Adherence to Antiretroviral Therapy and Disparities in Viral Suppression among U.S. Black and White Men Who Have Sex With Men—Medical Monitoring Project, 2009

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for the Medical Monitoring Project

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National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Division of HIV/AIDS Prevention

Background

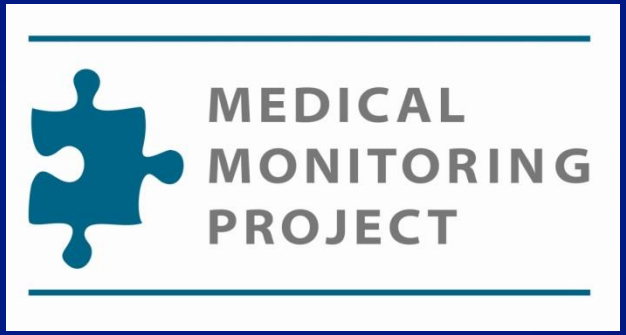
- **In the United States, black men who have sex with men (MSM) are disproportionately affected by HIV**
  - Higher rates of HIV incidence and prevalence
  - Less likely to be virally suppressed
- **Viral suppression associated with decreased morbidity, mortality, and risk of HIV transmission**
- **Adherence to antiretroviral therapy (ART) key to suppressing viral replication**
- **Differences in medication adherence may contribute to racial disparity in viral suppression among MSM, but prior studies have been limited**

Objectives

- Present nationally representative estimates of adherence and viral suppression among black and white MSM receiving care in the United States
- Assess whether differences in adherence were associated with differences in viral suppression
- Assess whether factors associated with adherence differed among black and white MSM

Methods

- **Analysis of Medical Monitoring Project (MMP) data collected June 2009 - May 2010**
  - **Ongoing supplemental HIV surveillance system**
  - **Interview and medical record data from HIV-infected adults receiving care**
    - 16 U.S. states (including 6 separately funded areas) and one territory
  - **Three-stage sample design**
    - States
    - HIV care-providing facilities
    - HIV-infected adults receiving care
  - **Response rates for matched data**
    - States = 100%
    - Facilities = 76%
    - Patients = 51%
    - Overall = 39%



Methods

- **Persons included: black or white non-Hispanic male MMP participants**
  - Oral or anal sex with a man during the past year
  - If abstinent, reported homosexual/gay/bisexual identity

- **Compared prevalence among HIV-infected BMSM and WMSM of**
  - **ART use:** Self-reported current use of ART
  - **Adherence:** Self-reported 100% adherence to ART doses in the past 72 hours (ACTG)
  - **Viral suppression:** Most recent viral load documented undetectable or $\leq$ 200 copies/ml

Methods

- **Modified Rao-Scott chi-square tests to identify significant bivariate differences in factors associated with adherence by race**
  - Sociodemographics, alcohol and substance use, dosing, side effects, medication beliefs
- **Analyses accounted for clustering, unequal selection probabilities, and non-response**

RESULTS: CHARACTERISTICS OF HIV-INFECTED BLACK AND WHITE MSM

Characteristics of HIV-infected Black and White MSM, MMP 2009: Sociodemographic Factors

