

Taking testing as a new prevention strategy for HIV infection towards three 90%

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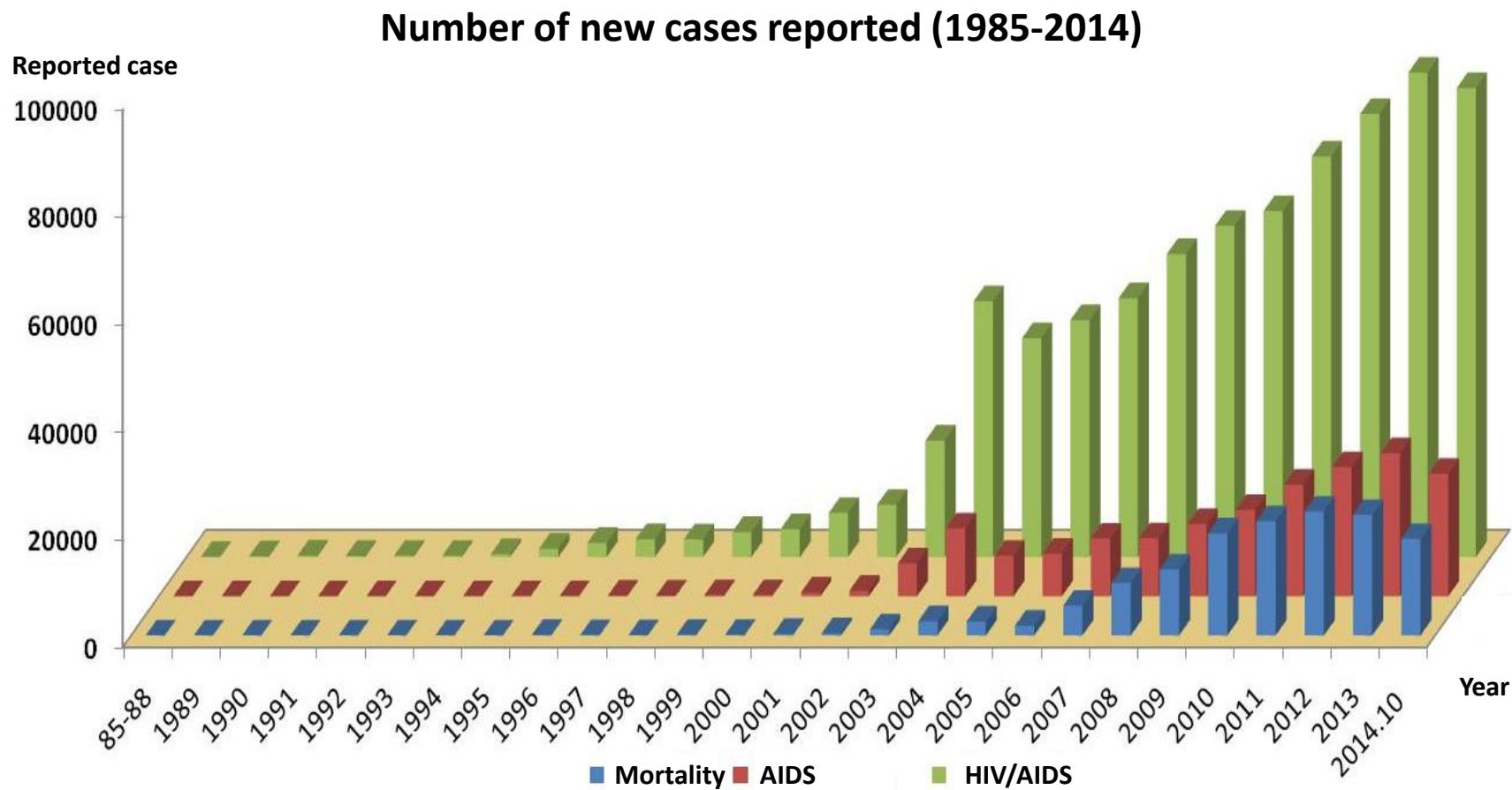
National HIV/HCV Reference laboratory, China CDC

90-90-90 by 2020

According to the latest guideline of WHO, 90% of all people living with HIV know their status is the critical step for controlling new HIV infections.

