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May 15, 2014
Study Aims

- To estimate levels of HIV infection and risk behaviors among migrant flows traveling through the Mexico-US border region

- To assess access to health care and factors associated with health care access in the U.S. and Mexico
Phases of Migration & Vulnerability

1. Pre-departure
2. Transit
3. Host Community
4. Interception/deportation
5. Return

Protective & Risk Factors:
- Cross-cutting
- Context/phase specific

(Haour-Knipe et al., 2013; Zimmerman et al. 2011)
Mexico – US Migration

- 12.7 million Mexican-born immigrants in the U.S.
  - 15% of Mexico’s labor force
  - More socially vulnerable compared to other immigrants or the US-born population
    - 60% undocumented
- High volume of migrants moving between the two countries

(CONAPO, 2008; Pew Hispanic Center, 2009a, 2009b)
HIV and Migration

- HIV epidemic in Mexico has been linked to migration to the U.S., particularly in rural Mexico
  - By 1990, 50% of AIDS cases in Mexico had a history of migration to the U.S.
  - 25% of rural AIDS cases are among migrants
  - 33% of AIDS cases in Mexico are from states that send the largest number of migrants to the U.S.

- HIV prevalence is 0.3% compared to 0.7% in the U.S.

- Some evidence suggests impact of migration on risk behavior
  (Bronfman et al. 1998; CONASIDA, 2000; Gayet et al., 2000; Magis-Rodriguez et al., 2004; Sanchez et al., 2004; CDC, 2011).
HIV and Migration (Cont.)

- Few recent studies have tested migrants for HIV/STIs
- Research has found high rates of STIs and behavioral risk factors for HIV
- Risk attributed to individual, contextual, structural and cultural factors

(e.g. Organista, 2004; Apostolopoulos et al., 2006; Painter, 2007)
A Social Ecological Model of HIV Risk

<table>
<thead>
<tr>
<th>Level</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies</td>
<td>Unauthorized entry, Deportation, No health insurance</td>
</tr>
<tr>
<td>Community</td>
<td>Recreation opportunities, Exposure to prevention, Lack of transportation</td>
</tr>
<tr>
<td>Organizational</td>
<td>Working conditions, History of imprisonment</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Altered social norms, Separation from partners</td>
</tr>
<tr>
<td>Individual</td>
<td>Sociodemographics, Migration history</td>
</tr>
</tbody>
</table>
Migrant Stock vs. Migrant Flows

- Previous research has examined:
  - Migrants back in sending communities
  - Migrants in receiving communities in the U.S.

- Less research focused on transit / travel phase
  - High risk populations in the Mexican border:
    - Injection drug users
    - Sex workers

- Limitations of reaching a disperse, reluctant population
- Few studies examining several migration phases at once

(Sanchez et al., 2004; Painter, 2007; Albarran et al., 2011)
Migration & Access To Health Care

- Mexican immigrants have low access to health care
  - Predisposing factors
  - Need factors
  - Enabling factors

- Data reflect experiences of more established immigrants

- Less research on circular, undocumented migrants
  - Reaching this transnational population is challenging

Behavioral Model of Health Utilization, (Andersen, 1995)
Methods
A Different Methodological Approach

- Over 90% of labor migrants enter/leave the U.S. through 8 Mexican border cities
  - Linked to transportation infrastructure
- The Mexican-US border as a “transit” point
- Focus on migrant flows complements previous research

(Encuesta sobre Migracion en la Frontera Norte de Mexico, 2007; Santibanez, 1997)
Study Design & Setting

- Cross-sectional, probability survey in Tijuana, Mexico
  - ~40% of US-Mexico migrant flow
- Multistage probability sampling design
  - Random samples of “venue-time” pairs
- Sampling sites:
  - Airport
  - Central bus station
  - Deportation station (San Ysidro / El Chaparral)
Migrant Flows Surveyed at the Border
## Surveys

<table>
<thead>
<tr>
<th>HIV (N=3,390)</th>
<th>Health Care (N=2,440)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anonymous questionnaire using audio computer-administered self-interview (ACASI) software:</td>
<td>Anonymous questionnaire using audio computer-administered self-interview (ACASI) software</td>
</tr>
<tr>
<td>- Behavioral risk factors for HIV</td>
<td>- Health care access</td>
</tr>
<tr>
<td>- Selected individual, interpersonal, contextual, structural, and cultural factors</td>
<td>- Predisposing factors</td>
</tr>
<tr>
<td>- Rapid HIV testing</td>
<td>- Health status and self-reported health conditions</td>
</tr>
<tr>
<td>- Binational toll-free line</td>
<td>- Enabling factors</td>
</tr>
</tbody>
</table>
Selected Results
HIV Survey Recruitment Flow Chart

