

# Self-Administered Sexual Histories in STD Clinics

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*2012 Texas HIV/STD Conference*

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- No conflicts of interest to disclose

# STD Clinical Operations Must Evolve

- Limited resources
- Uncertain future for STD Clinics in the U.S.
- Goal: increase clinic efficiency
  - Decrease cost of providing care while
  - Maintaining or improving quality of care and public health impact of clinic services

# Talk Overview

- Examples of STD clinic interventions to increase clinic efficiency
- Rationale for self-administered sexual history
- Seattle experience
- Key considerations for implementation
- Discussion

# STD Clinic Interventions Designed to Increase Efficiency

- “Express” visits
  - Triage asymptomatic or otherwise low-risk patients
  - Testing-focused visits
    - Specimen collection with minimal or no counseling
- Impact on efficiency and quality?
  - Denver: 39% time savings for men, 56% for women
  - NYC: ↑ GC, CT case detection, ↑ % treated within 30d, ↓ median time to treatment

Heijman et al, STD 2007 (Amsterdam)

Shamos et al, STD 2008 (Denver)

Wong et al, 2008 National STD Prev Conference (Chicago)

Paneth-Pollack et al, AJPB 2010 (NYC)

Dombrowski JC et al, 19<sup>th</sup> ISSTD, (Seattle)

# STD Clinic Interventions Designed to Increase Efficiency

- Technology aides
  - Computer-assisted self-registration<sup>1</sup>
  - Computer-assisted self-interview (CASI)<sup>2-3</sup>
  - Internet-based provision of test results<sup>4</sup>
  - Electronic health records<sup>5</sup>

1. Borrelli et al, 2012 National STD Prev Conf (NYC)
2. Vodstrcil et al, PLoS One 2011 (Melbourne)
3. Dombrowski JC et al, 19<sup>th</sup> ISSTD, (Seattle)
4. Ling et al, STD 2010 (Denver)
5. Paneth-Pollack et al, AJP 2010 (NYC)

# CASI in the Research Setting

- More accurate data = better STD risk assessment
  - ↓ social desirability bias
  - ↓ interviewer bias
- Lower non-response rates = more complete data
- No data entry costs
- Acceptable to users
  - including low-income, minority, low computer-literacy populations

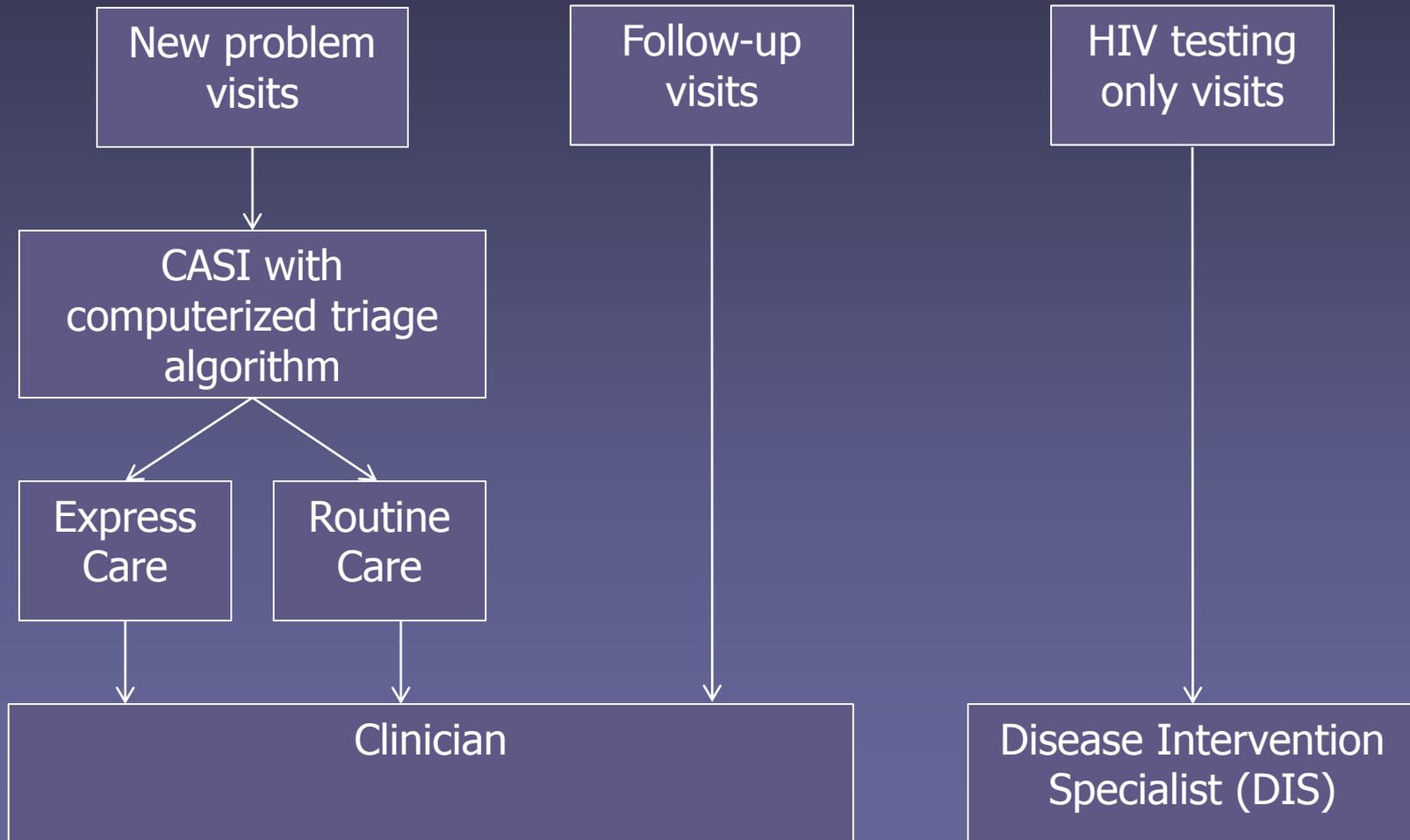
# Talk Overview

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- **Seattle experience**
- Key considerations for implementation
- Discussion

# King County STD Clinic

- Public STD Clinic in Seattle, Washington
- ~12,000 patient visits per year
- Launched in October 2010:
  - Computer-assisted self-interview (CASI)
  - Computerized triage to express or routine care
  - Express protocol
- Primary goal: increase clinic efficiency
- Secondary goal: improve data quality for surveillance and research

# King County STD Clinic Flow



# Criteria for Exclusion from CASI

- Patient does not speak fluent English
- Patient unable to use the touch screen monitor or mouse
- One-on-One (new HIV diagnosis) visit
- Drug rehab program referrals

After registration, patients proceed to touch-screen kiosks



# Public Health - Seattle & King County

Welcome to the STD Clinic.

