The BESURE Study
2004-2010

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Overview

- HET, IDU, MSM: focus on last round
  - Overview of sample characteristics and types of data
  - Sample of analyses, focus on HIV
- Next steps

HET: 2007 AND 2010

HET overview

	Wave 1 July – Oct 2007	Wave 2 Sept – Dec 2010
Data collection method	Venue – based	Respondent Driven
Total recruited *	332	338
HIV prevalence	3.9%	6.3%
Prevalence unrecognized infection	83.3%	62.5%

*Complete survey and HIV test

Sample characteristics: HET1 and HET2

Characteristic		Wave 1 (n=332)	Wave 2 (n=386)
Gender	Male	54%	48%
	Female	46%	52%
Race/Ethnicity	Black, not Hispanic *	89%	95%
	White, not Hispanic	4%	2%
	Other	8%	3%
Age	18-24	24%	25%
	25-34	27%	26%
	35-44 *	33%	17%
	45 or older *	16%	32%
Education	Less than high school	37%	42%
	High school grad or GED	42%	44%
	More than high school *	20%	14%

p<0.05

Sample characteristics: HET1 and HET2

Characteristic		Wave 1 (n=332)	Wave 2 (n=386)
Employment	Full or part-time *	41%	25%
	Disabled for work *	11%	16%
	Unemployed *	36%	45%
Homelessness	Current *	10%	19%
	Past year *	24%	39%
Arrested in past year	Yes	29%	24%
Health insurance	Yes *	48%	63%
Healthcare provider in past year	Yes	78%	74%
Ever injection drug use	Yes	21%	22%
Drug use in past year	Injection drug use	13%	9%
	Crack use	22%	17%
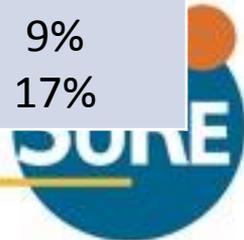
What counts as "sexual risk"? (HET1)

- Unprotected sex?
  - 84% report any unprotected vaginal or anal sex in past year
- Type of partner?
  - 72% report unprotected sex with only main partners
  - 38% report unprotected sex with casual or exchange partners

Towe VL, Sifakis F, Gindi RM, Sherman SG, Flynn C, Hauck H, Celentano DD. Prevalence of HIV infection and sexual risk behaviors among individuals having heterosexual sex in low income neighborhoods in Baltimore, MD: the BESURE study. J Acquir Immune Defic Syndr. 2010 Apr 1;53(4):522-8.

Unprotected intercourse by STD history

	No STD	Any STD	*p*-value
Comparing all groups			
No unprotected sex	89%	11%	0.01
With main partners only	93%	7%	
With casual/exchange partners only	82%	18%	
Comparing casual/exchange to main			
With main partners only	93%	7%	0.003
With casual/exchange partners only	82%	18%	
Comparing main to no unprotected sex			
No unprotected sex	89%	11%	0.37
With main partners only	93%	7%	

Research question

- Reported unprotected sex with casual or exchange partners (HET1): 38%
  - What are the associated socio-demographic characteristics?
  - What are the associated sexual behaviors?
  - What are other associated risks?

Towe VL, Sifakis F, Gindi RM, Sherman SG, Flynn C, Hauck H, Celentano DD. Prevalence of HIV infection and sexual risk behaviors among individuals having heterosexual sex in low income neighborhoods in Baltimore, MD: the BESURE study. J Acquir Immune Defic Syndr. 2010 Apr 1;53(4):522-8.

Characteristics associated with unprotected sex with casual or exchange partners: Demographics

Characteristic		Total # (n=301)	Unprotected % (n=115)	Prevalence Ratio
Current homelessness	Yes	27	63%	1.8 *
High school education	Yes	192	35%	-
Race/ethnicity	African-Amer	271	37%	-
Age	18-24	80	21%	Ref.
	25-33	77	44%	2.0 *
	34-41	71	48%	2.3 *
	42-50	73	41%	1.9 *
Gender	Male	161	44%	1.4 *
Marital status	Married/living	34	32%	-
Living below poverty level	Yes	190	37%	-
Healthcare past year	Yes	238	35%	0.69 *
Health insurance status	No insurance	156	41%	-
Arrested/ booked past year	Yes	89	49%	1.5 *