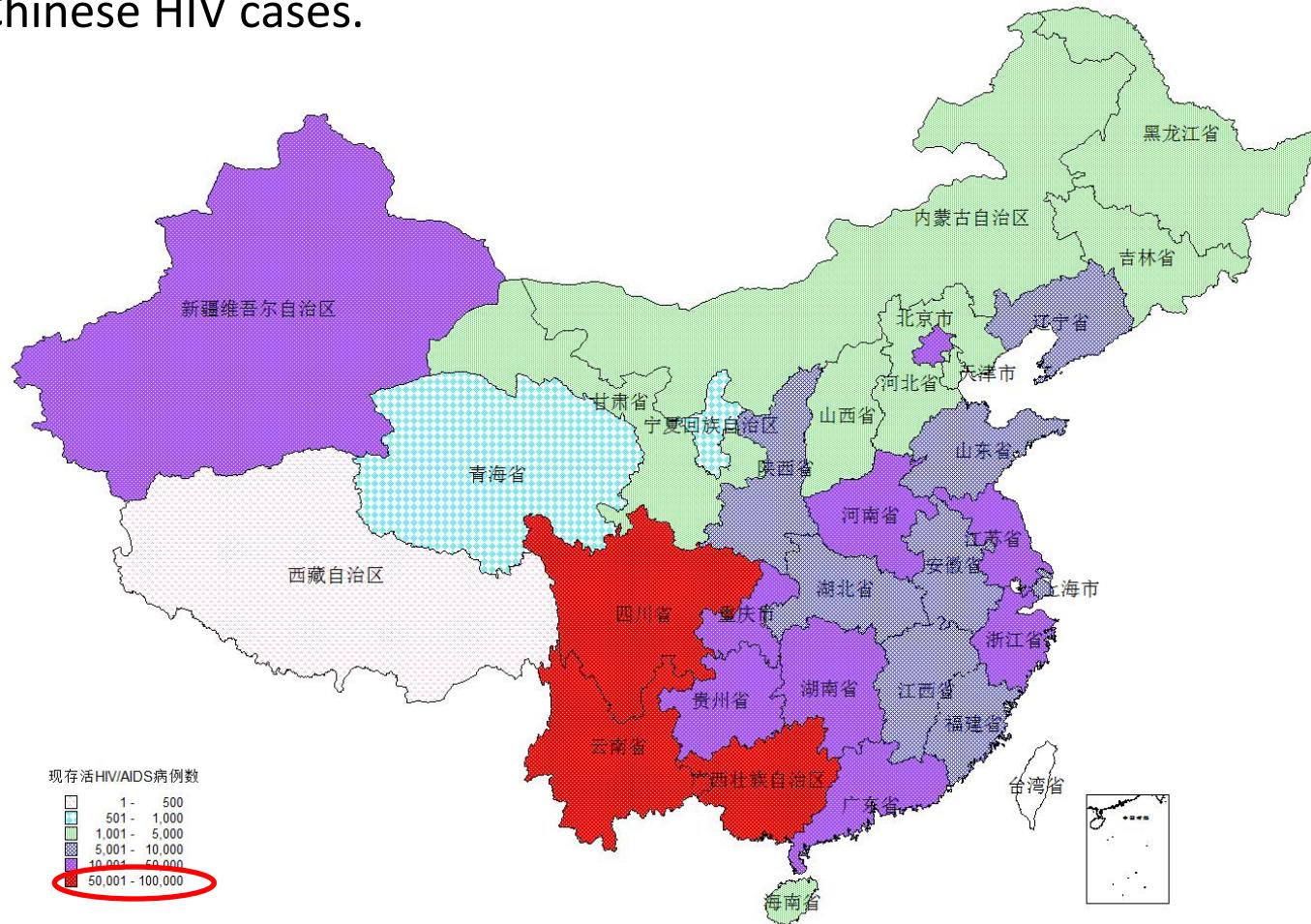
The number of HIV/AIDS is still rising

By the end of October 2014, there were 497,000 people reported in China were living with HIV/AIDS, including 199,000 AIDS. Total AIDS deaths increased to 154,000 .



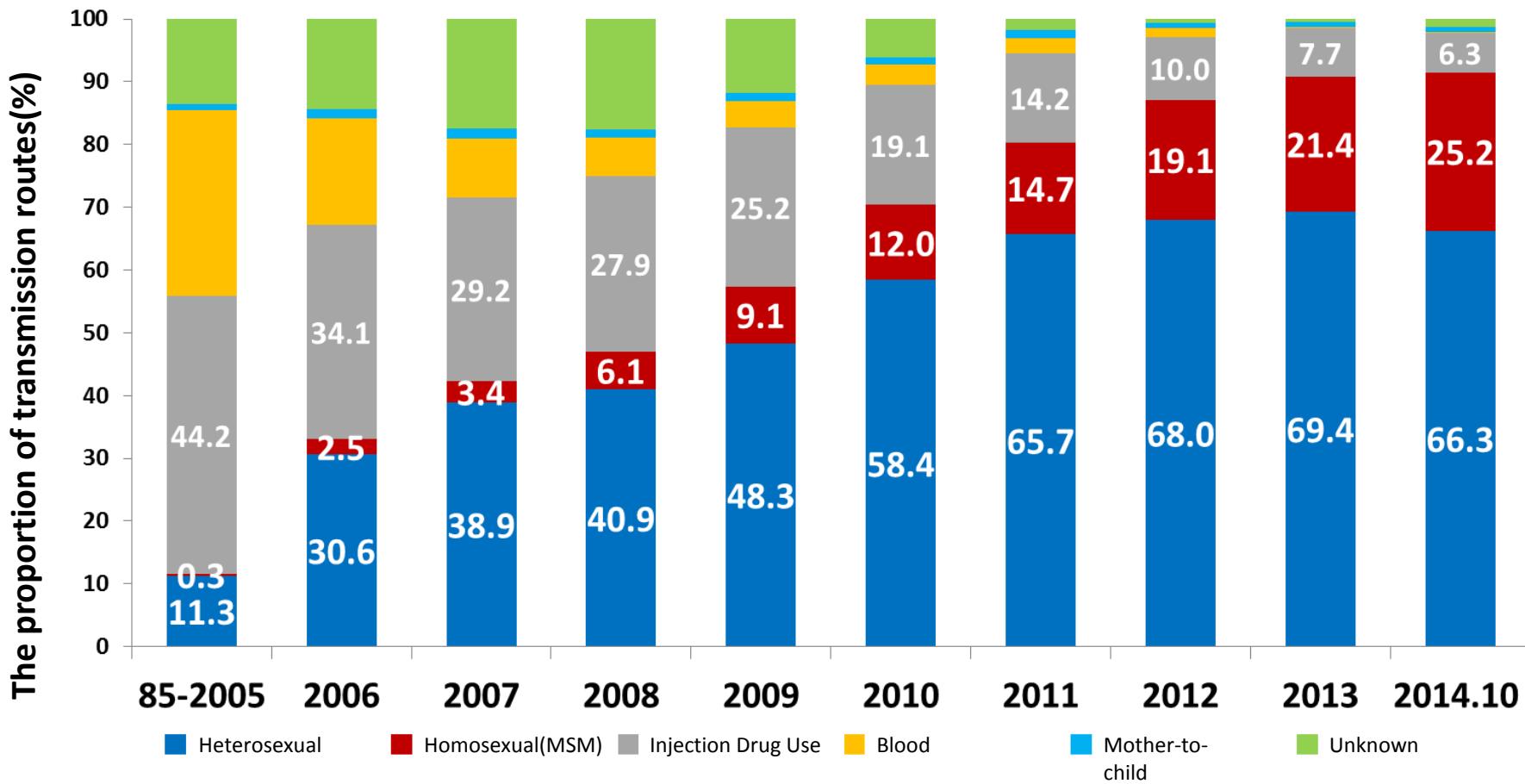
The features of the HIV epidemic

Despite an overall low prevalence, some areas have high HIV prevalence, such as Yunnan, Sichuan, and Guangxi. These three provinces account for 42.5% of Chinese HIV cases.



The features of the HIV epidemic

It is estimated that only 54% of the 810,000 individuals living with HIV/AIDS in mainland China were aware of their status.



The features of the HIV epidemic

There are big differences between the city and the countryside.

