Engagement as (treatment and) Prevention: The Evolution of the HIV Care Cascade

Measuring the HIV Care Cascade—A Foundation for Action

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Conflict of Interest Disclosure Statement

- No financial relationships to disclose
Objectives

• To understand the foundations of the HIV care cascade
• To investigate the U.S. HIV care cascade broken down by sub-populations
• To explore the HIV care cascade over time
• To understand the potential impact of health care systems on the HIV care cascade
The HIV Care Cascade
HIV Care Continuum

Adapted from
Eldred et al AIDS Patient Care STDs 2007;21(Suppl1):S1-S2
The Continuum Updated

HIV Diagnosis → Linkage to Care → ART Receipt → ART Adherence ↔ Outcomes

Retention in Care
Re-Engagement in Care
The Spectrum of Engagement in HIV Care in the United States

Percentage of persons with HIV engaged in selected stages of the continuum of care – United States

- Diagnosed: 82%
- Linked to care: 66%
- Retained in care: 37%
- Prescribed ART: 33%
- Viral suppression: 25%

Slide Courtesy of Dr. Irene Hall, CDC
Simulations of the Engagement in HIV Care Spectrum to Account for Inaccuracy in Engagement Estimates

(a) Current
(b) Dx 90%
(c) Engage 90%
(d) Treat 90%
(e) VL<50 in 90%
(f) Dx, Engage, Tx, and VL<50 in 90%

- Un-Diagnosed HIV
- Not Linked to Care
- Not Retained in Care
- ART Not Required
- ART Not Utilized
- Viremic on ART
- Undetectable Viral Load

The HIV Engagement in Care Cascade for HIV-Infected Individuals, Denver, CO, 2005-2009

<table>
<thead>
<tr>
<th>Stage</th>
<th>Number of Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV+, Previously Undiagnosed Target Population</td>
<td>770</td>
</tr>
<tr>
<td>HIV+, Diagnosed 2005-09</td>
<td>616</td>
</tr>
<tr>
<td>Linked to HIV Care in 18 months</td>
<td>515</td>
</tr>
<tr>
<td>Retained in HIV Care at 18 months</td>
<td>457</td>
</tr>
<tr>
<td>At least one HIV-RNA &lt;400 copies/ml at 6-18</td>
<td>238</td>
</tr>
<tr>
<td>HIV-RNA &lt;400 copies/ml at 18 months</td>
<td>216</td>
</tr>
</tbody>
</table>
The Cascade By Demographics
Percentage of persons with HIV engaged in selected stages of the continuum of care, by sex – United States
Percentage of persons with HIV engaged in selected stages of the continuum of care, by race/ethnicity – United States

- **Diagnosed**
- **Linked to care**
- **Retained in care**
- **Prescribed ART**
- **Viral suppression**

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Diagnosed</th>
<th>Linked to care</th>
<th>Retained in care</th>
<th>Prescribed ART</th>
<th>Viral suppression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>81</td>
<td>62</td>
<td>34</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>80</td>
<td>67</td>
<td>37</td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>White</td>
<td>85</td>
<td>71</td>
<td>38</td>
<td>35</td>
<td>30</td>
</tr>
</tbody>
</table>
Percentage of persons with HIV engaged in selected stages of the continuum of care, by transmission category – United States
Percentage of persons with HIV engaged in selected stages of the continuum of care, by age – United States

![Bar chart showing the percentage of persons with HIV engaged in various stages of care across different age groups in the United States. The chart includes data for diagnosed, linked to care, retained in care, prescribed ART, and viral suppression stages.](image)
The HIV Care Cascade Over Time
Engagement in HIV care in Denver by year of Diagnosis

- Linked to care at 18 months
- Retained in care at 18 months
- VL<400 copies/ml 18 months after diagnosis


- 2005: 80% (Linked), 66% (Retained), 25% (VL)
- 2006: 77% (Linked), 73% (Retained), 23% (VL)
- 2007: 87% (Linked), 77% (Retained), 38% (VL)
- 2008: 83% (Linked), 74% (Retained), 41% (VL)
- 2009: 90% (Linked), 84% (Retained), 46% (VL)
Denver Cascade over Time

IAC 2012 Poster MOPDC0305
Denver Cascade over Time
Censoring Out-Migration and Death

Months After HIV Diagnosis

- % in care
- % not retained
- % failed to link
- % out of state
- % died
- % VL < 200 cps/ml

IAC 2012 Poster MOPDC0305
Mapping Engagement in Care
Case Density, Care Location and Pattern Analyses in Philadelphia 2008-09

Behind the Cascade: Analyzing Spatial Patterns Along the HIV Care Continuum

JAIDS 2013;64:S42-51.
The Cascade in Different Health Care Systems
The treatment cascade among HIV positive people in the UK: 2010

- Total: 91,500
- Diagnosed: 69,400 (76%)
- On treatment: 56,900 (62%)
- Undetectable VLS: 49,500 (54%)

IAC 2012 Poster MOPDC0301
The cascade of care in the eastern European country of Georgia

IAS 2013 Abstract: MOPE143
India Cascade of Care after HIV Diagnosis

Patients (%)

- HIV diagnosis: 100.0%
- Entered into care: 81.6%
- Retained in pre-ART care: 70.3%
- Initiated ART: 54.9%
- Retained on ART: 38.0%
- Virological suppression: 31.4%

ART, antiretroviral therapy.

Interdisciplin Perspect Infect Dis 2013:ID384805
Other HIV Care Cascade Uses
UPENN: PMTCT Cascade of HIV Care

1. Expectant mothers receive prenatal care. They are offered, accept, and receive HIV testing and results.
2. Those that are HIV-infected receive HIV medications.
3. HIV-exposed infants receive medications to prevent HIV.
4. Mothers follow safe infant feeding practices.

Pregnant mothers → HIV-free baby
Conclusions

• Engagement in HIV care is critical for individual and population level HIV outcomes
• HIV Care cascades give a snapshot view of engagement in HIV care
• HIV Care cascades allow jurisdictions to understand where to focus resources for intervention
  – Steps in the cascade
  – Sub-populations
  – Geographic locations
• HIV Care cascades over time help jurisdictions understand the effectiveness of interventions
The United States 90% HIV Care Cascade

Stage of Engagement in HIV Care:

- HIV-Infected: 1,200,000
- HIV-Diagnosed: 1,080,000
- Linked to HIV Care: 972,000
- Retained in HIV Care: 874,800
- On Antiretroviral Therapy: 787,320
- Adherent/Undetectable: 708,588
- Overall: 59%
Thank You

Questions?