*$p<0.05$

Characteristics associated with unprotected sex with casual or exchange partners: Sex and HIV

Characteristic		Total # (n=301)	Unprotected % (n=115)	Prev. Ratio
Number of opposite sex partners	1	99	9%	Ref.
	2	70	34%	3.8 *
	3	47	47%	5.2 *
	4 or more	85	71%	7.8 *
Past year, any sex with:	Same sex partners	20	65%	1.8 *
	Concurrent partners	178	57%	5.0 *
Substance use in past year	Injection drug use	36	58%	1.6 *
	Non-injection drug use	173	46%	1.7 *
	Binge drinking (past mo)	100	48%	1.4 *
Ever told had STD	Yes	37	60%	1.7 *
HIV status	Positive	10	50%	-
Ever HIV test	Yes	255	37%	-
HIV test in past 2 years	Yes	190	36%	-

Characteristics associated with unprotected sex with casual or exchange partners: Multivariate

Characteristic		Total # (n=301)	Unprot. % (n=115)	Prev. Ratio	Adj. P. R.
Currently homeless	Yes	27	63%	1.8 *	1.2 *
Age	18-24	80	21%	Ref.	Ref.
	25-33	77	44%	2.0 *	1.6 *
	34-41	71	48%	2.3 *	1.9 *
	42-50	73	41%	1.9 *	2.2 *
Number of opposite sex partners	1	99	9%	Ref.	Ref.
	2	70	34%	3.8 *	-
	3	47	47%	5.2 *	-
	4 or more	85	71%	7.8 *	3.5 *
Concurrent sex partners	Yes	178	57%	5.0 *	2.1 *
Any binge drinking past month	Yes	100	48	1.4 *	1.2 *
Ever told by physician had STD	Yes	37	60%	1.7 *	1.2 *

Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Self-report
  - Don't know if findings also true in HET2 sample (different characteristics)
- Prevention implications:
  - Associated with variety of potential risk behaviors
  - Homelessness and older age as co-factors

IDU: 2006 AND 2009

IDU overview

	Wave 1 Aug 2006 – Jan 2007	Wave 2 Sept – Dec 2009
Data collection method	Respondent Driven	Respondent Driven
Total IDU in past year recruited *	539	507
HIV prevalence	11.9%	16.2%
Prevalence unrecognized infection	50%	48%

*Complete survey and HIV test

Sample characteristics: IDU1 and IDU2

Characteristic		Wave 1 (n=539)	Wave 2 (n=507)
Gender	Male	61%	73%
	Female *	38%	27%
Race/Ethnicity	Black, not Hispanic *	54%	80%
	White, not Hispanic	41%	16%
	Other	6%	4%
Age	18-34	27%	14%
	35-44	42%	23%
	45 or older *	31%	64%
Education	Less than high school	48%	43%
	High school or more	52%	57%
Homelessness past year	Yes	58%	54%
Arrested in past year	Yes	47%	44%
Hepatitis C diagnosis	Yes *	29%	50%

* $p<0.05$

Sample characteristics: IDU1 and IDU2

Characteristic		Wave 1 (n=539)	Wave 2 (n=507)
Years since first IDU	10 or more *	61%	86%
Daily IDU	Yes *	79%	90%
Crack use past year	Yes	46%	43%
Used someone's needle past year	Yes *	53%	28%
Always used sterile needle past year	Yes	24%	25%
Used someone's cooker, cotton, water past year	Yes	64%	69%

Research questions (IDU2)

- Characteristics associated with HIV infection
  - Total: 16.2%
  - RDS Adjusted: 13.2 (95% C.I.: 9.4, 16.8)
- Characteristics associated with unrecognized infection
  - Total: 8.3 (or 48% of HIV positive)
  - RDS Adjusted: 4.7 (2.7 – 7.8)

German D, Sifakis F, Maulsby C, Towe VL, Flynn CP, Latkin CA, Celentano DD, Hauck H, Holtgrave DR. (2011). Persistently high prevalence and unrecognized HIV infection among men who have sex with men in Baltimore: The BESURE Study. J Acquir Immune Defic Syndr. 57(1): 57-87.