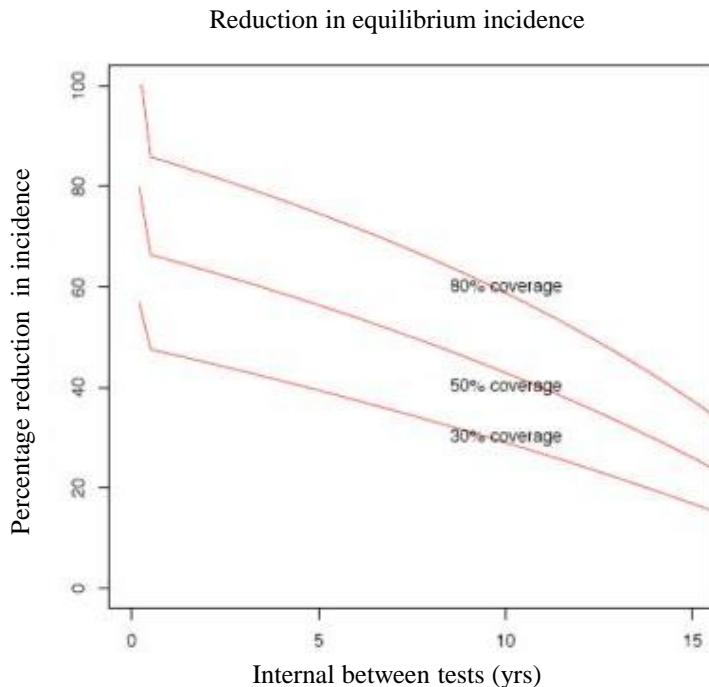
- In some big cities, MSM accounts for **51.1%** of the new HIV diagnoses, up to **80%** in Changchun, Harbin, Shenyang and Beijing.
- In small and medium-sized cities, heterosexual transmission accounts for **60.8%**, while MSM accounts for **32.2%**.
- In most countryside area, heterosexual transmission accounts for **75.7%**, up to **90%** in Guangxi and Guizhou province.

**Treatment as Prevention (TAP)
Possible**

**Testing as Prevention (TAP)
Possible?**

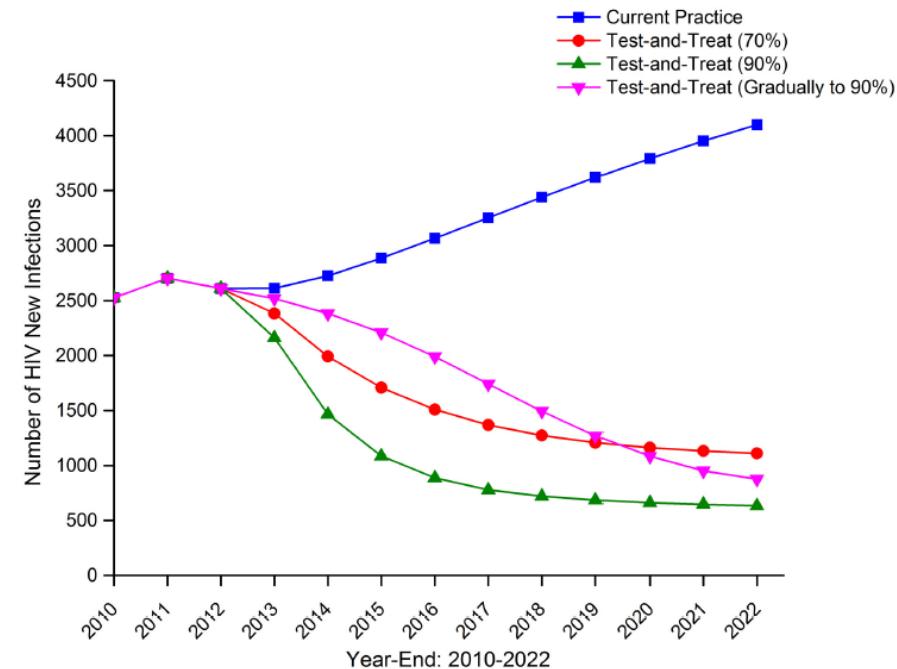
Based on the mathematical model study, it is reported that the coverage rate and frequency of testing were negative correlated with new HIV infections

Reduction in incidence(%) versus mean interval between HIV tests (years) (Africa)



Dodd PJ, et al. AIDS, 2010, 24(5)

Number of HIV new infections among MSM Beijing,2010-2022 (China)



Luo S, et al. Plos One, 2015, 10(6)

National program of rapid testing for MSM population from an NGO of Xian city (2013 to 2015)

MSM at NGO

↓ 2013 (610)

↓ 2014 (1201)

↓ 2015 (630)

Questionnaire

RT testing(RT-ELISA-WB)

Testing: RT at MSM group, TA by local CDC screening laboratory if positive, sent sample to do WB testing

Lab QC: PT 3 times per year provided by NARL

MSM population from an NGO of Xian city (2013 to 2015)

Having HIV testing last year? Response from 2441 persons

↓yes

1898 (77.8%)

↓ test

93+ (4.9%)

↓no

543 (22.2%)

↓ test

62+ (11.5%)

p<0.01

The HIV infection rate of MSM who received HIV test in the past year was significantly lower than that without testing, showing the testing is the protective factor for preventing HIV infection.

(to be published)

Treatment as Prevention (TAP)

Positive population:

Treatment → Viral load ↓ → prevention
others infection

Testing as Prevention (TAP)

Population without tested:

Testing → **positive** → treatment

Testing → **negative** → behavior change



decrease seroconversion

MSM of Beijing Youan Hospital STD clinic (2014-10-1 to 2015-10-30)

9126

↓ test

8470 - (92.81%) 656 + (7.19%)