N=3,390
51.4% overall response rate
95.3% answered questionnaire
83.6% were tested for HIV

Approached 17,415

Screened 16,658 (96%)

Eligible 6,594 (40%)

Southbound 2,229

Deported 702

Northbound 2,625

Border 1,038

Consented 1,049 (47%)

Consented 691 (98%)

Consented 1,077 (41%)

Consented 573 (55%)

HIV test 808 (77%)

HIV test 611 (88%)

HIV test 956 (89%)

HIV test 458 (80%)
Characteristics of Migrant Flows (Males)

- 30-40 years old
- Half are married

Southbound/Deported:
- About 10 years in the U.S.
- Most crossed the border illegally (63 – 96%)
- Over half have a history of deportation (Southbound)

Northbound/Border:
- 30-40% have migration history
- 30-60% are heading to the U.S.
HIV Rates
Prevalence of HIV Infection Among Males (%)
Prevalence of HIV Infection among Males
(In Context)
A Pseudo Cascade of Engagement in Care

- Ever tested: 33%
- Knew HIV status: 11%
A Pseudo Cascade of Engagement in Care

- **HIV+ Ever tested:** 33%
- **Diagnosed:** 11%

- **HIV+ Diagnosed:** 79%

**Comparison:**
- **Migrants**
- **U.S.**
Behavioral Risk Factors

Sexual Practices
Cross-Cutting Risk Factors (Males)

- ≥2 sex partners: 40.6%
- Casual Partners / Sex Workers: 36.1%
- Unprotected sex with casual/sex worker: 53.7%*
- Sex under influence: 39.6%
- Sex under influence OD: 6.7%
- Last 12 mo. STI: 8.1%

*Among those who had sex with casual partners/sex workers
Flow-Specific Factors (Males)

- Same-sex anal sex
- Sex with IDU
- Use of illicit drugs
- Last 12-mo. HIV testing

* Significantly different in unadjusted analyses; **Significantly different in adjusted analyses
## Migration, Deportation, and Time in U.S.

<table>
<thead>
<tr>
<th></th>
<th>Southbound</th>
<th>Deported</th>
<th>Northbound</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration History, %</td>
<td>100</td>
<td>100</td>
<td>28.0</td>
<td>28.1</td>
</tr>
<tr>
<td>Ever deported, %</td>
<td>43.7</td>
<td>100</td>
<td>20.0</td>
<td>22.1</td>
</tr>
<tr>
<td>Time in U.S. (yrs.), Mean</td>
<td>11.7</td>
<td>8.8</td>
<td>2.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Migration trips, %</td>
<td>2.8</td>
<td>2.9</td>
<td>1.7</td>
<td>1.6</td>
</tr>
</tbody>
</table>
**Migration Context & HIV Risk**

*Model adjusted for age, education, ethnicity, marital status, number of migration trips, history of deportation, and time in the U.S.*

**Recent Migration Context**

<table>
<thead>
<tr>
<th></th>
<th>Composite Risk Index (Adjusted Means)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>1.2</td>
</tr>
<tr>
<td>Border</td>
<td>1.4</td>
</tr>
<tr>
<td>South</td>
<td>1.3</td>
</tr>
<tr>
<td>Deported</td>
<td>1.2</td>
</tr>
</tbody>
</table>

*B=0.29, p=0.041*
Mobility & HIV Risk

*Model adjusted for age, education, ethnicity, marital status, migration flow, history of deportation, and time in the U.S.*
Deportation & HIV Risk

**Composite Risk Index (Adjusted Means)**

*Model adjusted for age, education, ethnicity, marital status, migration flow, number of migration trips, and time in the U.S.*
Access to Health Care
HCAU Survey Recruitment Flow Chart

Approached 11,780

Screened 11,547 (98%)

Eligible 4,200 (36%)

Southbound 1,246

- Consented 704 (57%)

Deported 481

- Consented 466 (97%)

Northbound 1,826

- Consented 841 (46%)

Border 647

- Consented 429 (66%)

N=2,440
58% response rate
Conceptual Model

PREDISPOSING
- Age
- Gender
- Marital status
- Education
- Employment status
- Occupation
- Length of residence in the U.S.
  - Lifetime
  - Last 12 months
- Acculturation (language)

NEED FACTORS
- Health status
- Injuries

ENABLING
- Migration barriers:
  - Unauthorized entry
  - Deportation
- Health insurance
- Transportation barriers

HEALTH CARE ACCESS
- Any Health Care Utilization
- Emergency services
- Hospitalization
- Usual source of care
-Forgone care