Characteristics associated with HIV: socio-demographic (IDU2)

Characteristic		Total # (n=507)	HIV+ % (n=82)	Odds Ratio (RDS Adj.)
Gender	Male	370	18%	Ref
	Female	136	13%	-
Race/Ethnicity	Non-Hispanic White	83	7%	Ref
	Non-Hispanic Black	404	18%	-
	Other	20	10%	-
Age	18-34	69	6%	Ref
	35-44	116	15%	-
	> 45	322	19%	2.5 *
Education	At least high school	287	15%	0.3 *
Homeless past year	Yes	274	13%	-
Arrested past year	Yes	223	14%	-
Any STI past year	Yes	33	15%	-
Diagnosed with HCV	Yes	255	18%	2.2 *

Characteristics associated with HIV: drug and sex behaviors (IDU2)

Characteristic		Total # (n=507)	HIV+ % (n=82)	Odds Ratio (RDS Adj.)
Years since first injection	Less than 10 10 or more	70 437	4% 18%	Ref. 10.9 *
Daily injection drug use	Yes	454	17%	-
Crack use past year	Yes	218	12%	-
Used anyone's needle past year	Yes	144	13%	0.3 *
Share cooker, cotton, water past year	Yes	351	16%	-
Number sex partners past year	0 1 2 or more	70 199 230	29% 18% 11%	Ref 0.5 * -
Any unprotected sex past year	Yes	349	10%	0.3 *
Last sex with HIV+ partner	Yes	12	3%	5.3 *

Characteristics associated with HIV (IDU2)

| Characteristic		Total # (n=507)	HIV+ % (n=82)	Odds Ratio (RDS Adj.)	Adj. Odds Ratio
Age	18-34	69	6%	Ref	Ref
	35-44	116	15%	-	-
	> 45	322	19%	2.5 *	-
Years since first IDU	10 or more	437	18%	10.9 *	7.0 *
Education	At least h.s.	287	15%	0.3 *	0.2 *
Diagnosed with HCV	Yes	255	18%	2.2 *	-
Used anyone's needle	Yes	144	13%	0.3 *	0.4 *
Number sex partners past year	0	70	29%	Ref	Ref.
	1	199	18%	0.5 *	-
	2 or more	230	11%	-	-
Any unprotected sex	Yes	349	10%	0.3 *	0.2 *
Last sex with HIV+ partner	Yes	12	3%	5.3 *	6.6 *

Characteristics associated with unrecognized HIV infection (IDU2)

- 48% of HIV-positive

- No difference:
  - Socio-demographic characteristics
  - Drug use patterns
  - Injection risk behaviors

HIV testing and unrecognized HIV infection

- Among those unaware of HIV positive status (n=42)
  - Ever test for HIV: 72%
  - Never test for HIV: 28%
- Among those ever tested for HIV (n=34)
  - Tested in past year: 36%
  - Not tested in past year: 64%

Reasons for not testing for HIV
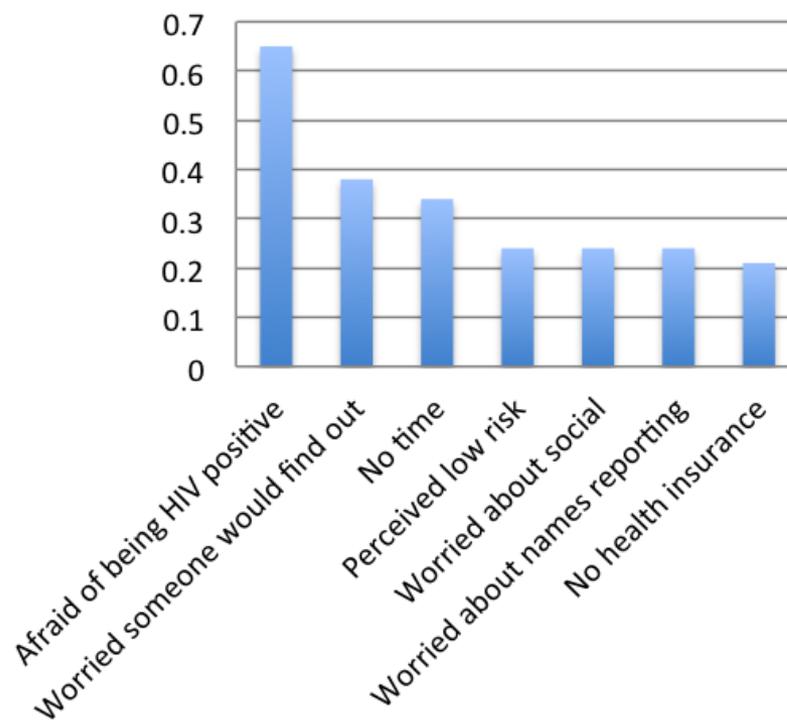
Categories (left to right):
- Afraid of being HIV positive
- Worried someone would find out
- No time
- Perceived low risk
- Worried about social
- Worried about names reporting
- No health insurance

Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Self-report
  - Comparison to IDU1 (Different characteristics)
- Prevention implications:
  - Low HIV risk behaviors among HIV-positive IDUs
  - Continued need for testing
  - Need to counter "fear of being positive"
  - Increase "always sterile needle"
  - Persistently high rates of cooker, cotton, water sharing
  - High arrest and homelessness

MSM: 2004/2005 AND 2008

MSM overview

	Wave 1 July – Oct 2007	Wave 2 Sept – Dec 2010
Data collection method	Venue – based	Venue – based
Total MSM in past year *	645	448
HIV prevalence	37.7%	37.5%
Prevalence unrecognized infection	58.4%	78.4%

*Complete survey and HIV test

Sample characteristics: MSM1 and MSM2

Characteristic		Wave 1 (n=645)	Wave 2 (n=448)
Race/Ethnicity	Black, not Hispanic *	63%	71%
	White, not Hispanic *	31%	23%
	Other	6%	5%
Age	18-24 *	24%	31%
	25-34	26%	30%
	35-44 *	31%	24%
	45 or older	18%	15%
Education	High school or less	49%	48%
	College or some college	45%	45%
	Graduate education	6%	6%
Sexual identity	Homosexual	63%	68%
	Bisexual	32%	30%
	Heterosexual or other *	5%	2%
Current homelessness	Yes *	3%	6%

* *p*<0.05

Sample characteristics: MSM1 and MSM2

Characteristic		Wave 1 (n=645)	Wave 2 (n=448)
Sex partners in past year	Men only *	67%	76%
	Men and women *	33%	24%
# male partners past year	1	26%	24%
	2-3 *	28%	34%
	4-8	23%	26%
	9 or more *	23%	16%
Unprotected anal sex past year	Yes *	53%	36%
Ever IDU	Yes *	17%	6%
Non-injection drugs past year	Yes *	49%	59%
Ever tested for HIV	Yes	87%	90%
Health insurance	None	36%	37%
	Public	23%	19%
	Private	41%	44%
Doctor's visit past year	Yes	77%	81%

Research questions (MSM2)

- Characteristics associated with HIV infection
  - Total: 37.5%

- Characteristics associated with unrecognized infection
  - Total: 74.4% of HIV positive

- Racial disparities?

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Characteristics associated with HIV infection (MSM2): Socio-demographic

Characteristic		Total % (n=448)	HIV+ % (n=168)	Prevalence Ratio
Race/Ethnicity	Non-Hispanic white	31%	18%	Ref
	Non-Hispanic Black	62%	45%	2.5 *
	Other	6%	25%	-
Age	< 24	24%	29%	Ref
	25-34	26%	42%	-
	35-44	30%	40%	-
	> 45	18%	43%	-
Education	Graduate education	49%	29%	Ref.
	College or some college	45%	34%	-
	High school or less	6%	42%	-
Homelessness	Current	3%	41%	-
Sexual identity	Homosexual	63%	39%	Ref
	Bisexual	32%	35%	-
	Heterosexual or other	5%	20%	-

Characteristics associated with HIV infection (MSM2): Sex and drug

Characteristic		Total % (n=448)	HIV+ % (n=168)	Prevalence Ratio
# of male sex partners, past year	1	26%	34%	Ref
	2-3	28%	35%	-
	4-8	23%	44%	-
	9 or more	23%	39%	-
Sex partners in past year	Men only	67%	40%	Ref
	Men and women	34%	30%	-
Unprotected sex in past year	None	47%	35%	Ref
	With main partners only	25%	33%	-
	With casual/exchange partners	27%	52%	1.5 *
Substance use	Ever IDU	17%	30%	-
	Non-injection drug use past year	49%	41%	-