↓ testing education

1354

↓ retest, 2.78 times/person/year

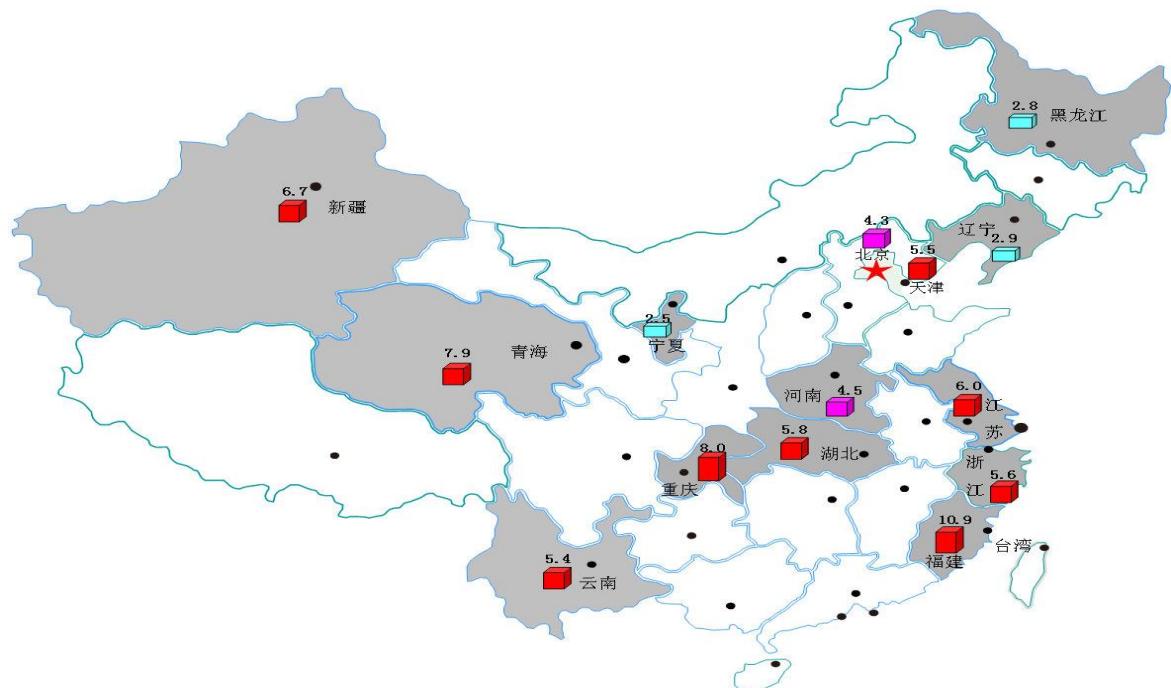
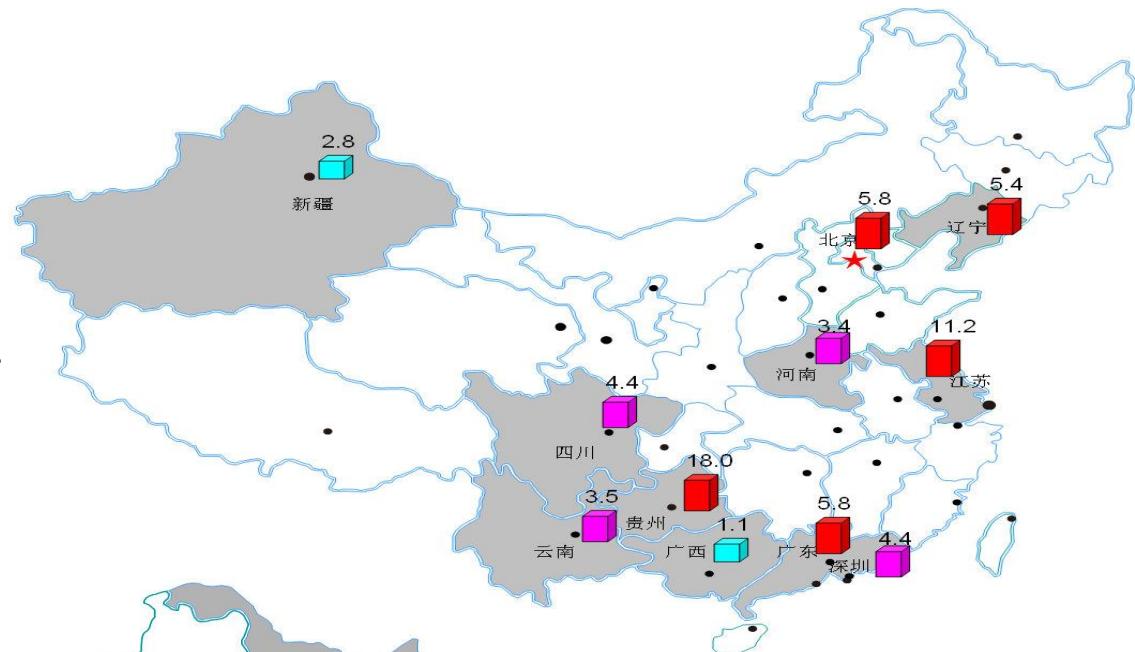
Seroconversion 7 persons (incidence **0.52%**)

(To be published)

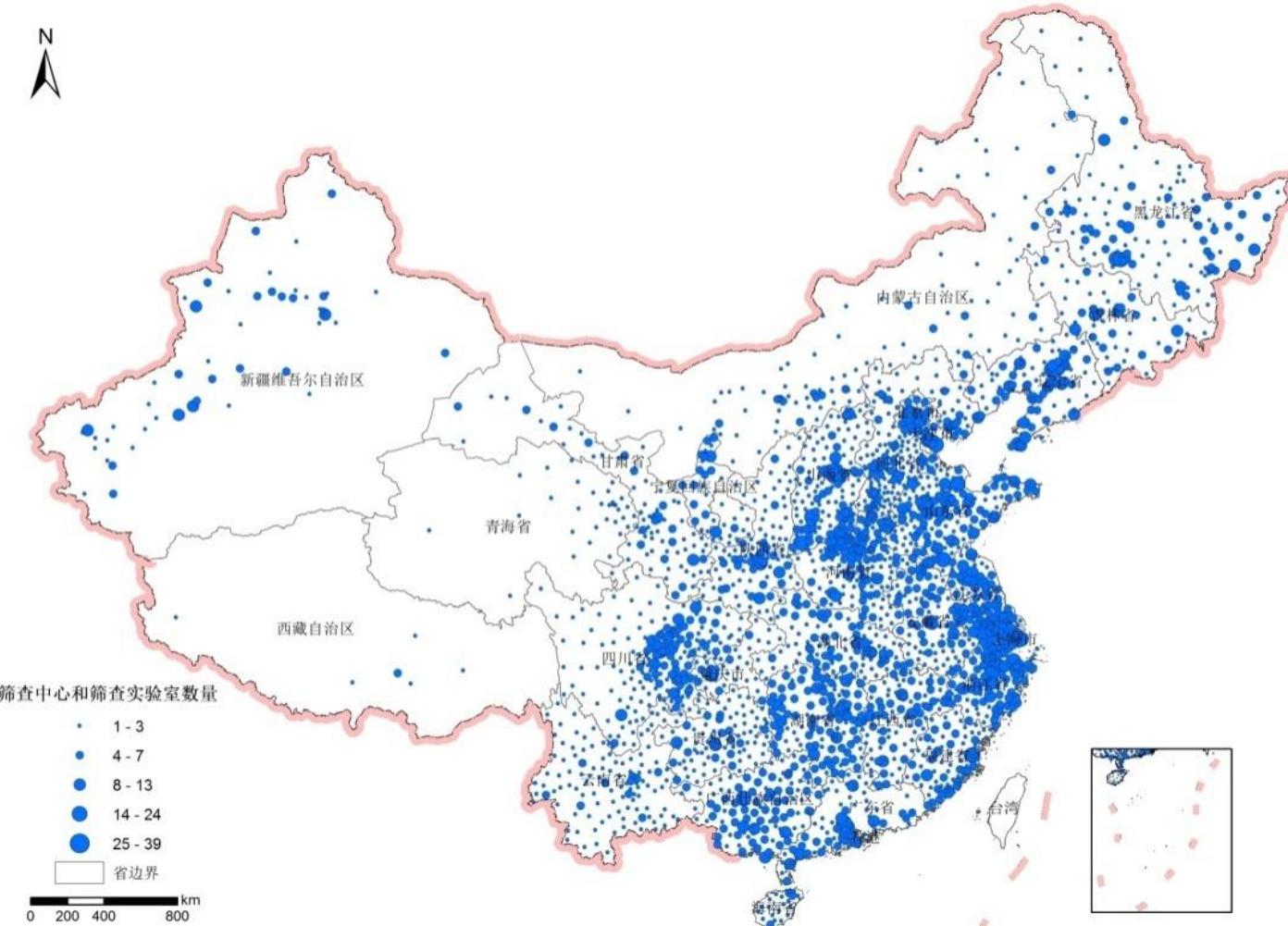
Incidence of MSM population based on Meta analysis

