Gender Disparities in Viral Suppression and Antiretroviral Therapy Use by Racial and Ethnic Group—Medical Monitoring Project, 2009-2010

Linda Beer PhD, Christine L Mattson PhD, William Rodney Short MD, and Jacek Skarbinski MD

9th International Conference on HIV Treatment and Prevention Adherence
June 9, 2014
Background

- **Women comprise a quarter of persons living with HIV in the United States**
  - Majority are black or Hispanic/Latina

- **Female gender and non-white race/ethnicity often found to be associated with lack of viral suppression and poor clinical outcomes**

- **Consideration of both gender and race/ethnicity needed to identify areas for targeted intervention to improve outcomes that are relevant to specific groups of women**
  - Few prior studies have sufficient sample size
Analytic questions

- Among adults receiving HIV care in the United States, does viral suppression and antiretroviral therapy (ART) use vary by gender?

- Do gender differences in race and ethnicity and/or ART use account for gender differences in viral suppression?

- Why are women receiving HIV care less likely to use ART than men?
Medical Monitoring Project (MMP) methods

- **Ongoing supplemental HIV surveillance system**
  - Interview and medical record data from HIV-infected adults receiving care in 16 U.S. states and Puerto Rico

- **Three-stage sample design**
  - States; HIV care-providing facilities; HIV-infected adults receiving care

- **Data collected June 2009 - May 2011**
  - Response rates for matched data

<table>
<thead>
<tr>
<th>Cycle year</th>
<th>States %</th>
<th>Facilities %</th>
<th>Patients %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>100</td>
<td>76</td>
<td>51</td>
</tr>
<tr>
<td>2010</td>
<td>100</td>
<td>81</td>
<td>50</td>
</tr>
</tbody>
</table>
Methods

- **Analytic sample**
  - Men or women
  - Black, Hispanic or Latino/a, or white

- **Compared prevalence**
  - **Viral suppression:** Most recent viral load documented undetectable or ≤ 200 copies/ml
  - **ART use:** Self-reported current use of ART

- **Assessed potential confounders, mediators, and effect modifiers**
Methods

- Modified Rao-Scott $\chi^2$ tests for bivariate differences in factors associated with viral suppression and ART use by gender and race/ethnicity

- Multivariable logistic regression with predicted marginals to assess association between gender and ART use, including variables that
  - Were associated with ART use at $p < .10$
  - Changed association between gender and ART use by $> 10%$
Analytic sample

<table>
<thead>
<tr>
<th></th>
<th>Men 72% of total</th>
<th>Women 28% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Black</td>
<td>2097</td>
<td>36</td>
</tr>
<tr>
<td>Hispanic or Latino/a</td>
<td>1360</td>
<td>21</td>
</tr>
<tr>
<td>White</td>
<td>2469</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>5926</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Medical Monitoring Project 2009-2010; all percentages are weighted.
Sample characteristics

- Women more likely than men to be
  - Younger
  - Less educated
  - Below poverty level
  - Publically insured
  - More recently diagnosed
  - Non-AIDS diagnosed

- When stratified by race/ethnicity, some differences not seen among certain groups
  - e.g., insurance type among blacks, AIDS diagnosis among whites, age among Hispanics
Viral suppression and ART use among HIV-infected men and women receiving care*

Most recent HIV viral load test value undetectable or <200

<table>
<thead>
<tr>
<th></th>
<th>Men (n = 5926)</th>
<th>Women (n = 2243)</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>69</td>
<td></td>
</tr>
</tbody>
</table>

Currently taking ART

<table>
<thead>
<tr>
<th></th>
<th>Men (n = 5926)</th>
<th>Women (n = 2243)</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>85</td>
<td></td>
</tr>
</tbody>
</table>

Most recent HIV viral load test value undetectable or <200 among those taking ART

<table>
<thead>
<tr>
<th></th>
<th>Men (n = 5926)</th>
<th>Women (n = 2243)</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>77</td>
<td></td>
</tr>
</tbody>
</table>

All differences $p < .05$

Source: Medical Monitoring Project 2009-2010; *Persons of race/ethnicity other than Black, Hispanic, and White were excluded; all percentages are weighted.
Viral suppression and ART use among HIV-infected blacks, Hispanics, and whites receiving care*

Most recent HIV viral load test value undetectable or <200: Black (n = 3512), Hispanic (n = 1794), White (n = 2863)

Currently taking ART: Black (n = 3512), Hispanic (n = 1794), White (n = 2863)

Most recent HIV viral load test value undetectable or <200 among those taking ART: Black (n = 3512), Hispanic (n = 1794), White (n = 2863)

All differences p < .0001

Source: Medical Monitoring Project 2009-2010; *Persons of gender other than men and women were excluded; all percentages are weighted.
# Viral suppression and ART use by gender and race/ethnicity