(Based on Andersen, 1995)
Health Care in Two Migration Contexts

- Health Care in the U.S.:
  - US-Mexico migrant flows (Southbound & Deported)

- Health Care in Mexico:
  - Northbound flow

- Indicators of Health Care Access:
  - Health Care Utilization
  - Regular Source of Care
  - Forgone Health Care
Distribution of Selected Factors

- Low acculturated (Mean = 1.3, on a 0-8 scale)
- Generally healthy (Mean = 37, on a 0-44 scale)
- Health insurance in the U.S.: 41%
- Health insurance in Mexico: 70%
- Transportation barriers: 16%
Access To Health Care In The U.S./Mexico

- Any health care receipt: U.S. 46, Mexico 51 (p=.08)
- Emergency room visit: U.S. 6, Mexico 5
- Hospitalization: U.S. 4, Mexico 4
- Forgone health care: U.S. 8, Mexico 6 (p<.001)
- Usual source of care

* Based on Deported/Southbound flows
** Based on Northbound flow
Access To Health Care In The U.S./Mexico

- Any health care receipt: U.S. 46%, Mexico 51%, US adults 75%
- Emergency room visit: U.S. 6%, Mexico 5%, US adults 21%
- Hospitalization: U.S. 4%, Mexico 4%, US adults 9%
- Forgone health care: U.S. 8%, Mexico 6%, US adults 15%
- Usual source of care: U.S. 54%, Mexico 65%, US adults 65%

* Based on Deported/Southbound flows
**Based on Northbound flow
Access To Health Care In The U.S./Mexico

CHIS data based on Bustamante et al. J Imm Minority Health, 2010
# Health Care Utilization

<table>
<thead>
<tr>
<th>Predisposing</th>
<th>In Mexico OR (95% CI)</th>
<th>In the U.S. OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male)</td>
<td>0.59 (0.38-0.92)</td>
<td></td>
</tr>
<tr>
<td>Marital status (married)</td>
<td>0.53 (0.36-0.78)</td>
<td></td>
</tr>
<tr>
<td>Lifetime in the U.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No migration hx</td>
<td>Ref.</td>
<td></td>
</tr>
<tr>
<td>• &lt; 5 yrs</td>
<td>0.99 (0.51-1.92)</td>
<td></td>
</tr>
<tr>
<td>• 5-9 yrs</td>
<td>1.00 (0.34-2.97)</td>
<td></td>
</tr>
<tr>
<td>• &gt;=10</td>
<td>0.45 (0.26-0.77)</td>
<td></td>
</tr>
<tr>
<td>Last 12-month in the U.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• &lt; 6 mos.</td>
<td>Ref.</td>
<td></td>
</tr>
<tr>
<td>• 6-11 mos.</td>
<td>1.86 (1.04-3.33)</td>
<td></td>
</tr>
<tr>
<td>• 12 mos.</td>
<td>3.47 (1.92-6.25)</td>
<td></td>
</tr>
<tr>
<td>Acculturation (language scale)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.09 (1.00-1.18)</td>
<td></td>
</tr>
<tr>
<td>Need</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health status</td>
<td>0.97 (0.94-1.00)</td>
<td>0.95 (0.93-0.97)</td>
</tr>
<tr>
<td>Enabling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health insurance</td>
<td>2.58 (1.63-4.08)</td>
<td>3.64 (2.64-4.99)</td>
</tr>
</tbody>
</table>
## Availability of Usual Source of Care

<table>
<thead>
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<th>In the U.S. OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male)</td>
<td></td>
<td>0.56 (0.37-0.84)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time employed</td>
<td></td>
<td>Ref. 2.44 (1.05-5.68)</td>
</tr>
<tr>
<td>Part time employed</td>
<td></td>
<td>Ref. 0.65 (0.41-1.01)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime in the U.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No migration hx</td>
<td></td>
<td>Ref. 1.86 (1.04-3.33)</td>
</tr>
<tr>
<td>&lt; 5 yrs</td>
<td></td>
<td>2.64 (1.62-4.31)</td>
</tr>
<tr>
<td>5-9 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;=10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need</td>
<td>Health status</td>
<td>0.96 (0.92-1.00)</td>
</tr>
<tr>
<td>Enabling</td>
<td>Health insurance</td>
<td>3.92 (2.45-6.26)</td>
</tr>
</tbody>
</table>
# Forgone Care