To better serve you today,  
please answer the following questions.

To start, tap the "Next" button at the bottom of the screen.

A blue, rounded rectangular button with a slight gradient and shadow, containing the word "Next" in white text.

**Next**

# CASI Printout

- Triage result (express or routine care)
- Reason for visit and symptoms
- Sexual exposure history
- HIV/STD history and risk factors
- Obstetrics and gynecology summary
  - Pregnancy history
  - Contraception
  - Cervical cancer screening
- Vaccine history
  - Self-report, clinic record, hepatitis serologies
- Herpes and syphilis serologies from database

# Criteria for Routine Care

- Age  $\leq 18$  years
- Symptomatic
- Known contact to STD/HIV
- Sex partner with symptoms
- +STD test result, needs treatment
- HIV+ out of care
- HCV+, wants referral
- Wants to discuss HSV suppression
- Patient is eligible for vaccine
- Female patient with no menses for past 6 weeks
- Female patient requesting emergency contraception
- Female patient who wants to discuss contraception
- Women  $\geq 21$  with no Pap smear in last year
- Transgendered

# Express Care Protocol

- Introduction and explanation
- Blood draw for HIV and syphilis testing
- Patient directed to self-obtain indicated swabs for GC, CT screening

# Evaluation Questions

- Does CASI collect accurate data in clinical practice compared to clinician interview?
- Does CASI-based triage increase clinic efficiency?
- What are patients' preferences regarding CASI and express care?
- Does CASI affect prevalence of sensitive behaviors reported by clinic patients?
- Does CASI improve data completeness for key variables?

# Methods

- Development
  - Designed CASI to reflect history section of clinic chart
  - 2 months of parallel CASI and clinician interviews
- Implemented October 2010
- Pre- and post-implementation
  - 10 day tracking of visit and wait times for walk-in visits
- Patient survey: interview & visit type preferences
  - 10 day period, 4 months post-implementation
  - Anonymous, written survey distributed at end of visit to all patients who completed CASI
- Data analysis: October 2010 – May 2011

# Agreement between CASI & Clinician Interviews (N=875)

Variable	Kappa coefficient	Kappa interpretation (level of agreement)	Prevalence (CASI + or Clinician +)
STD symptoms	0.67	Substantial	66%
Contact to HIV or STD	0.60	Moderate	21%
Syphilis in past year	0.40	Moderate	2%
Seeking contraception (women)	0.32	Fair	29%
Vaccine indication (HAV, HBV, HPV)	0.25	Fair	37%
Symptomatic partner	0.15	Slight	9%
Needs treatment for +STD test	0.12	Slight	3%

- Discordance examples

- Symptoms: CASI 63%, Clinicians 53%
- Vaccine indication: CASI 36%, Clinicians 9%

# Agreement between CASI & Clinician Interviews (N=875)

Variable	Kappa coefficient	Kappa interpretation (level of agreement)	Prevalence (CASI + or Clinician +)
Male sex partner, among men	0.93	Substantial	48%
Injection drug use	0.82	Substantial	6%
Methamphetamine use	0.71	Substantial	13%
Transactional sex, among women	0.67	Substantial	12%
Unprotected anal intercourse with partners of opposite or unknown HIV status, among MSM	0.58	Moderate	41%

- Discordance example
  - Nonconcordant UAI: CASI 34%, Clinicians 28%

# Evaluation of Triage Algorithm

- October 2010 – May 2011 (8 months)
- 5,697 patients had completed CASI
- 878 (15%) triaged to express care
- 3,464 symptomatic
  - 61% of all patients completing CASI
  - 72% of those excluded from express care

# Reasons for Exclusion from Express Care (N=4819)

Criteria for exclusion	Primary reason for exclusion		Met criterion	
	N	%	N	%
Symptoms	3464	72	3464	72
Contact to STD/HIV	530	11	1160	24
Treatment for + test	45	1	236	5
Symptomatic partner	26	1	442	10
HIV+ out of care	2	<1	38	1
HCV+ out of care	5	<1	29	1
Discuss HSV suppression	32	1	232	5
Discuss contraception	22	<1	89	2
Evaluation for Pap smear	9	<1	50	4
Syphilis in past year	19	<1	145	3
Age <18	18	<1	103	2
Vaccine indication	527	11	2271	47
Needs pregnancy test	120	2	755	16

# New HIV/STD diagnoses, by triage outcome

Diagnosis	Triage Outcome		P-value
	Routine Care N=4819 n (%)	Express Care N=878 n (%)	
Chlamydial infection	367 (7.6)	19 (2.2)	<0.001
Gonorrhea	298 (6.2)	5 (0.6)	<0.001
Early syphilis	68 (1.4)	0	<0.001
Primary	26 (0.5)	0	<0.001
Secondary	28 (0.5)	0	<0.001
Early latent	14 (0.3)	0	<0.001
HIV	43 (0.9)	1 (0.1)	0.015
Acute HIV	6 (0.1)	0	0.30

# Time Study

- We hypothesized that CASI would shorten mean visit times
  - Express care visits: specimen collection only
  - Routine visits: more efficient with interview results

	Pre-implementation Mean (SD)	Post-implementation Mean (SD)	P-value (t-test)
Visit time, minutes	32 (3)	31 (3)	0.30
Wait time, minutes	61 (19)	57 (20)	0.64

# Patient Survey

- 133 (39%) of 337 patients completed the survey

	Overall (N=133)
Interview preference	
CASI	34 (26)
Clinician	27 (20)
No preference	72 (54)
	Asymptomatic patients (N=46)
Visit type preference	
Express	27 (59)
Routine	19 (41)
Test more often with	
Express	17 (37)
Routine	8 (17)
Same either way	21 (46)