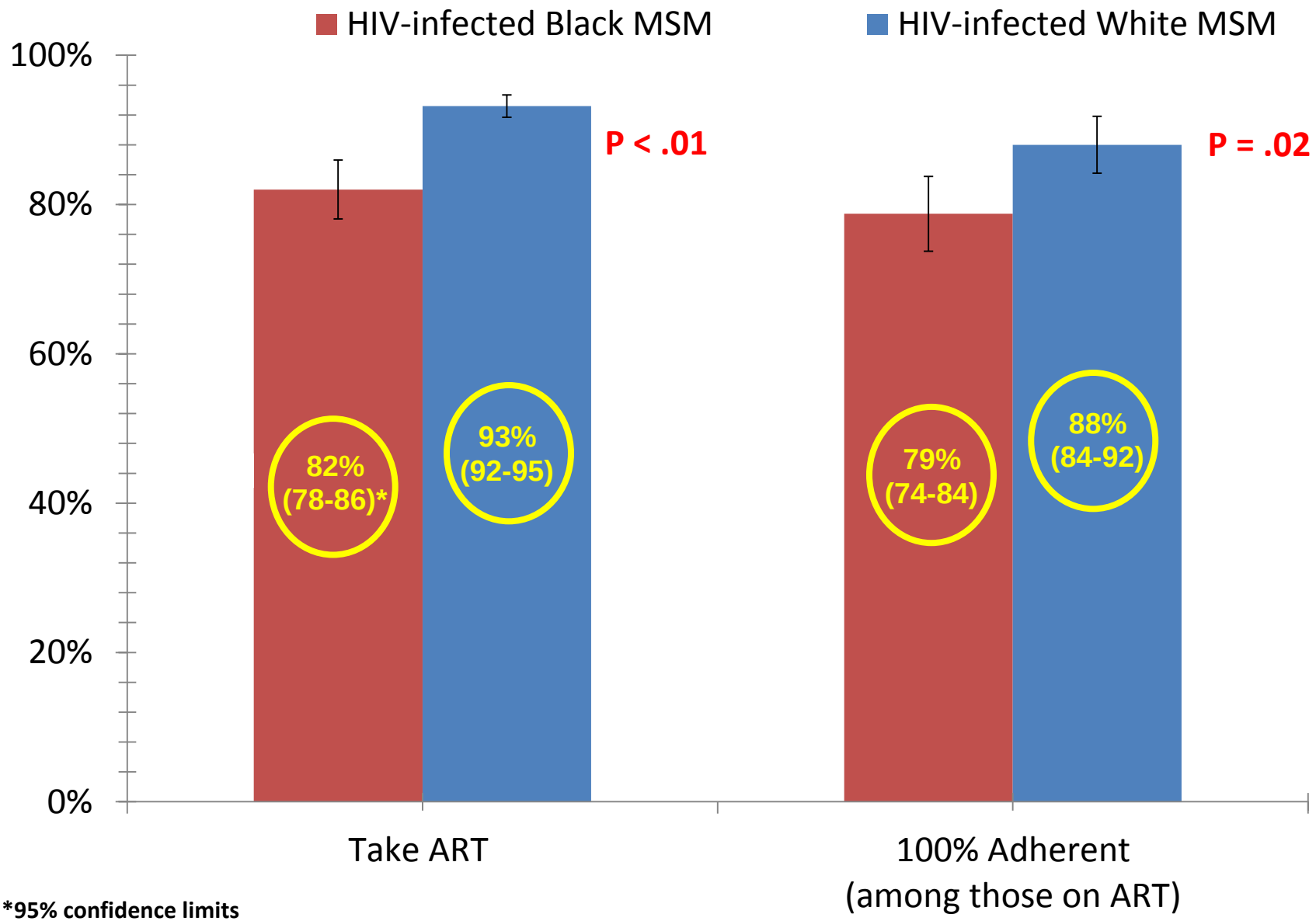
		Black MSM (n=445)	White MSM (n=1,004)	p value
		%	%	
Age at interview (years)	18-29	16	4	<.01
	30-39	20	13	
	40-49	37	42	
	50+	27	41	
Educational attainment	< High school	11	5	<.01
	High school or equiv	28	20	
	> High school	61	75	
At or below poverty		36	18	<.01
Homeless (past 12 mths)		9	4	< .01

Characteristics of HIV-infected Black and White MSM, MMP 2009: Health Care Access and Clinical Factors

		Black MSM (n=445) %	White MSM (n=1,004) %	p value
Any lapse in health care coverage (past 12 months)		36	17	<.01
HIV disease stage	Clinical or immunologic AIDS	64	64	
	No AIDS and nadir CD4 200-499	32	28	.10
	No AIDS and nadir CD4 ≥ 500	5	8	
Time since HIV diagnosis (years)	< 5	30	20	
	5 - 9	20	17	<.01
	≥ 10	50	63	