Incidence from
national cohort
study

5.8 (3.3-10.0) /100PY



Incidence from
BED-CEIA assay
5.3 (4.5-6.2) /100PY



**Over 10000 HIV screening lab,
Over 10000 RT points
Free testing police**

Guidelines

2006 National Guideline for HIV/AIDS Detection and Management
Guideline for QC/QA of CD4+ T Cells Testing

2007 Newsletter of the HIV/AIDS Laboratory Network

2008 Guideline for Test and QC/QA of HIV-1 Viral Load,
Training on CD4 testing technology

2009 National Guideline for HIV/AIDS Detection, Training on Early Infant Diagnosis

2010 National Guideline for HCV Detection
Protocol on HIV New Infection Detection, PEP training materials

2012 Guideline for QC/QA of Drug Resistance Detection

2015 National Guideline for Detection of HIV/AIDS



Training



Proficiency testing

➤ International PT Programs:

SQA: CAP, WHO, US-CDC

IQA: CAP, QASI, UK NEQAS,

VQA: CAP, US-CDC, RUSH Lab

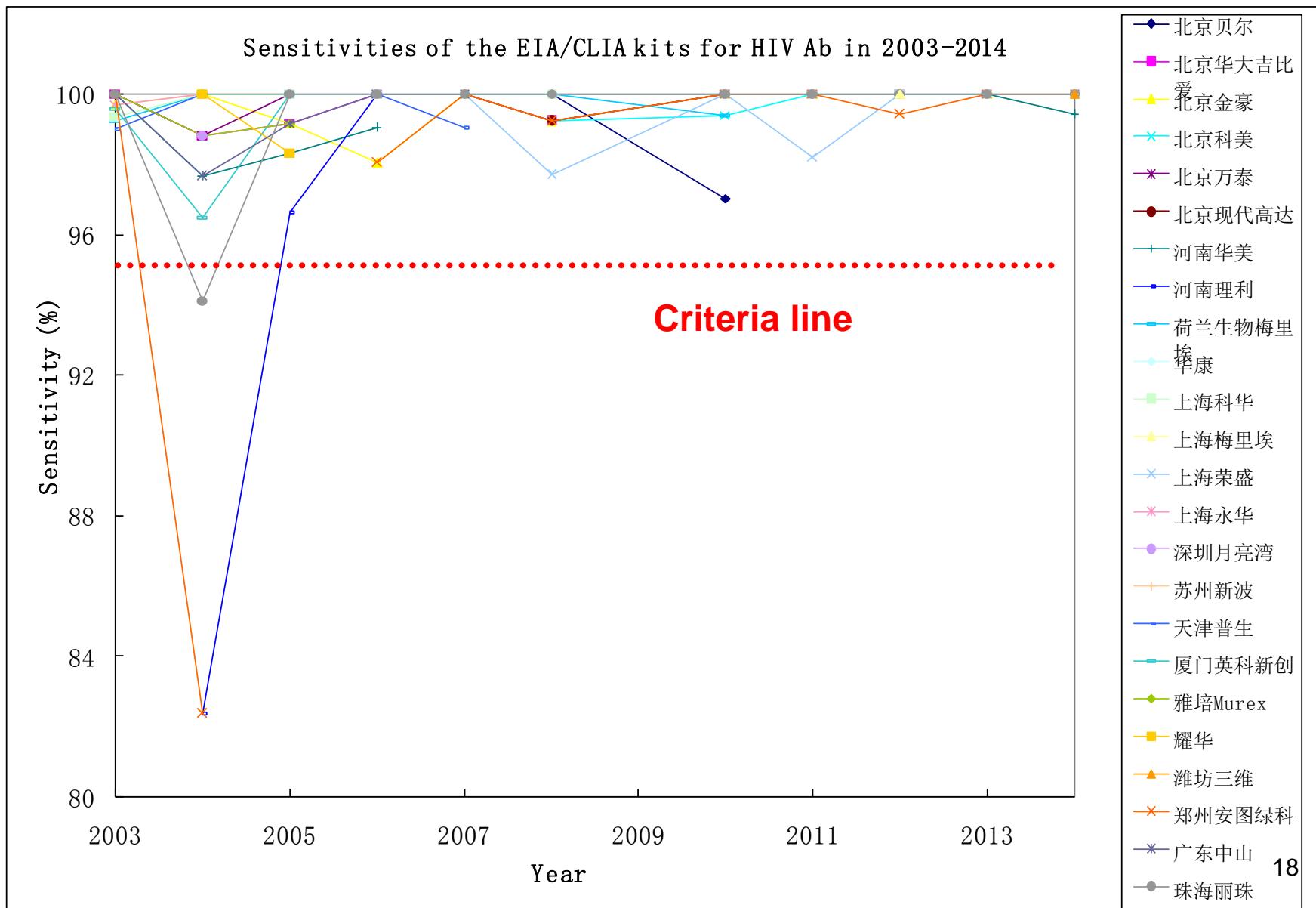


➤ National PT Programs:

Type	PT item		Participation lab	Qualified lab	Rate(%)
Serology	HIV antibody test	RT	381	379	99.5
		EIA	395	394	99.7
		WB	395	386	97.7
	HBsAg test		262	254	96.9
	HCV antibody test		367	361	98.4
	Syphilis	TPPA	367	357	97.3
		RPR	367	349	95.1
	HIV-1new infectious test (BED)		32	32	100
Immunology	CD4+T cell count		438	429	97.9
Virology	HIV viral load		115	112	97.4
	DBS-DNA		8	8	100
	HIV drug resistance test		34	34	100