# Summary of Initial Experience

- CASI accurately collected key data elements
  - May have been limited by incomplete clinician documentation
- Triage algorithm effectively identified lower risk patients
  - Only 15% triaged to express care
  - Previous reports: Denver 30%, NYC 25%, Chicago 19%
  - May be due to exclusion of patients with a vaccine indication
- CASI and express care were acceptable to most patients
  - Limited by low survey completion rates
- In initial evaluation, CASI triage protocol was not shown to increase clinic efficiency
  - Variable clinician acceptance prevented full implementation
  - Non-clinician staff may be required to successfully implement express care

# Evaluation of Effect on Data Quality

- Compared new problem visits in
  - October 2010 - September 2011 (post-CASI)
  - October 2005 – September 2010 (pre-CASI)
- Non-CASI visits: clinicians documented history
  - Structured, standardized form for collection of sexual history
  - Entered into electronic database

# Key Variables: Completeness

- MSM
  - HIV testing, care and ART use
  - Bacterial STD history
  - Condom use with anal sex, by partner HIV status
- Women and heterosexual men
  - HIV status and testing history
  - Bacterial STD history
  - Condom use with vaginal sex
- Could not assess data completeness for drug use
- Compared data completeness with t-tests

# Key Variables: Sensitive Risk Behaviors

- MSM
  - Methamphetamine, amyl nitrate use
  - $\geq 10$  sex partners
  - Unprotected anal intercourse with partners of discordant or unknown HIV status
- Women, heterosexual men
  - Transactional sex, crack use, IDU
- Examined prevalence in clinic population pre- and post-CASI implementation

# Population for Evaluation of Data Quality

- 67,958 visits
  - 29% MSM (N=20,024)
  - 41% Heterosexual Male (N=27,852)
  - 30% Female (N=20,075)
- Accuracy of MSM ascertainment?
  - Parallel validation: kappa coefficient 0.93
  - Pre-CASI year: 47% of men
  - Post-CASI year: 49% of men
    - On par with year-to-year increases prior to CASI

# Ascertainment of Key Data Elements from MSM Visits (N=20,024)

Variable	Pre-CASI completeness (N= 16,369) (%)	Post-CASI completeness (N=3,655) (%)	P-value
HIV care status (HIV+)	79	88	<0.001
Antiretroviral use (HIV+)	61	88	<0.001
HIV Status	96	98	<0.001
HIV Testing History (HIV-)	92	96	<0.001
Bacterial STD History	96	97	0.02
Condom use with anal sex, by partner HIV status	86	88	0.002

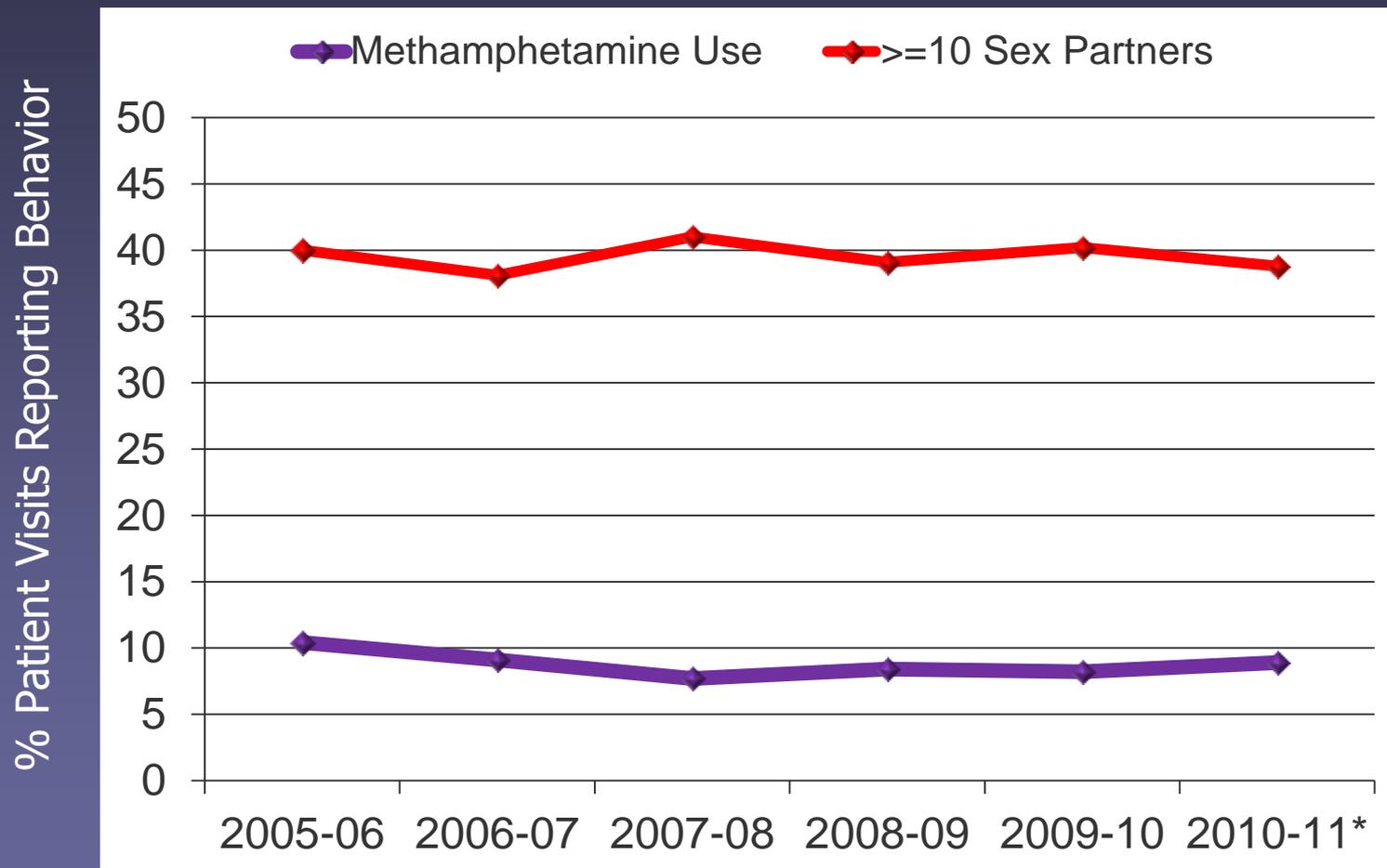
# Estimated numbers of patients with key risk factors identified in the first year of CASI