<table>
<thead>
<tr>
<th>Predisposing</th>
<th>In Mexico OR (95% CI)</th>
<th>In the U.S. OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.97 (0.94-1.00)</td>
<td></td>
</tr>
<tr>
<td>Marital status (married)</td>
<td></td>
<td>1.78 (1.01-3.14)</td>
</tr>
<tr>
<td>Lifetime in the U.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No migration hx</td>
<td></td>
<td>Ref.</td>
</tr>
<tr>
<td>- &lt; 5 yrs</td>
<td></td>
<td>10.5 (1.33-83.0)</td>
</tr>
<tr>
<td>- 5-9 yrs</td>
<td></td>
<td>7.96 (1.07-59.0)</td>
</tr>
<tr>
<td>- &gt;=10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last 12-month in the U.S.</td>
<td></td>
<td>Ref.</td>
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<tr>
<td>- &lt; 6 mos.</td>
<td></td>
<td>1.86 (1.04-3.33)</td>
</tr>
<tr>
<td>- 6-11 mos.</td>
<td></td>
<td>3.47 (1.92-6.25)</td>
</tr>
<tr>
<td>- 12 mos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need</td>
<td>0.89 (0.84-0.94)</td>
<td>0.89 (0.86-0.93)</td>
</tr>
<tr>
<td>Enabling</td>
<td>Authorized entry</td>
<td>0.31 (0.17-0.57)</td>
</tr>
</tbody>
</table>
Health Care Receipt & HIV Testing: Missed Opportunities

- Received healthcare in last 12 months in U.S., but not tested for HIV, %
- Tested for HIV in last 12 months, %

Bar chart showing prevalence of healthcare receipt and HIV testing by migration flow.
Incarceration & HIV Testing: Missed Opportunities

- Incarcerated or detained for more than 30 days in last 12 months in U.S., but not tested for HIV, %
- Tested for HIV in last 12 months, %

<table>
<thead>
<tr>
<th>Migration flow</th>
<th>Incarcerated or detained</th>
<th>Tested for HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southbound and deported flows</td>
<td>45.8%</td>
<td>22.6%</td>
</tr>
<tr>
<td>Deported flow</td>
<td>34.4%</td>
<td>27.7%</td>
</tr>
<tr>
<td>Southbound flow</td>
<td>22.9%</td>
<td>20.1%</td>
</tr>
</tbody>
</table>
Summary

- Elevated rates of HIV infection among male migrants in Border and Deported flows
- Low levels of testing and engagement in care
- High prevalence of sexual risk behaviors
- Significant differences across migrant flows
  - Recent migration context matters
  - Circular migration associated with increased risk
  - Deportation may increase risk
Summary (Cont.)

- Missed opportunities to increase HIV testing for a high-risk population
- Evidence of limited levels of access to health care
- Access to care is worse in the U.S. compared to Mexico
- In the U.S., access to care improves with length of residence, stability, acculturation, insurance, legal migration status
- In Mexico, access to care worsens with time in the U.S. and improves with insurance
Limitations

- Self-selection of study participants
  - For survey
  - For HIV testing
- Data on risk behaviors are based on self-report
- Limited to migrants who travel by ground
- Limited to Tijuana
Implications

- Public health efforts must be intensified to target:
  - Cross-cutting risk factors
  - Flow-specific prevention and treatment needs
- Identify factors that increase HIV risk for specific migration contexts and phases
- The border as critical observatory to monitor HIV risk
- The border as an intervention setting to deliver education, testing, and referrals
Implications (Cont.)

- Binational policies to address modifiable barriers to health care
  - Insurance programs to meet the needs of mobile populations
  - Ensure continuity of care within and between countries

- Seize opportunities to improve HIV/STI testing
  - Routine opt-out testing in health care settings and detention centers
  - Provider awareness of HIV risk among migrants

- Binational surveillance and research collaboration on the Mexican border
Next Steps / Work in Progress

- Factors associated with HIV rates and sexual risk practices:
  - Migration contexts and phases
  - Characterizing migrants’ sexual partners and contexts
- Access to HIV testing and prevention messages
- Receipt of preventive services: e.g. influenza vaccination
Other Research Lines

- Tobacco control: Home non-smoking rules, tobacco policies and social norms
- Assessing and improving the food environment for obesity prevention
- Improving cancer care in rural oncology settings: Health literacy and patient navigation
Acknowledgments

- **Mexico:**
  - Gudelia Rangel (Mexico-US Border Health Commission)
  - Eduardo Gonzalez-Fagoaga (COLEF)
  - Ahmed Asadi Gonzalez (UABC)
  - Carlos Magis-Rodriguez (CONASIDA)

- **San Diego State University:**
  - Melbourne Hovell
  - Carol Sipan
  - Catalina Amuedo-Dorantes

- **UW-Madison:**
  - Xiao Zhang
  - Norma-Jean Simon
  - Natalie Rhoads

- **UC Berkeley:**
  - Sylvia Guendelman

- **Funding from The Eunice Kennedy Shriver NICHD**
  (R01HD046886-01A2)