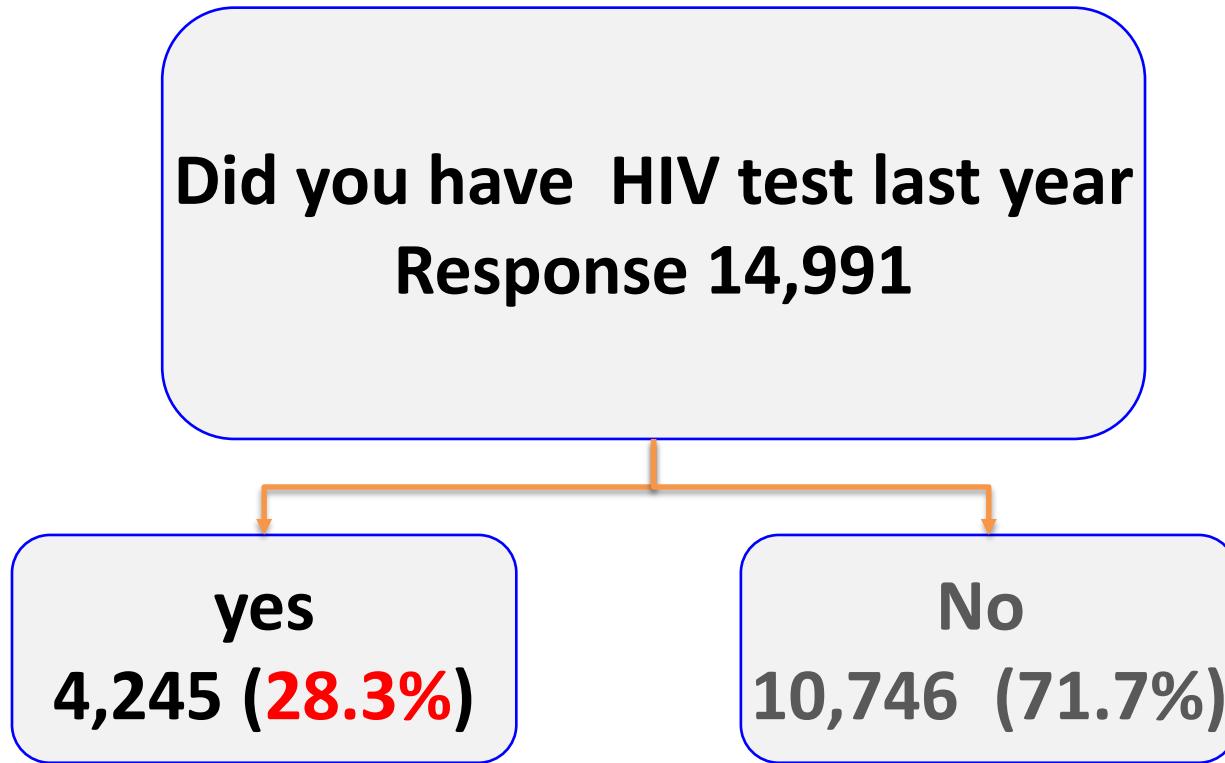


Sensitivities of the EIA/CLIA kits for HIV Ab (2003-2014)



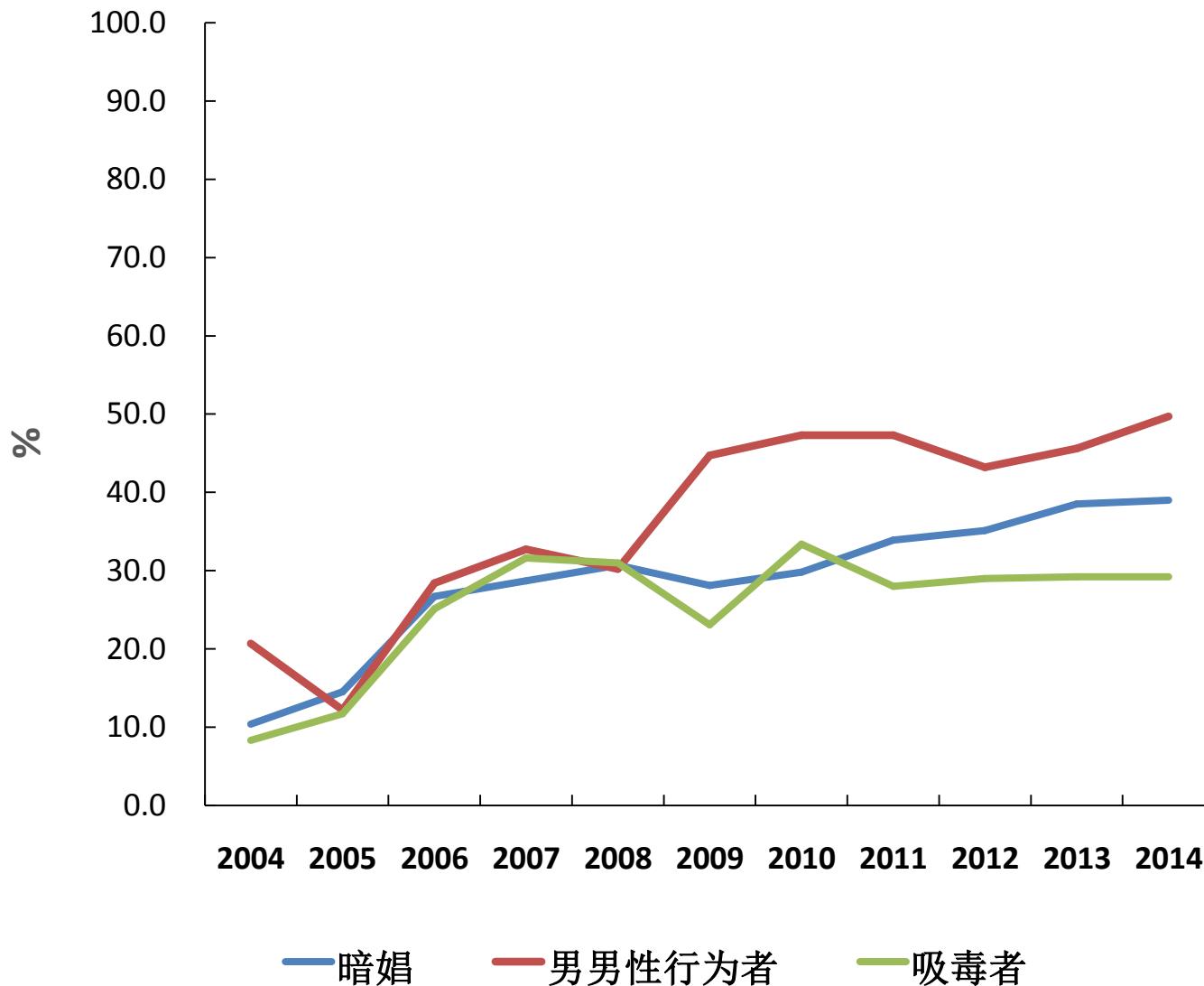
Challenges:
Lower testing rate
Lower known rate