	Mean No. Patients per year	Mean No. Patients per year	
	PRE-CASI	POST-CASI	Difference
MSM with nonconcordant UAI	737	1120	+383
HIV+ persons out of HIV care	34	49	+15
HIV+ persons not taking antiretrovirals	97	126	+29

# Ascertainment of Key Data Elements from Female and Heterosexual Male Visits (N=47,927)

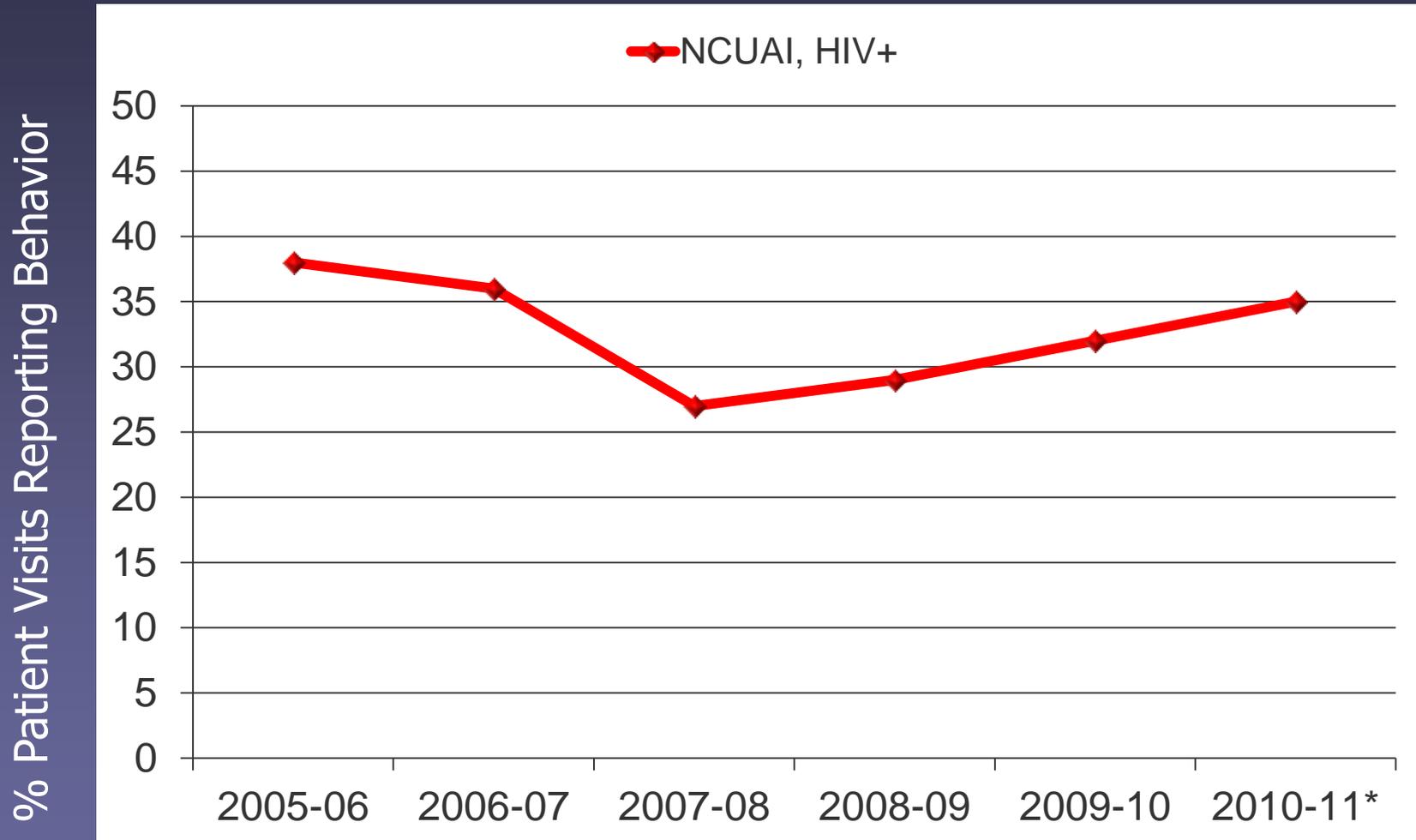
Variable	Pre-CASI completeness (N=41,540) (%)	Post-CASI completeness (N=6,387) (%)	P-value
Condom use with vaginal sex	96	99	<0.001
Bacterial STD History	97	98	0.003
HIV Status	94	97	<0.001
HIV Testing History (HIV-)	88	93	<0.001