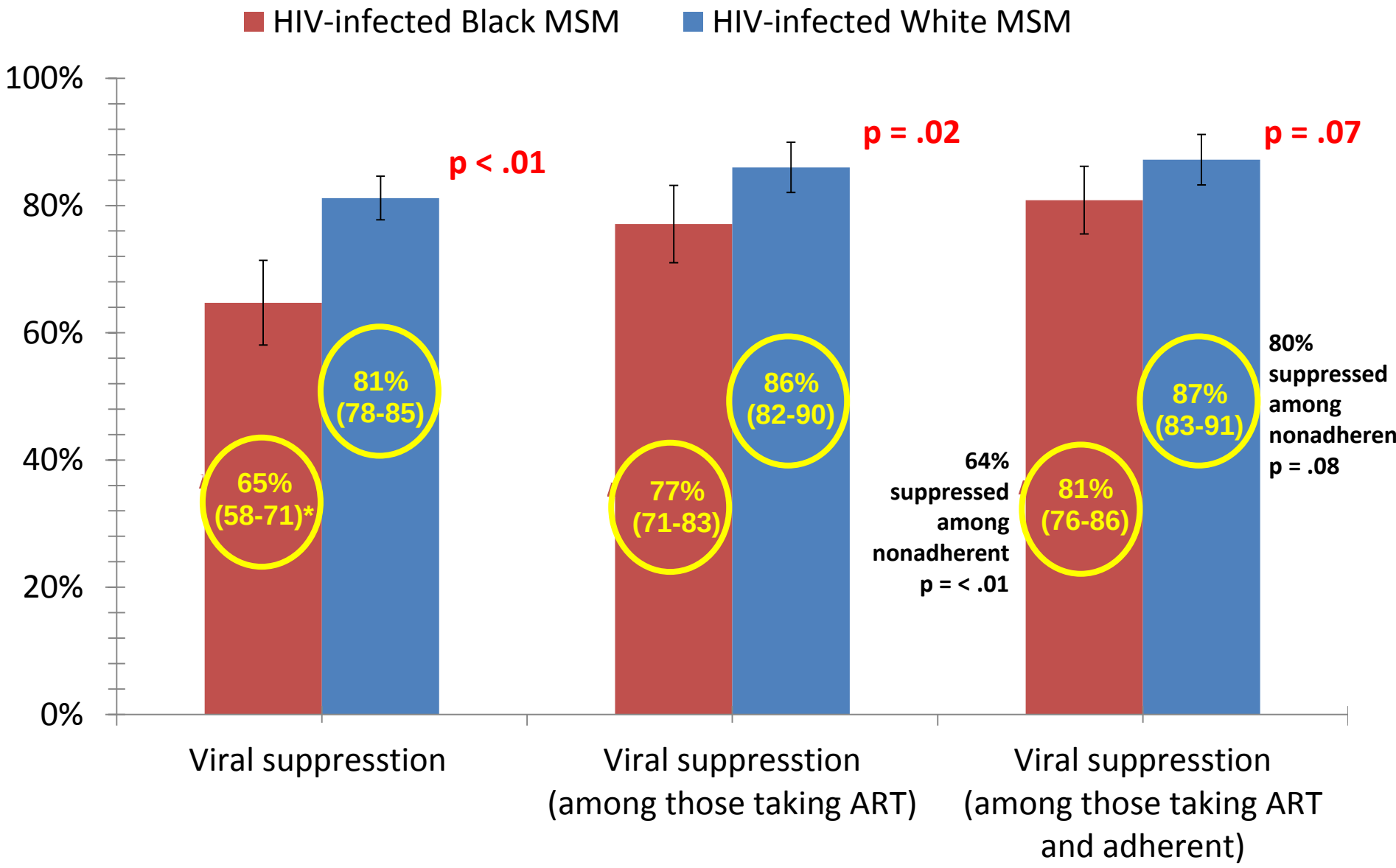
RESULTS:
ART USE, ADHERENCE, AND VIRAL SUPPRESSION

Use Of and Adherence to Antiretroviral Therapy (ART) Among HIV-infected Black and White Men Who Have Sex With Men (MSM)– Medical Monitoring Project (MMP) United States, 2009



*95% confidence limits

Recent Viral Suppression Among Black and White Men Who Have Sex With Men (MSM) by ART Use and Viral Suppression– Medical Monitoring Project (MMP) United States, 2009



*95% confidence limits, viral suppression: most recent viral load documented <200 or undetectable; ART=antiretroviral therapy

RESULTS:
RACIAL DIFFERENCES IN FACTORS ASSOCIATED WITH ADHERENCE

Variables Examined for Association with Adherence

- Age
- Education
- Poverty
- Homelessness
- Incarceration
- Depression
- Drug use
- Stimulant use
- Binge drinking
- Health coverage/insurance
- Years since HIV diagnosis
- One daily dose
- Side effects
- Being sure can take medicine
- Being sure medication has positive effect
- Being sure of resistance if nonadherent
- Social support