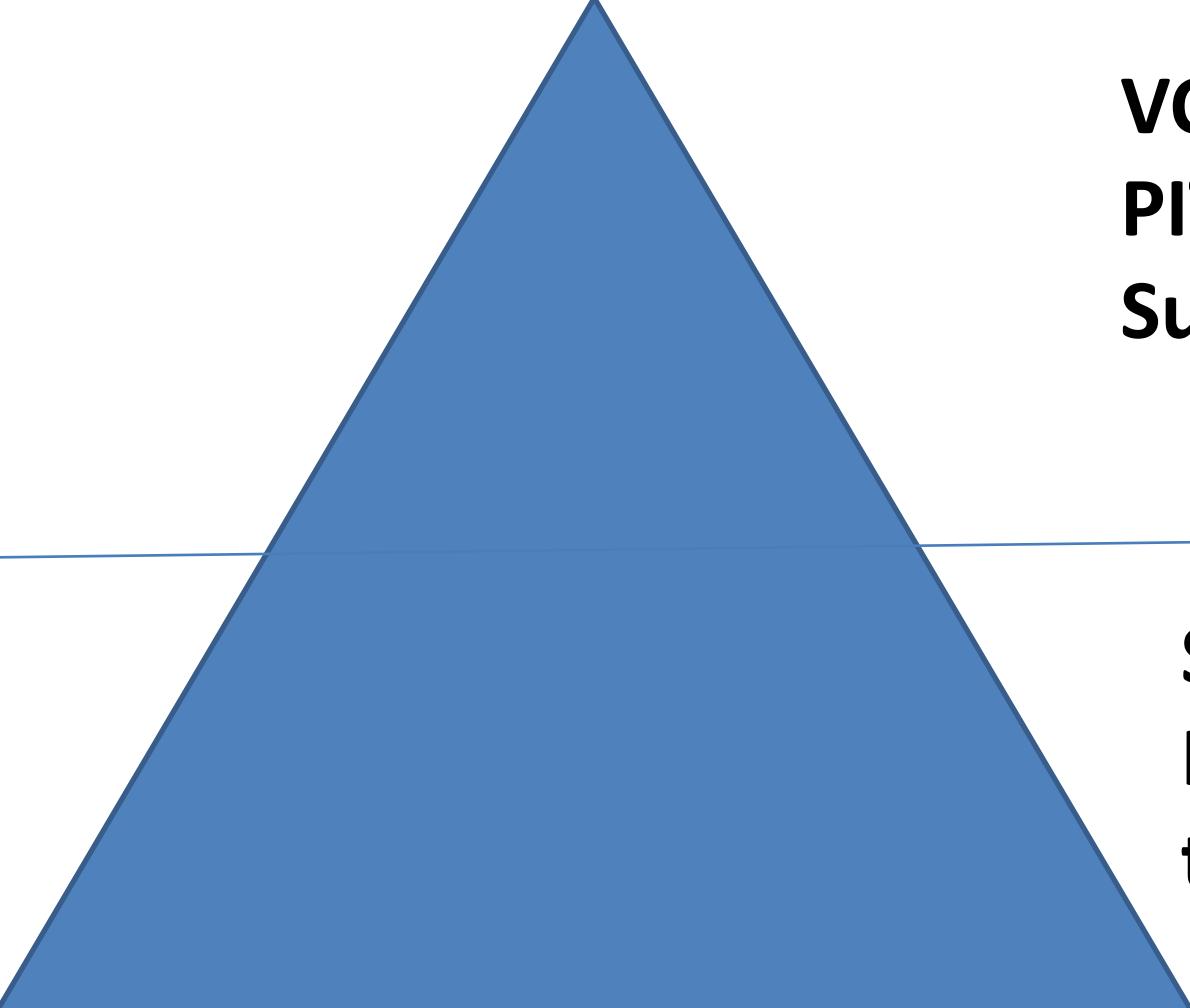
Questionnaire for MSM population on line



For students, testing is only 2.9%
(Data from 2 universities of Guangxi province)

Lower rates for people know their HIV status (National surveillance sites)





VCT
PITC
Surveillance sites

Self collection?
Internet based
testing?

Because of privacy, stigma and discrimination, the MSM population are reluctant to receive HIV test. Under the above background, we develop the Internet-based anonymous HIV urine testing, a new option for MSM population.

The model refers to home collection of urine, transferred the sample to laboratory by mail, performed and interpreted in the professional laboratory, enquired the testing results online.

On line investation ,acceptability is **60.1%**
(Blood is 73.6%, oral is 60.63%)

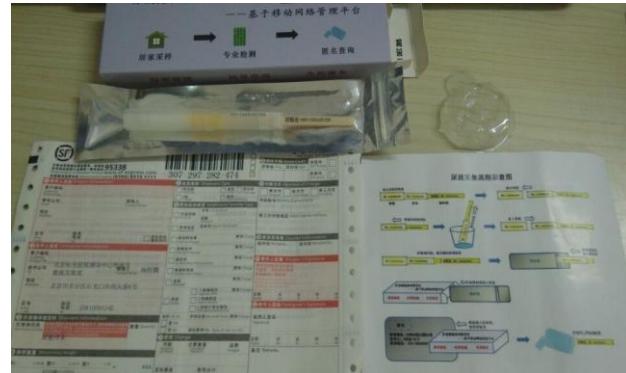
Taking urine collection tube
at Beijing pharmacy

↓ Mail

Laboratory

↓ test

Check results on line
acceptability is 91.1%



Taking urine collection tube at NGO group

↓ Providing the tube to group

The urine will be tested at central lab

↓

Results → group → MSM
acceptability is 100%



300 urine collection tubes at pharmacy

↓from 2015-8-1 to 2015-10-30

275 were taken (all of the persons are young man)

↓214

HIV laboratory of Beijing Youan hospital

(77.81%, 214/275)

↓

↓

1 without urine

213 with urine

↓ ELISA 1 time/week

input results ↓ to computer

screening positive 18.78% (40/213)

Results known 92.49% (197/213)

