+ | 70 | 2 | 72 |
| SR-/dk | 70 | 152 | 222 |
| | 140 | 154 | 294 |

Sensitivity = 50%

Accuracy of knowledge of HIV+ serostatus

AMONG THOSE EVER TESTED:

| | T+ | T- | |
|--------|-----|-----|-----|
| SR+ | 70 | 2 | 72 |
| SR-/dk | 70 | 152 | 222 |
| | 140 | 154 | 294 |

Sensitivity = 50%

AMONG TOTAL SAMPLE:

| | T+ | T- | |
|--------|-----|-----|-----|
| SR+ | 70 | 2 | 72 |
| SR-/dk | 122 | 192 | 314 |
| | 192 | 194 | 386 |

Sensitivity = 36%

Summary of findings

- The majority of IDU in St. Petersburg had not been recently tested for HIV or received test results.
 - 24% never tested
 - Among tested, 30% had not been in past year and 17% had not received results
- Many IDU are not aware of their HIV+ serostatus.
 - 24% of self-reported negative were infected
 - Sensitivity of self-report for HIV+ status $\leq 50\%$
- We did not identify any correlates of testing patterns.
 - Motivators and deterrents for HIV testing unclear

Implications

- Efforts are needed to increase testing participation and return rates among IDU.
 - Despite widespread availability, quality of and desire for HIV testing may be lacking.
- Future research is needed to understand why high-risk IDU do or do not seek HIV testing, and to understand if knowledge of HIV positive serostatus results in behavior change for secondary prevention.

Challenges

- Widespread AIDS-related discrimination
 - For example, prevailing beliefs that HIV+ individuals should be isolated from society, HIV is associated with “immoral” behavior, and predominant “unforgiving” sentiment toward HIV+
 - Individuals with HIV are often refused general or HIV related health care, isolated in health care settings, fired from jobs or forced out of homes.
 - Limited available ART
 - Only 5% (5,000 / 100,000) of those in need of ART receive it.
 - Generic drugs are not registered and treatment is therefore expensive and unaffordable to many.
- Make promoting HIV testing difficult

Acknowledgments: Key personnel

Robert Heimer (PI)
Andrei Kozlov (Co-PI)
Olga Toussova
Sergei Verevochkin
Maria Baranova
Polina Girchenko
Nadia Abdala
Kaveh Khoshnood
and many others



Additional acknowledgments

Additional Yale team

Louis Alexander
Kim Blankenship
Mark Kinzly
Elijah Paintsil



Imperial College

Geoff Garnett
Adrian Renton
Zahid Asghar

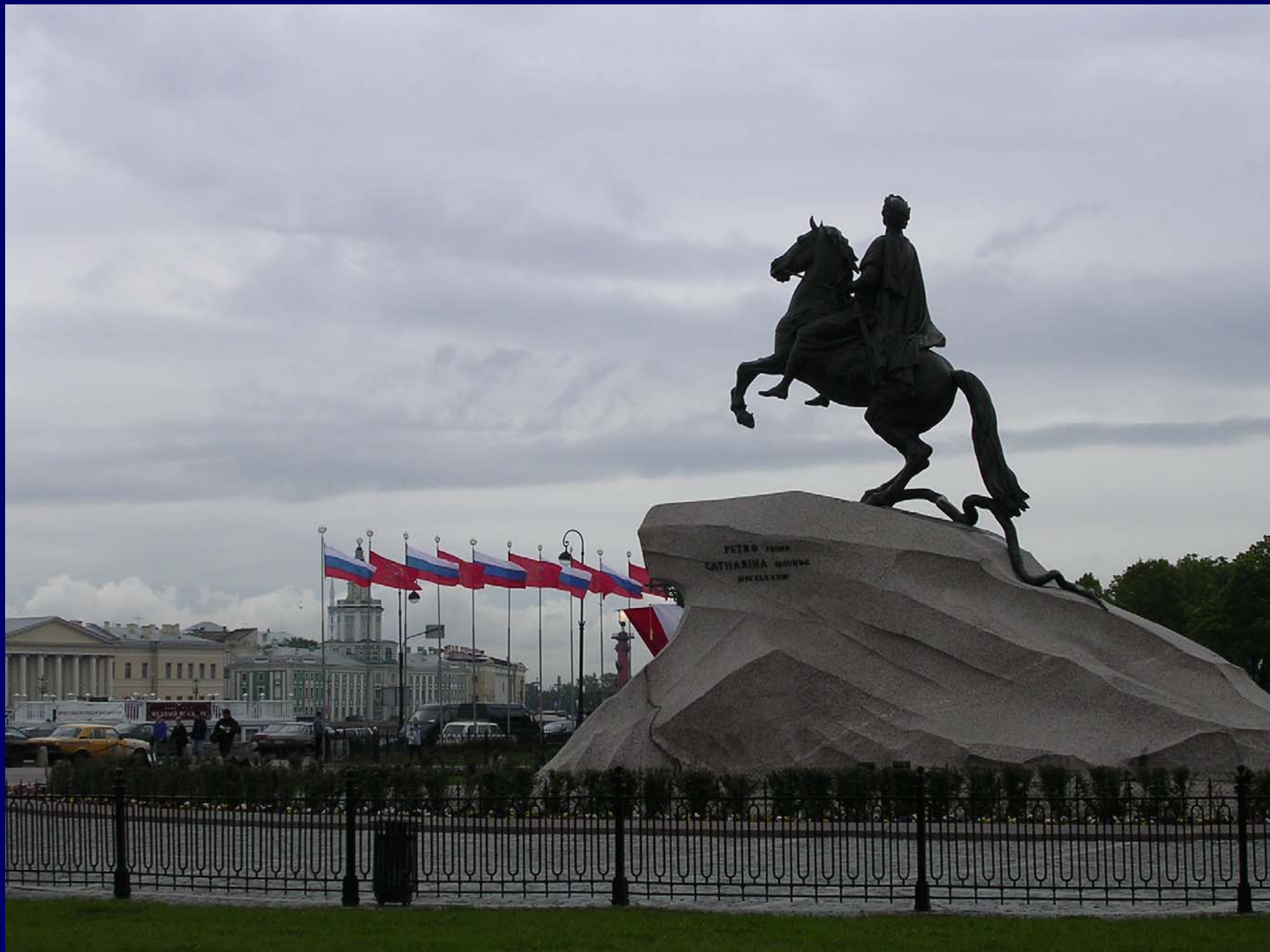
Additional Biomedical Center team

Ludmilla Senkovski
Nikolai Klimov
Igor Duhovlinov
Alexander Tulupyev
Tatania Krasnoselskikh
Svetlana Smirnova

Colleagues at UCLA, UIC, RTI

RAND, Coordinating Center

National Institutes of Health (NIDA)



Some possible limitations

- May not have achieved a representative sample.
- Testing data rely on retrospective self-report.