Variables Not Significantly Associated With Adherence Among Black and White MSM

- Age
- Poverty
- Homelessness
- Incarceration
- Health coverage/insurance
- Years since HIV diagnosis
- One daily dose
- Social support

Factors Significantly Associated with 100% Adherence Among Black and White MSM—MMP 2009

		Black MSM		White MSM	
		Adherent %	PR	Adherent %	PR
Sure of ability to take medications as directed	Not at all/somewhat	40	Ref.	44	Ref.
	Very/extremely	82	2.05	89	2.04
Binge drinking	No	81	1.24	90	1.15
	Yes	66	Ref.	79	Ref.
Drug use	No	86	1.34	91	1.10
	Yes	65	Ref.	83	Ref.
Stimulant use	No	82	1.42	90	1.23
	Yes	57	Ref.	74	Ref.

All percentages weighted; PR= prevalence ratio; all differences significant at $p < .05$.

Factors Significantly Associated with 100% Adherence Among Black and White MSM—MMP 2009

		Black MSM		White MSM	
		Adherent %	PR	Adherent %	PR
Education	< High School	69	Ref.	81	Ref.
	High School	81	1.17	91	1.12
	> High School	79	1.15	88	1.08
Sure of resistance if do not take medications as instructed	Not at all/somewhat	78	Ref.	81	Ref.
	Very/extremely	79	1.00	90	1.11
Sure medications will have a positive effect on health	Not at all/somewhat	60	Ref.	82	Ref.
	Very/extremely	81	1.35	89	1.08
Troubled by side effects	Never/rarely	81	1.21	89	1.06
	About half or more	67	Ref.	84	Ref.
Depression	No	82	1.19	88	1.01
	Yes	69	Ref.	87	Ref.

All percentages weighted; PR= prevalence ratio; yellow indicates significant at $p < .05$.

IMPLICATIONS, LIMITATIONS, AND CONCLUSIONS

Areas to Target for Interventions to Improve Adherence Among MSM

- **For Black and White MSM**
  - Increase self-efficacy around taking medications as directed
  - Screen for and treat alcohol and substance abuse
- **For White MSM**
  - Address factors associated with low educational attainment that affect adherence (literacy/numeracy?)
  - Increase knowledge about adherence and resistance relationship
- **For Black MSM**
  - Increase ART use
  - Screen for and treat depression
  - Reduce side effects
  - Increase beliefs about positive effects of medications on health

Limitations

- Adherence measure likely overestimates actual adherence
- Measurement of adherence and viral load were not necessarily contemporaneous
- Lower than optimal response rates, but estimates were adjusted for nonresponse

Conclusions

- Although differences remained, use of and adherence to ART reduced disparities in viral suppression among BMSM and WMSM
- Increasing ART use and adherence among BMSM are key steps towards decreasing racial disparities in treatment outcomes among MSM
- The development and implementation of ART use and adherence interventions that specifically address the needs of BMSM should be prioritized

Acknowledgments

- MMP facility staff and patients
- MMP Principal Investigators and Project Coordinators
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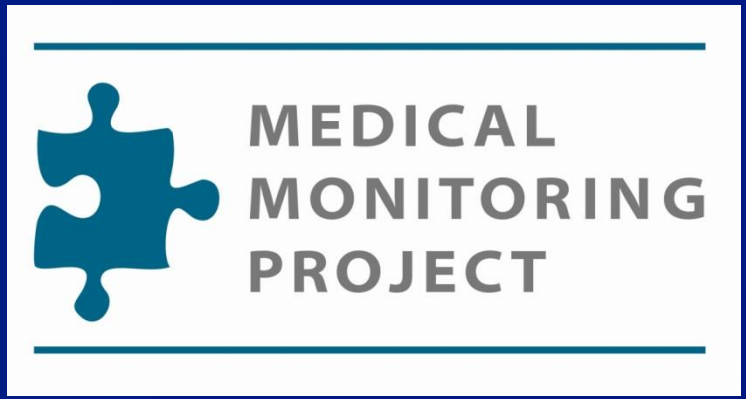

Thank you!

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