# Methamphetamine Use and $\geq 10$ Sex Partners in the Prior Year – MSM Visits (N=20,024)



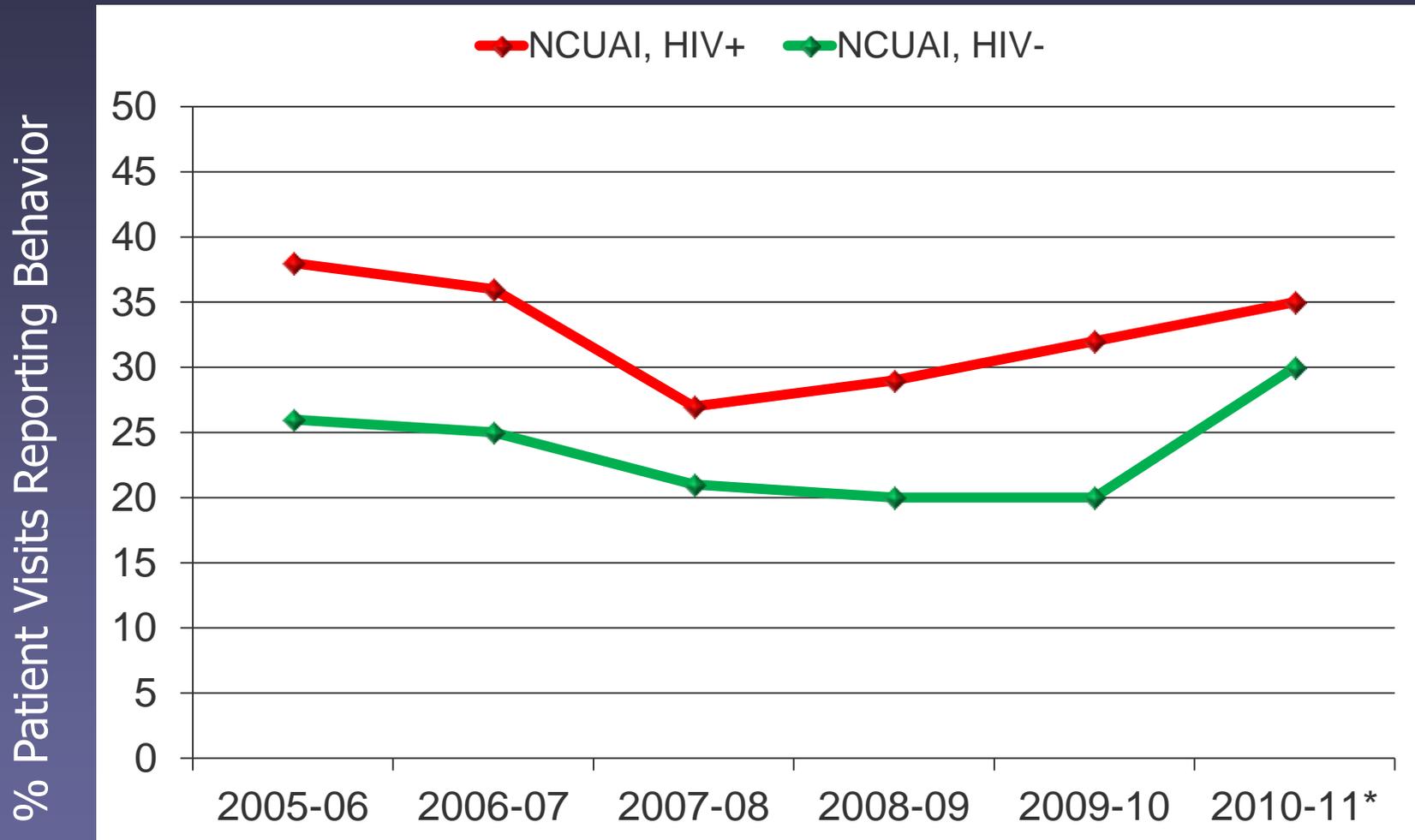
12 Month Period  
\*Post-CASI year

# Nonconcordant Unprotected Anal Intercourse – MSM with Previously Diagnosed HIV (N=2,544)



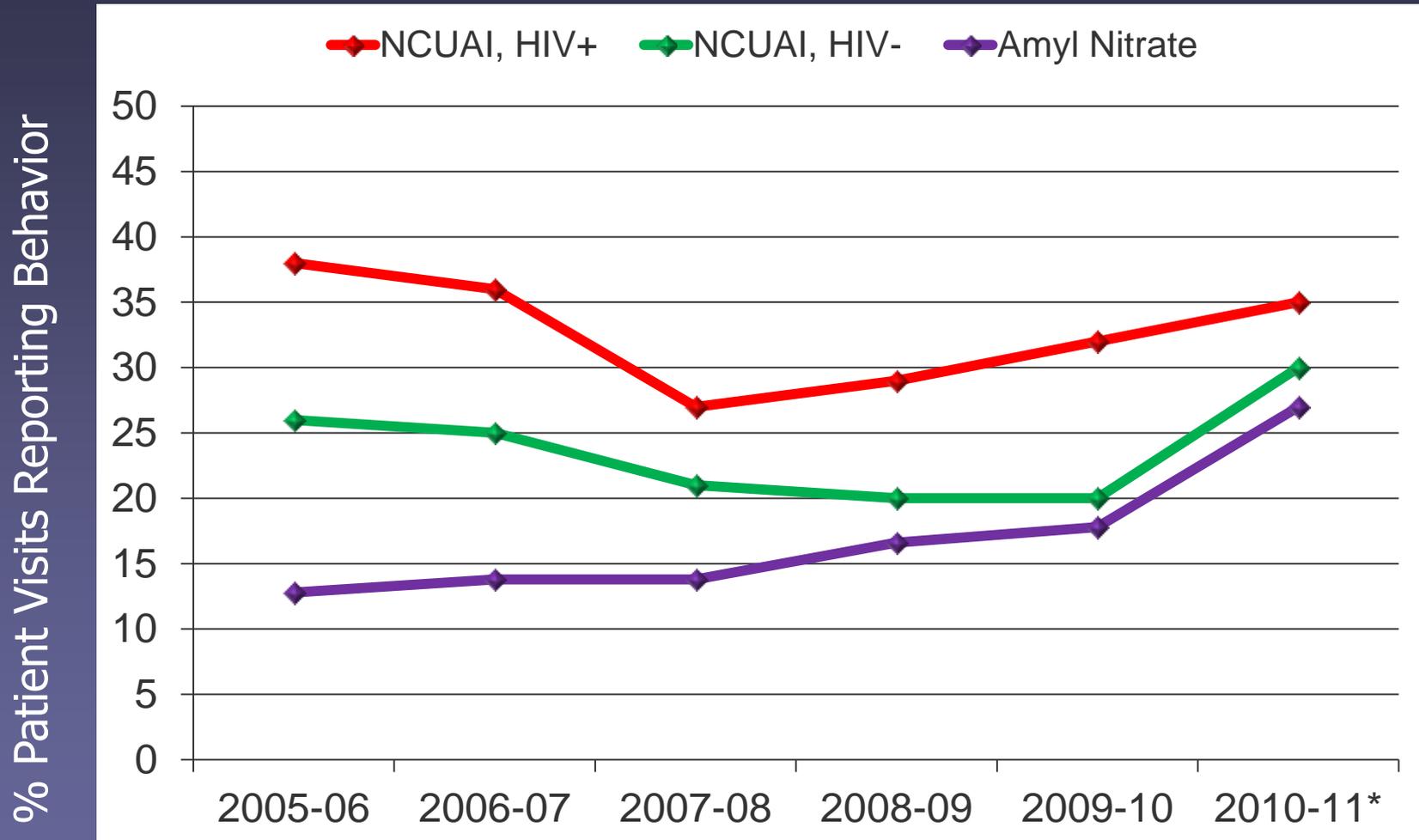
12 Month Period  
\*Post-CASI year

# Nonconcordant Unprotected Anal Intercourse by HIV Status – MSM (N=18,221)



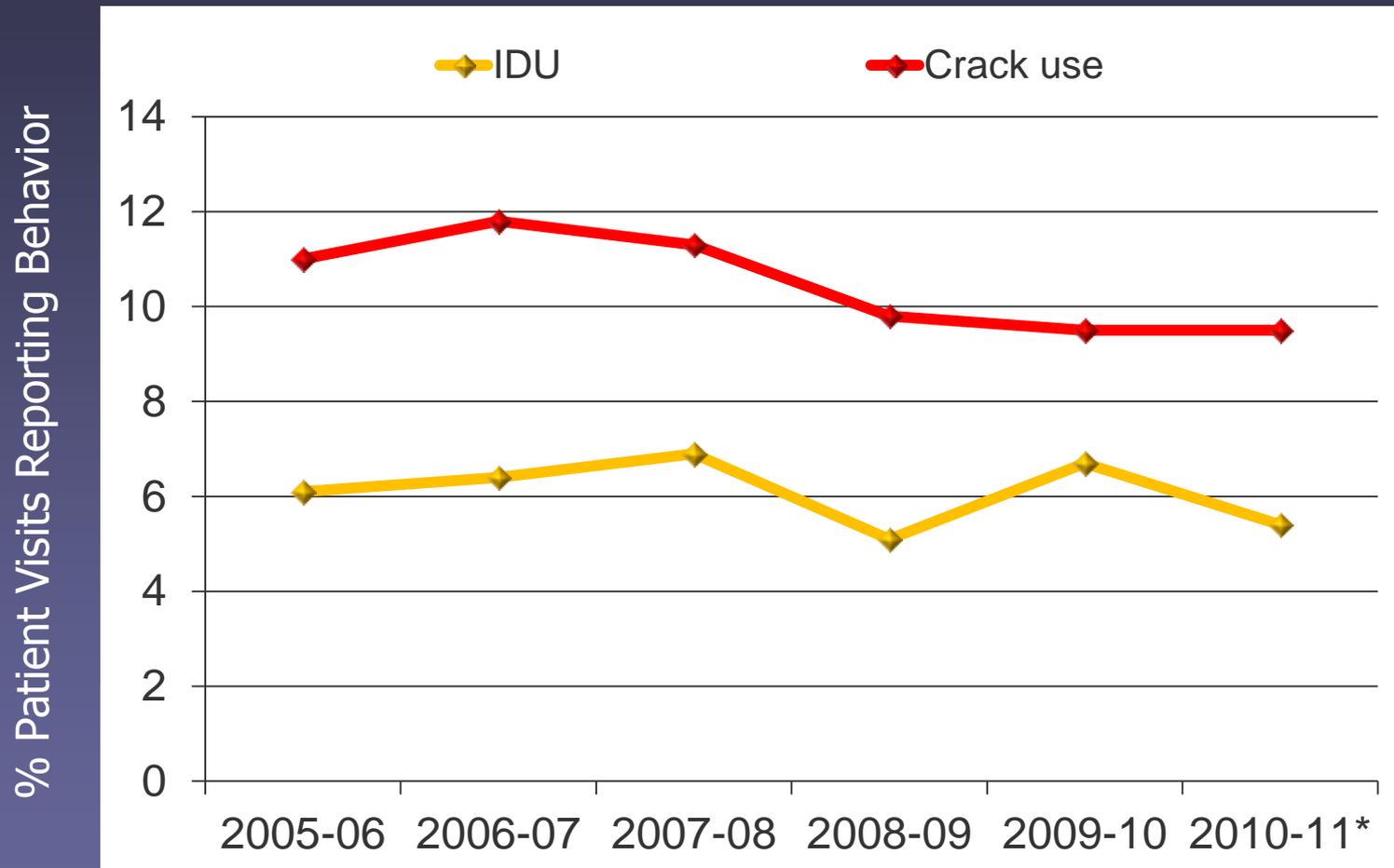
12 Month Period  
\*Post-CASI year

# Nonconcordant Unprotected Anal Intercourse and Amyl Nitrate Use – MSM Visits (N=20,024)



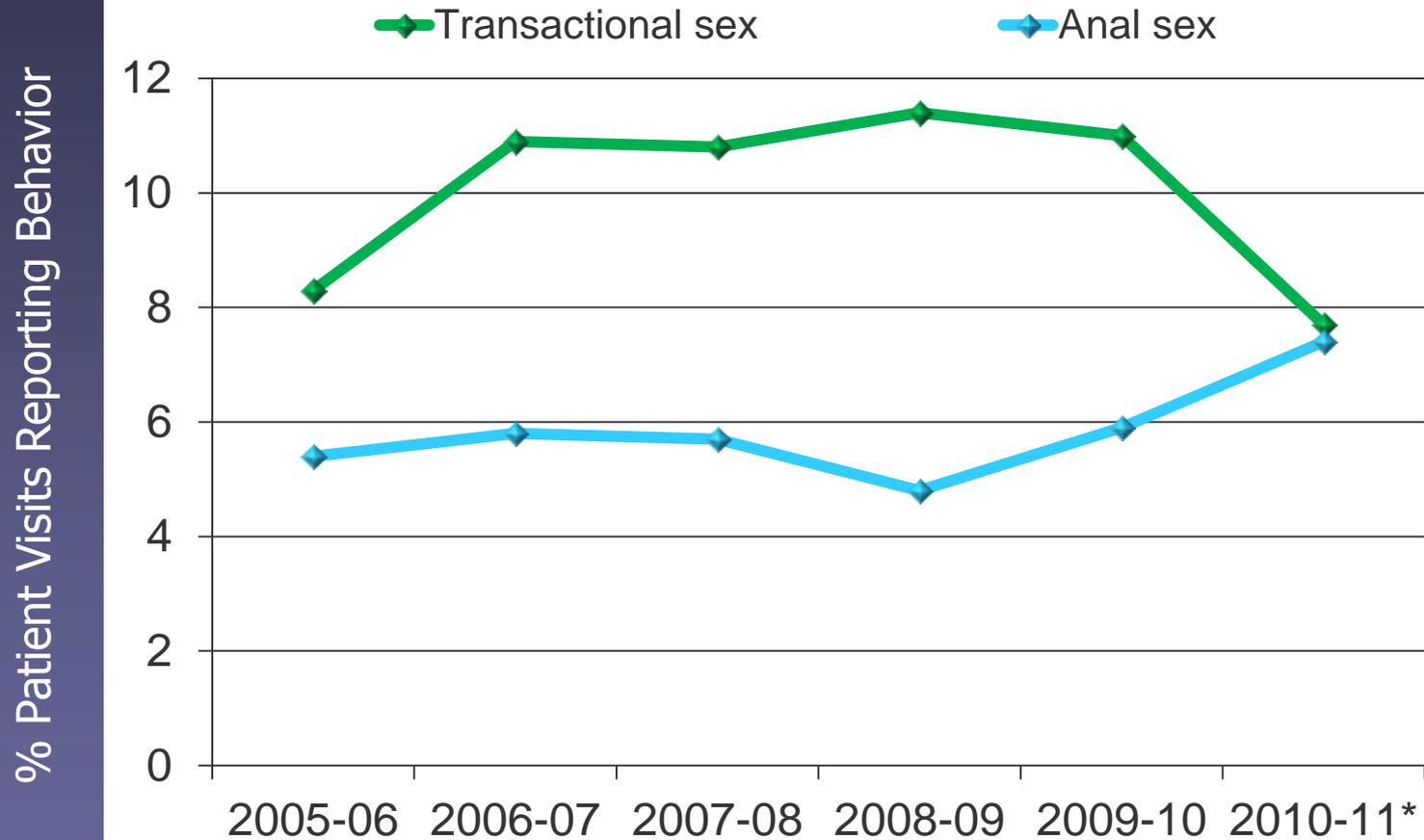
12 Month Period  
\*Post-CASI year

# Injection Drug Use and Crack Use – Female Visits (N=20,075)



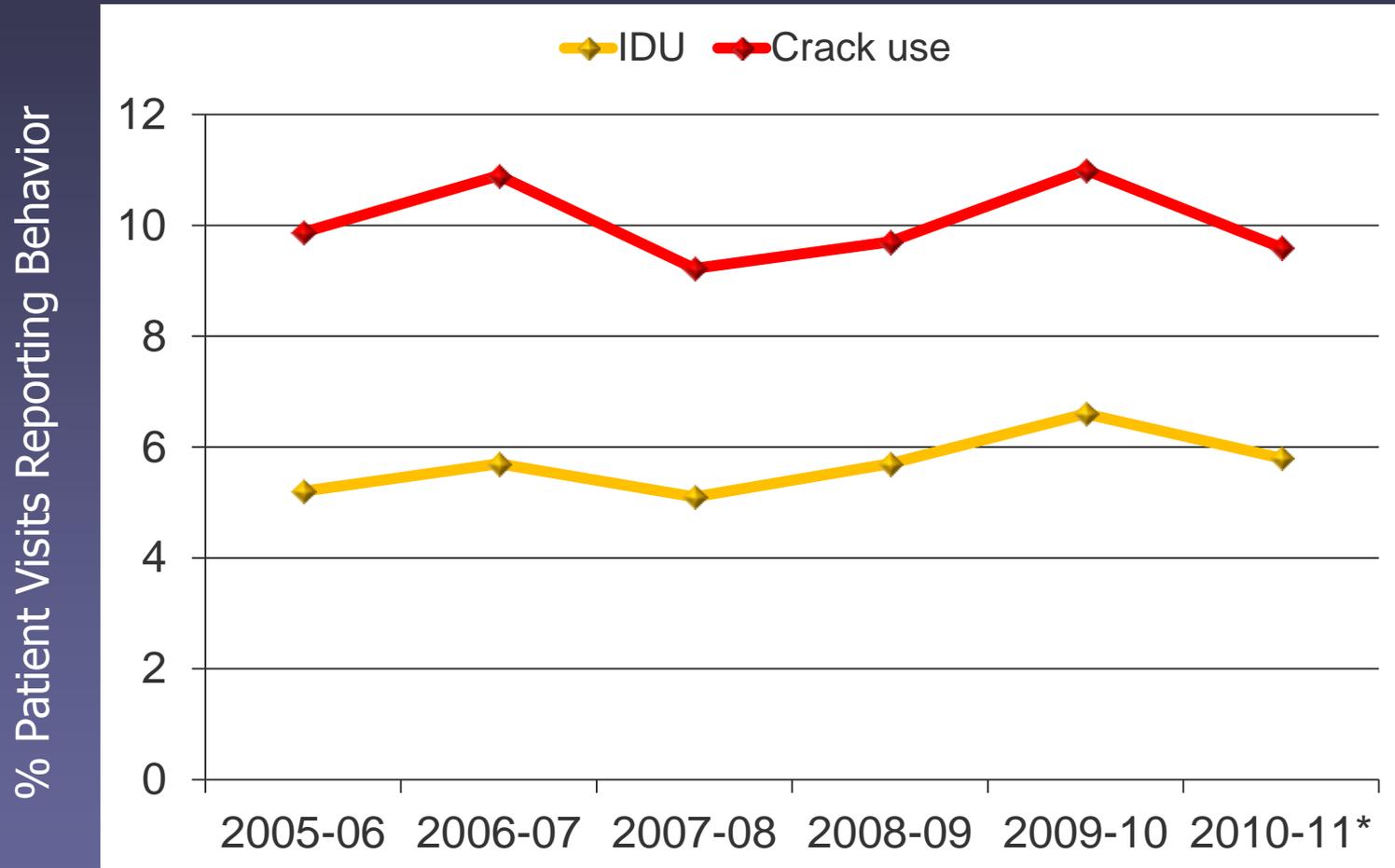
12 Month Period  
\*Post-CASI year

# Transactional Sex and Anal Sex – Female Visits (N=20,075)



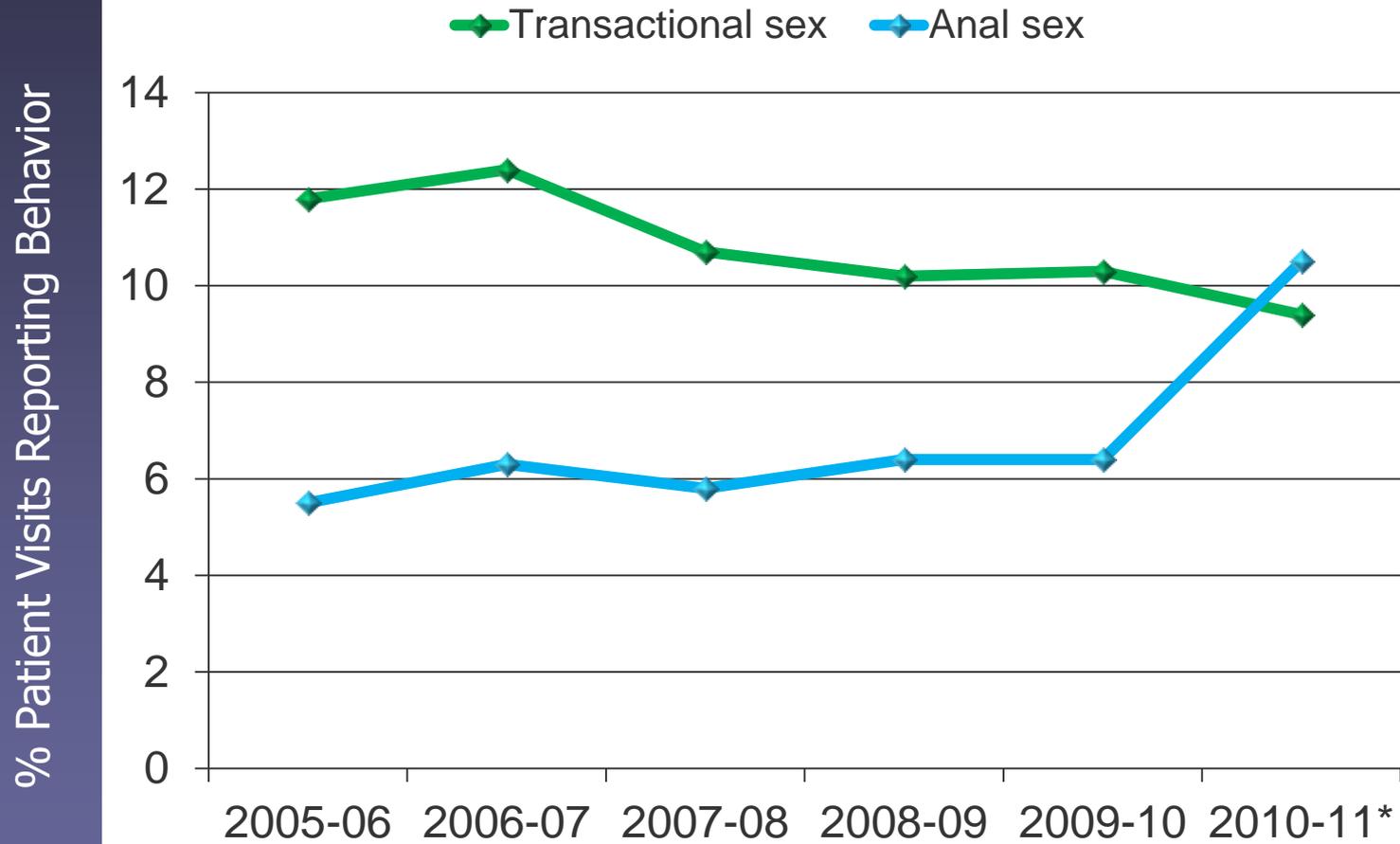
