Factors associated with mobile app-based ordering of HIV self-test kits among men who have sex with men

Noah Mancuso (he/him)
Gordon Mansergh
Rob Stephenson
Keith J. Horvath
Sabina Hirshfield
Jose A. Bauermeister
Mary Ann Chiasson
Martin J. Downing, Jr.
Patrick Sullivan
Background

- In the US, new HIV diagnoses have declined overall for MSM in past 10 years but increased in certain age and racial/ethnic groups.
- Only half of MSM in the US report annual HIV testing in accordance with CDC recommendations.
- Online and mobile app services have shown promise in increasing testing but evidence from RCTs is lacking and concerns about a “digital divide” persist.
Mobile Messaging for MSM (M-Cubed)

- mHealth intervention using tailored text and video messages
- Risk/eligibility screening and commodity ordering
- RCT showed high-risk MSM were ~2 times as likely to test for HIV using the app

Research Question

• What factors are associated with ordering HIV self-test kits among men offered the opportunity to order them via the M-Cubed app?

Covariate Selection

• Demographics chosen based on literature review and factors known to be associated with the HIV epidemic (age, race/ethnicity, geography, income)
• Theoretically informed co-variates
## Theoretical Framework

<table>
<thead>
<tr>
<th>SCT Domains</th>
<th>Intervention Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>HIV testing history (ever, past 3 months, past 12 months)</td>
</tr>
<tr>
<td>Knowledge</td>
<td>How often should you be tested for HIV?</td>
</tr>
<tr>
<td>Environment</td>
<td>Total number of partners, Status of partners</td>
</tr>
<tr>
<td>Goal Setting</td>
<td>When do you plan to get test for HIV next?</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>How likely are you to get tested / see a provider in the next 3 months?</td>
</tr>
<tr>
<td>Outcome expectations</td>
<td>How much protection against HIV will getting tested provide?</td>
</tr>
</tbody>
</table>

**HIV Prevention Behavior (Outcome)**
Ever ordering an HIV self-test kit
Methods

- M-Cubed data used from Atlanta, Detroit, and New York.
- Multivariable logistic regression used to describe variables related to the outcome of ordering one or more test kits.
- Predictor variables that yielded p<0.05 in bivariate analyses were considered for inclusion in the empirical model.
- Demographic variables chosen a priori were added to final model estimating adjusted prevalence ratios (aPR).
## Demographic Results

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Ordered (n=219)</th>
<th>No Order (n=198)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>32 (11)</td>
<td>35 (12)</td>
<td>ND</td>
</tr>
<tr>
<td>Race/Ethnicity, n (row %)</td>
<td></td>
<td></td>
<td>ND</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>117 (55)</td>
<td>96 (45)</td>
<td></td>
</tr>
<tr>
<td>Black/African American, non-Hispanic</td>
<td>46 (51)</td>
<td>44 (49)</td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>30 (49)</td>
<td>31 (51)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>26 (49)</td>
<td>27 (51)</td>
<td></td>
</tr>
<tr>
<td>Income, n (row %)</td>
<td></td>
<td></td>
<td>ND</td>
</tr>
<tr>
<td>$0-$14,999</td>
<td>40 (50)</td>
<td>40 (50)</td>
<td></td>
</tr>
<tr>
<td>$15,000-$29,999</td>
<td>47 (58)</td>
<td>34 (42)</td>
<td></td>
</tr>
<tr>
<td>$30,000-$49,999</td>
<td>47 (54)</td>
<td>40 (46)</td>
<td></td>
</tr>
<tr>
<td>$50,000-$74,999</td>
<td>41 (48)</td>
<td>45 (52)</td>
<td></td>
</tr>
<tr>
<td>$75,000 or more</td>
<td>43 (52)</td>
<td>39 (48)</td>
<td></td>
</tr>
</tbody>
</table>
Selected Findings

Age (reference of 18-25 years)
- 26-30 years
- 31-40 years
- 40+ years

Race/Ethnicity (reference of White, non-Hispanic)
- Black/African American, non-Hispanic
- Hispanic/Latino
- Other

Site (reference of Atlanta)
- New York
- Detroit

No HIV test in past 3 months (Behavior)

Plans to get tested in next 3 months (Goal Setting)

Definitely or probably likely to get tested in next 3 months (Self-Efficacy)
Final Model Results

Participants were:

- 30% more likely to order if they had not tested in the past three months (Behavior)
- 60% more likely to order if they reported plans to get tested in the next three months (Goal Setting)

No statistical difference by:

- Age
- Race/Ethnicity
- Income
Discussion

Mobile app-based ordering of HIV self-test kits can help:

- Reach undertested populations.
- Supplement community-based and clinical testing.
- Align MSM testing intentions with actualized behavior.
- Overcome structural barriers to HIV prevention services.
Conclusion

1. The ability to order free HIV kits via mobile apps helps remove barriers to testing and allows MSM to follow through on their plans to test.

2. Accessible and frequent HIV testing for key populations is crucial for ending the HIV epidemic in the United States.

3. Offering free HIV self-test kits via mobile apps should be a critical component of this larger system of testing opportunities for MSM.
Acknowledgements

- Special thanks to Patrick Sullivan, Gordon Mansergh, Rob Stephenson, Keith J. Horvath, Sabina Hirshfield, Jose A. Bauermeister, Mary Ann Chiasson, Martin J. Downing, Jr., and the rest of the M-Cubed team

- This work was supported by a Cooperative agreement from CDC (CDC U01PS004977) and by the Center for AIDS Research at Emory University (NIH P30AI050409).