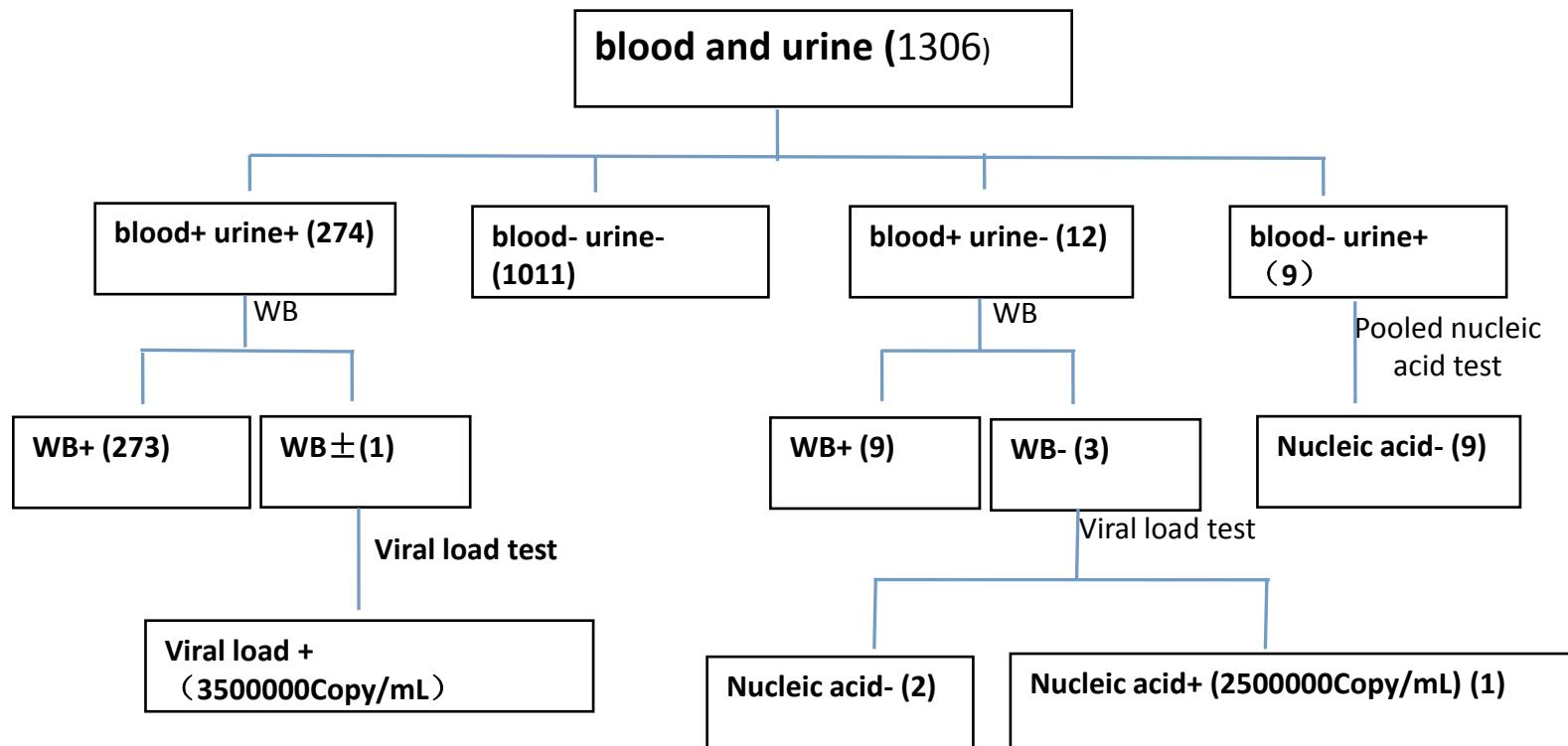
(To be published)

Internet based urine testing is an effective way to prompt MSM population to involve in HIV testing actively.

This new model may effectively expand the coverage for testing, prevent further transmission, finally reduce new HIV infections.

Need more work

Figure 1. sample processing and qulitative results



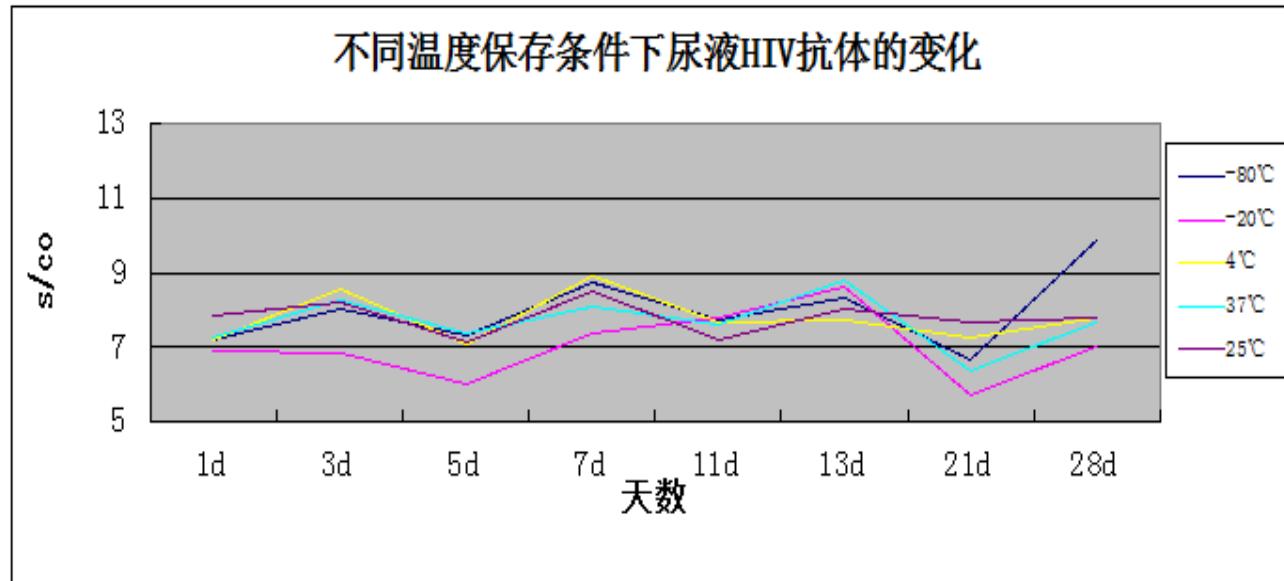
Agreement of urine and blood samples

Urine	Serum		total
	+	-	
+	270	9	279
-	7	856	863
total	277	865	1142

Sensitivity: 94.34-95.96%

Specificity: 95.39-99.63%

2th Chinese AIDS conference 2015



Results of urine HIV antibody testing with ELISA before and after mail (positive sample)

After mail	Before mail			合计
	+	-		
+	94	0		94
-	1	4		5
合计	95	4		99

kappa: 0.886
(To be published)

Next step

More work for internet + T

**How to linking patients to
Doctors**

90 - 90 - 90

Thanks for

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company