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th></th>
<th>Hispanic</th>
<th></th>
<th>White</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Viral suppression</td>
<td>66%</td>
<td>66%</td>
<td>75%</td>
<td>72%</td>
<td>81%</td>
<td>74%</td>
</tr>
<tr>
<td>Current ART use</td>
<td>88%</td>
<td>84%</td>
<td>92%</td>
<td>86%</td>
<td>93%</td>
<td>86%</td>
</tr>
<tr>
<td>Viral suppression among those taking ART</td>
<td>73%</td>
<td>75%</td>
<td>80%</td>
<td>77%</td>
<td>86%</td>
<td>83%</td>
</tr>
</tbody>
</table>

Source: Medical Monitoring Project 2009-2010; all percentages are weighted; red font indicates $p<0.05$
ART use and gender

- Women and men equally likely to have ever taken ART

- Women more likely to report discontinuing ART
  - Black women vs black men, 7% vs 4%
  - White women vs white men, 8% vs 3%

- Most women and men reported not taking ART on advice from their healthcare provider
  - Women vs men, 69% vs 64%
  - No gender differences within racial/ethnic groups
Why are women less likely to take ART?

- Multivariable logistic model predicting ART use with gender as a covariate
  - Sociodemographics
    - Race/ethnicity, age, educational attainment, homelessness, health insurance/coverage, household poverty, incarceration, inadequate health literacy
  - Substance use and mental health
    - Drug use, stimulant use, binge drinking, depression
  - HIV-related factors
    - Time since diagnosis, disease stage, geometric mean CD4+ T-lymphocyte count
### ART use and gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>%</th>
<th>PR</th>
<th>CI</th>
<th>%</th>
<th>aPR*</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>91</td>
<td>Ref.</td>
<td>-</td>
<td>91</td>
<td>Ref.</td>
<td>-</td>
</tr>
<tr>
<td>Women</td>
<td>85</td>
<td>.93</td>
<td>(.91-.96)</td>
<td>87</td>
<td>.96</td>
<td>(.94-.98)</td>
</tr>
</tbody>
</table>

*Adjusted for: race/ethnicity, age, poverty, drug use, depression, and disease stage

Source: Medical Monitoring Project 2009-2010; PR, prevalence ratio; CI, confidence interval; aPR, adjusted prevalence ratio; red font indicates p<0.05.
### ART use, gender, and race/ethnicity

<table>
<thead>
<tr>
<th>Gender and race/ethnicity</th>
<th>%</th>
<th>PR</th>
<th>CI</th>
<th>%</th>
<th>aPR*</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black women</td>
<td>84</td>
<td>.90</td>
<td>(.87-.93)</td>
<td>85</td>
<td>.91</td>
<td>(.89-.93)</td>
</tr>
<tr>
<td>Hispanic women</td>
<td>86</td>
<td>.92</td>
<td>(.86-.99)</td>
<td>88</td>
<td>.95</td>
<td>(.90-1.00)</td>
</tr>
<tr>
<td>White women</td>
<td>86</td>
<td>.93</td>
<td>(.89-.97)</td>
<td>89</td>
<td>.95</td>
<td>(.92-.99)</td>
</tr>
<tr>
<td>Black men</td>
<td>88</td>
<td>.94</td>
<td>(.92-.96)</td>
<td>88</td>
<td>.94</td>
<td>(.92-.96)</td>
</tr>
<tr>
<td>Hispanic men</td>
<td>92</td>
<td>.99</td>
<td>(.97-1.01)</td>
<td>92</td>
<td>.99</td>
<td>(.97-1.01)</td>
</tr>
<tr>
<td>White men</td>
<td>93</td>
<td>Ref.</td>
<td>-</td>
<td>93</td>
<td>Ref.</td>
<td>-</td>
</tr>
</tbody>
</table>

*Adjusted for: age, poverty, drug use, depression, and disease stage

Source: Medical Monitoring Project 2009-2010; PR, prevalence ratio; CI, confidence interval; aPR, adjusted prevalence ratio; red font indicates p<0.05.
Limitations

- Cross-sectional design, causality cannot be assessed
- Facility and provider-level factors affecting ART use not assessed
- Possibility of residual non-response bias despite adjustment for non-response
SUMMARY AND CONCLUSIONS
Summary and conclusions

- 31% of women in care were not virally suppressed, compared to 26% of men

- Disparities in viral suppression
  - Between white men and women
  - Among racial/ethnic groups

- Among those taking ART, men and women of the same race/ethnicity did equally well
Summary and conclusions

- Overall ART use was high, but women of all race/ethnicities were less likely to take ART than men
  - Women may be more likely to discontinue ART
  - Adjusting for sociodemographic, behavioral, and clinical factors reduced but did not eliminate gender differences in ART use

- Decreasing gender disparities in viral suppression may require
  - Better understanding barriers to ART use among women
  - Reducing racial/ethnic disparities in viral suppression
Acknowledgments

- MMP facility staff and patients
- MMP Principal Investigators and Project Coordinators
- MMP Provider Advisory Board and Community Advisory Board members
- CDC Clinical Outcomes Team and Behavioral and Clinical Surveillance Branch
Thank you

Questions or comments?