12 Month Period  
\*Post-CASI year

# Injection Drug Use and Crack Use – Heterosexual Male Visits (N=27,852)



12 Month Period  
\*Post-CASI year

# Transactional Sex and Anal Sex – Heterosexual Male Visits (N=27,852)



12 Month Period  
\*Post-CASI year

# Summary of Post-Implementation Evaluation

- Complete ascertainment of key aspects of the sexual history increased with CASI
  - HIV testing history
  - HIV care receipt and ART use
- Sensitive behavior detection may have changed
  - MSM: ↑ nonconcordant UAI, amyl nitrate use
  - Heterosexuals: ↑ anal sex, ↓ transactional sex
- Limitations
  - Only one year of data available for post-CASI period
  - No gold standard for “true” sexual risk behavior

# Next Steps

- Change to separate staffing model for express care (medical assistant)
- Eliminate vaccine eligibility and need for pregnancy test as criteria for exclusion from express care
- Repeat time study now (more time after CASI, before staffing model change) and in ~6 months (after staffing model change)
- Testing reminder triggered from CASI?
- Alternative scheduling models?

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# Potential Disadvantages of CASI

- Clinician interview may be more sensitive than CASI for detecting symptoms
- Disclosures in CASI may not generate same response from clinician
- CASI may diminish opportunities for clinician to build rapport with patient

# Key Considerations re: CASI

- What is the purpose – data for triage, complete interview?
- Program from scratch or refine others' products? (see link to ours, below)
- What software to use? How much customization needed?
- What hardware? Security and IT support?
- Interface with patient registration and medical records?
- How will this affect billing and reimbursement (if relevant)?
- Right time for staff input in process?
- Validation compared to current data collection process?
- Evaluation plan – what baseline data do you need before launching it?

# Conclusions & Implications

- CASI implementation in STD Clinics
  - Likely to improve data quality
  - May improve clinic efficiency
  - May improve patient care
- If multiple sites implemented CASI
  - Uniformity of data collection could improve
  - Infrastructure for surveillance, research, and computerized interventions
- STD Clinics must become more efficient, improve care quality and improve public health impact

# Acknowledgements

- Matthew Golden, MD, MPH
- PHSKC STD Clinic patients and staff
- Fred Koch, Shirley Zhang, Vlaimir Karasek - CASI programmers and data specialists
- Barbara Krekeler, STD Clinic Manager
- Irene King, STD Clinic co-Lead Clinician
- Roxanne Kerani, STD Epidemiologist
- Riza Santos, Data entry
- Renee Petrie, DatStat
- NIH K23MH090923-01