BE SURE

Characteristics associated with HIV infection (MSM2): Health services

Characteristic		Total % (n=448)	HIV+ % (n=168)	Prevalence Ratio
Ever tested for HIV	Yes	86%	38%	-
Ever told had STD	Yes	16%	51%	1.5 *
Health insurance	No health insurance	36%	40%	Ref.
	Public	23%	48%	-
	Private	41%	31%	-
Visit doctor's office in past year	Yes	77%	39%	-

Characteristics associated with HIV infection: Multivariate

Characteristic		Total % (n=448)	HIV+ %	Prevalence Ratio	Adjusted Prevalence Ratio
Race/Ethnicity	Non-Hispanic White	31%	18%	Ref	Ref.
	Non-Hispanic Black	62%	45%	2.5 *	2.5 *
	Other	6%	25%	1.4	-
Unprotected sex in past year	None	47%	35%	Ref	Ref
	With main partners only	25%	33%	0.9	-
	With casual/exchange partners	27%	52%	1.5 *	1.4 *
Ever told had STD	Yes	16%	51%	1.5 *	1.5 *

BE SURE

Unrecognized HIV infection (MSM2): Socio-demographic

Characteristic		Total % (n=448)	HIV+ % (n=168)	Unrecog % (n=125)	P.R.
Race/Ethnicity	Non-Hispanic White	31%	18%	47%	Ref
	Non-Hispanic Black	62%	45%	77%	-
	Other	6%	25%	100%	2.1 *
Age	< 24	24%	29%	85%	Ref
	25-34	26%	42%	75%	-
	35-44	30%	40%	79%	-
	> 45	18%	43%	50%	0.6 *
Education	Graduate education	49%	29%	50%	Ref.
	College or some coll	45%	34%	77%	-
	High school or less	6%	42%	76%	-
Homelessness	Current	3%	41%	73%	-
Sexual identity	Homosexual	63%	39%	72%	Ref
	Bisexual	32%	35%	81%	-
	Heterosexual/other	5%	20%	50%	-

Unrecognized HIV infection (MSM2): Sex and drug

Characteristic		Total % (n=448)	HIV+ % (n=168)	Unrecog % (n=125)	P.R.
# of male sex partners, past year	1	26%	34%	76%	Ref
	2-3	28%	35%	74%	-
	4-8	23%	44%	76%	-
	9 or more	23%	39%	70%	-
Sex partners in past year	Men only	67%	40%	71%	Ref
	Men and women	34%	30%	88%	1.2 *
Unprotected sex in past year	None	47%	35%	73%	Ref
	With main partners only	25%	33%	81%	-
	With casual/exchange partners	27%	52%	74%	-
Substance use	Ever IDU	17%	30%	74%	-
	Non-injection drug use in past year	49%	41%	79%	-

Unrecognized HIV infection (MSM2): Health services

Characteristic		Total % (n=448)	HIV+ % (n=168)	Unrecog % (n=125)	P.R.
Ever told had STD	Yes	16%	51%	66%	-
Health insurance	No health insurance Public Private	36% 23% 41%	40% 48% 31%	80% 73% 68%	Ref. 0.9 * -
Visit doctor's office in past year	Yes	77%	39%	71%	0.8 *

Characteristics associated with unrecognized HIV infection: Multivariate

Characteristic		Total % (n=448)	HIV+ %	Unrecog % (n=125)	P.R.	A.P.R.
Race/Ethnicity	Non-Hispanic White	31%	18%	47%	Ref	Ref.
	Non-Hispanic Black	62%	45%	77%	1.6	-
	Other	6%	25%	100%	2.1 *	-
Age	< 24	24%	29%	85%	Ref	Ref
	25-34	26%	42%	75%	0.9	-
	35-44	30%	40%	79%	0.9	-
	> 45	18%	43%	50%	0.6 *	0.7 *
Visit doctor's office	Yes	77%	39%	71%	0.8 *	0.8 *

Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Self-report
  - Comparison to MSM1 (different characteristics)
- Prevention implications:
  - Drastic need for innovative evidence-based prevention, especially among African-American men
  - Drastic need for targeted testing and link to care, especially among young men
  - Racial disparities not accounted for by behaviors

BESURE next steps

- Round 3: MSM3 2011
- BESURE Blog!

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