Injection Drug Use, HIV and Hepatitis C Virus (HCV) in India

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The Madras Injection Drug Users and AIDS Cohort (MIDACS) Study

• April 2005- present
• Funded by 2 administrative supplements from NIDA to US-based RO1s
• Indian partner: YRG Centre for AIDS Research & Education

• 1158 IDUS recruited through community outreach over 1 year
• HIV negatives followed at 6-month intervals (<5% loss/year)
• HIV positives referred to on-site clinical care (followed as part of a ‘clinical’ cohort)

• **Main objectives:** Characterize trends in HIV and other blood-borne infection incidence as well as risk behaviors
Characteristics of 1158 IDUs in Chennai

• All male
• Median age = 35 years
• 64% married
• Predominantly heroin injectors (80%) but also high levels of buprenorphine (30%) and other pharmaceutical drug injection (37%)
• Risky behaviors prevalent at baseline (comparable in HIV positives & negatives)
• Pharmacies were primary site of needle acquisition
• Little to no access to NEP, drug treatment

Solomon SS et al, Subst Use and Misuse (in press)
Prevalence of blood-borne infections at baseline

Solomon SS et al, JAIDS 2008
Mortality rates among IDUs over 3 years of follow-up

Leading causes of death are AIDS, overdose and Tuberculosis
Standardized mortality ratio when compared to IDUs in a US-based cohort in pre-HAART era ~ 3

Solomon SS et al, AIDS 2009
HIV incidence

• Estimated HIV Incidence at baseline (BED-CEIA)
  – 2.95 per 100 p-y (95% CI: 1.21, 4.69)

• HIV Incidence (cohort follow-up)
  – 6 seroconversions in 1207 p-y of follow-up
  – 0.5 per 100 p-y (95% CI: 0.02, 1.08)
  – all reported injecting in the prior 6 months
  – 4 of 6 reported sharing needles in the last month
Changing risk behaviors after enrollment

![Graph showing changes in risk behaviors over time.](image-url)
Prevalence of liver disease

Bar chart showing:
- No fibrosis (APRI<0.5)
- Mild/moderate fibrosis (APRI 0.5 -1.5)
- Significant fibrosis (APRI>1.5)

Groups compared:
- HIV/HCV uninfected
- HIV mono-infected
- HCV mono-infected
- HIV/HCV coinfected
Correlates of significant liver disease

<table>
<thead>
<tr>
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<th>Unadjusted PR (95% CI)</th>
<th>Adjusted PR (95% CI)</th>
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<tbody>
<tr>
<td>Age (per 5 years)</td>
<td>1.07 (0.90-1.27)</td>
<td>0.95 (0.74-1.22)</td>
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<tr>
<td>Years of injection drug use</td>
<td>1.05 (1.01-1.09)</td>
<td>1.04 (0.98-1.09)</td>
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<tr>
<td>HIV/HCV</td>
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<tr>
<td>HIV/HCV uninfected</td>
<td>1</td>
<td>1</td>
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<tr>
<td>HIV mono-infected</td>
<td>0.84 (0.11-6.44)</td>
<td>1.41 (0.19-10.7)</td>
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<tr>
<td>HCV mono-infected</td>
<td>2.80 (1.04-7.54)</td>
<td>3.01 (1.04-8.74)</td>
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<tr>
<td>HIV/HCV co-infected</td>
<td>3.73 (1.40-9.94)</td>
<td>3.86 (1.23-12.1)</td>
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<tr>
<td>HBsAg positive</td>
<td>1.25 (0.51-3.11)</td>
<td>1.40 (0.58-3.38)</td>
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<td>% visits heavy alcohol use reported</td>
<td>2.91 (1.0-8.42)</td>
<td>5.32 (2.12-13.3)</td>
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<tr>
<td>% visits daily marijuana use reported</td>
<td>0.49 (0.20-1.17)</td>
<td>0.40 (0.16-0.99)</td>
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<tr>
<td>% visits heroin injection</td>
<td>2.70 (0.63-11.5)</td>
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<tr>
<td>% visits buprenorphine injection</td>
<td>0.52 (0.02-11.1)</td>
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<tr>
<td>% visits pharmaceutical drug use</td>
<td>7.07 (1.90-26.2)</td>
<td>2.53 (0.66-9.68)</td>
</tr>
</tbody>
</table>
Major findings / Future directions

• Access to HAART is a major problem
  – 25 patients have been started on HAART since the HIV clinic has opened on-site
    • Most who were referred to the government program were started on nevirapine
    • Adherence is a problem
  – Study funded to compare directly observed antiretroviral therapy (DAART) vs. standard HAART in combination with suboxone
    • But, the majority of participants have stopped injecting (negative by urine test)
    • Protocol is being revised
Major findings / Future directions

• Liver disease is a relatively minor cause of morbidity and mortality in this cohort but is likely to increase as access to HAART improves and IDUs are living longer
  – Other co-factors beyond HIV and HCV include alcohol use, TB and anti-TB therapy, ART regimens, other infections

• Potential interventions
  – Alcohol reduction
  – HCV treatment (cost, side-effects vs. efficacy)
Other initiatives in India

• Nearly two-thirds of IDUs are married
  – Studies with wives of IDUs about prevalence of HIV, HBV and HCV, disclosure, utilizing families for cessation of substance use as well as treatment interventions

• Interviews with IDUs suggest existence of multiple IDU epidemics in India
  – Characterize diversity of HIV and HCV among IDUs in 9 different sites throughout India to understand the connectedness of the Indian IDU epidemics
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  – CP Vasudevan
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