**Who in the world buys ARVs on the black market? The impact of drug use and ARV diversion on adherence**

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**Abstract**

**Aims:** Anti-retroviral (ARV) adherence is the most important predictor of regimen success and HIV viral suppression. HIV-positive drug users are found to have less access to ARV treatment and to initiate treatment at later stages of advanced infections than non-drug users. Recent studies also identify ARV diversion as a factor that may affect ARV adherence in drug users. This study examines motivations behind buying ARVs on the black market with a focus on the role of drug use and ARV diversion on ARV adherence.

**Methods:** Semi-structured, in-depth interviews were conducted with 44 people living with HIV who reported purchasing ARVs on the street at least once in the past three months. Respondents gave detailed information about their drug use, ARV adherence, and history of buying ARVs on the street. Grounded theory was used to code and analyze interviews using the Atlas.ti program.

**Results:** The sample averaged 46 years (SD = 11.3), 59% male, and 43% non-Hispanic Black. 36% of participants reported drinking alcohol, 34% used crack, 27% used cocaine, 23% used marijuana, and 19% used heroin. Motivations for buying ARVs on the black market included: having sold or lost ARVs, having provider or insurance barriers to the legal acquisition of ARVs, and profit-making. The most common motivation for buying ARVs illicitly was to replace a legitimate prescribed medication that was sold for money to purchase illicit drugs, personal items, or to pay bills. The data suggest that drug dependence undermines ARV adherence in several ways. Participants mentioned that drug seeking and use impeded ARV adherence and the desire not to mix illicit drugs and ARVs in their system.

**Conclusions:** Limited ARV adherence among substance users may further exacerbate the risk of treatment failure. ARV diversion may affect ARV regimen success and may negatively impact HIV literacy education, accessible drug treatment programs, and interventions to support ARV adherence.

**Introduction**

- Prescription drug diversion is defined as the unlawful channeling of regulated pharmaceuticals from legal sources (e.g. legitimate prescriptions filled by patient) to the illicit market. 1
- Antiretroviral (ARV) drug diversion has been documented in at least seven U.S. states with substantial ARV diversion revealed in South Florida. 2
- ARV diversion has serious implications for the integrity of HIV care and prevention, making it a critical public health concern.

1. Aims: Anti-retroviral (ARV) adherence is the most important predictor of regimen success and HIV viral suppression. HIV-positive drug users are found to have less access to ARV treatment and to initiate treatment at later stages of advanced infections than non-drug users. Recent studies also identify ARV diversion as a factor that may affect ARV adherence in drug users. This study examines motivations behind buying ARVs on the black market with a focus on the role of drug use and ARV diversion on ARV adherence.

2. Semi-structured, in-depth interviews were conducted with 44 people living with HIV who reported purchasing ARVs on the street at least once in the past three months. Respondents gave detailed information about their drug use, ARV adherence, and history of buying ARVs on the street. Grounded theory was used to code and analyze interviews using the Atlas.ti program.

3. The sample averaged 46 years (SD = 11.3), 59% male, and 43% non-Hispanic Black. 36% of participants reported drinking alcohol, 34% used crack, 27% used cocaine, 23% used marijuana, and 19% used heroin. Motivations for buying ARVs on the black market included: having sold or lost ARVs, having provider or insurance barriers to the legal access to ARVs, and profit-making. The most common motivation for buying ARVs illicitly was to replace a legitimate prescribed medication that was sold for money to purchase illicit drugs, personal items, or to pay bills. The data suggest that drug dependence undermines ARV adherence in several ways. Participants mentioned that drug seeking and use impeded ARV adherence and the desire not to mix illicit drugs and ARVs in their system.

4. Limited ARV adherence among substance users may further exacerbate the risk of treatment failure. ARV diversion may affect ARV regimen success and may negatively impact HIV literacy education, accessible drug treatment programs, and interventions to support ARV adherence.

**Methods**

- **Targeted sampling** was used to recruit participants, an appropriate method for hard-to-reach populations, where a set number of participants are recruited within specific geographic districts.
- **Participants were eligible if they were 18+ years old, had documented HIV+ serostatus, and had purchased illicit ARVs at least once in the prior three months.**
- A total of 44 buyers of illicit ARVs were interviewed between November 2009 and July 2011.
- Interviews covered history with HIV, access and quality of HIV care, illicit buying and selling of ARVs, characteristics and consequences of buying illicit ARVs, and expectations of the illicit ARV market.
- A grounded theory approach was used to analyze the qualitative data and, consistent with this methodology, constant comparison was conducted across each stage of the research process for a dynamic process.

**Sample Characteristics (N=44)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Age (range, average)</td>
<td>26-62</td>
<td>45.8 years</td>
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<tr>
<td>Male</td>
<td>59%</td>
<td></td>
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<tr>
<td>Race/Ethnicity</td>
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<tr>
<td>Black/African American</td>
<td>43%</td>
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<tr>
<td>Hispanic</td>
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<tr>
<td>Non-Hispanic-White</td>
<td>18%</td>
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<tr>
<td>Interview in English</td>
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<tr>
<td>History of Homelessness</td>
<td>30%</td>
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</tr>
<tr>
<td>Length of time HIV+ (range, average)</td>
<td>1-17, 13 years</td>
<td></td>
</tr>
<tr>
<td>History of substances used</td>
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<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>36%</td>
<td></td>
</tr>
<tr>
<td>Crack Cocaine</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Powder Cocaine</td>
<td>27%</td>
<td></td>
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<tr>
<td>Marijuana</td>
<td>22%</td>
<td></td>
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<tr>
<td>Heroin</td>
<td>9%</td>
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</tbody>
</table>

**Motivations for Buying ARVs**

- **Back-up ARVs**
- **Lost/Stolen/Ruined ARVs**
- **ADAP Waitlist**
- **Poor Access to HIV Care**
- **Sell, for Subsistence**
- **Sell, for Drugs**

**Quantitative Data**

- **Lost/Stolen/Ruined ARVs**
- **ADAP Waitlist**
- **Poor Access to HIV Care**
- **Sell, for Subsistence**
- **Sell, for Drugs**

**Discussion and Conclusions**

- Carriers to accessing ARV care and low quality of care are two key motivations for buying illicit ARVs. At the time of our study, Florida’s ADAP fell $14 million short of their budget and severely restricted eligibility criteria, which led to a wait list that peaked in 2011 of 4,000 people in need of ARVs. Our study exemplifies structural barriers to HIV care that are often overlooked.
- Participants purchased ARVs from illicit markets to secure treatment after a gap in formal care caused by missed appointments or a poor patient-provider relationship. Retention efforts must improve the quality of the patient-provider relationship to improve patient engagement in HIV care.
- Our study documents an HIV treatment disparity for substance users. Participants were reluctant to divulge substance use or relapse to their healthcare providers for fear of being taken off their ARV regimen. Likewise, participants purchased illicit ARVs because they were not prescribed them.
- ARV adherence patterns in our sample ranged from complete adherence to behaviors such as skipping pills due to drug use, and stretching pills across days or weeks by limiting doses; a range that reflects both competing needs and low HIV literacy. Periodic adherence has serious risk for treatment failure, ARV resistance, and HIV transmission.

**References**


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