Entry into care following universal home-based HIV testing in rural KwaZulu-Natal, South Africa

The ANRS TasP 12249 cluster-randomised trial

M. Plazy, K. El Farouki, C. Iwuji, N. Okesola, J. Orne-Gliemann, J. Larmarange, ML. Newell, D. Pillay, F. Dabis, R. Dray-Spira, for the ANRS 12249 TasP study group

8th IAS conference, Vancouver, 2015
Background and objectives
Benefits of early linkage to HIV care and ART initiation (1)

... for ensuring the best health outcomes in HIV-infected individuals

Benefits of early linkage to HIV care and ART initiation (2)

- ... for ensuring the best health outcomes in HIV-infected individuals

- ... for preventing HIV transmission to uninfected individuals
  - □ At individual level (HPTN 052 trial: Cohen et al, NEJM 2011)
  - □ At populational level (Tanser et al, Science 2013)
Towards the “Universal Test and Treat” strategy: the 90-90-90 UNAIDS target (1)

90% diagnosed

90% on treatment (no specific eligibility criteria)

90% virally suppressed

(UNAIDS, 2014)
Towards the “Universal Test and Treat” strategy: the 90-90-90 UNAIDS target (2)

- Linkage to HIV and ART care
- 90% diagnosed
- 90% on treatment (no specific eligibility criteria)
- 90% virally suppressed
Early linkage to care after home-based HIV counselling and testing (HBHCT) (1)

- **HBHCT**: strategy evaluated as **acceptable and effective** for increasing HIV testing coverage in regions of high HIV prevalence.
Early linkage to care after home-based HIV counselling and testing (HBHCT) (2)

- **HBHCT**: strategy evaluated as acceptable and effective for increasing HIV testing coverage in regions of high HIV prevalence.

- **BUT are people properly linked to care after being diagnosed HIV-positive through HBHCT?**
  - Limited data available.
Objectives

- To describe the proportion of linkage to HIV care within three months of referral following HBHCT in a rural area with high HIV prevalence
- To explore the factors associated with poor linkage to HIV care
Methods
The ANRS 12249 TasP trial (1)

- Cluster randomized trial (2011-2016) evaluating the feasibility, acceptability and efficacy of immediate ART on HIV incidence in rural KwaZulu-Natal, South Africa

Iwuji et al, Trials 2013
Orne-Gliemann et al, BMC Publ H 2015

IAS 2015: Iwuji et al (abstract no MOAC0104)
The ANRS 12249 TasP trial (2)

Home-based HIV-testing (6 monthly rounds)

Trial area population: 22000 individuals

Referral to TasP clinic if identified HIV+

TasP clinics (1/cluster)

11 Intervention clusters: Treat all HIV+ individuals regardless of CD4 count /clinical stage
11 Control clusters: Treat all HIV+ individuals according to South African guidelines
The ANRS 12249 TasP trial (3)

**TasP clinics (1/cluster)**

11 **Intervention clusters**: Treat all HIV+ individuals regardless of CD4 count /clinical stage

11 **Control clusters**: Treat all HIV+ individuals according to South African guidelines

**DoH clinics**

Treat all HIV+ individuals according to South African guidelines

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**Home-based HIV-testing (6 monthly rounds)**

Trial area population: 22000 individuals

Referral to TasP clinic if identified HIV+
Study population (2x5 clusters)

**Individuals ≥16 years old**
- identified HIV+ during HBHCT and referred to a TasP clinic from March 2012 and June 2014
- not actively in care at referral (= no visit to the local HIV programme within the past 13 months)

**Exclusion criteria**
- Inconsistent dates (death, out-migration or clinic visit)
- Period of observation <3 months if no linkage to care
- Death or out-migration before linkage to a TasP or local HIV programme clinic within three months of referral
- Incomplete data
Statistical analysis

Outcome: Linkage to HIV care within three months of referral
- Linkage to care: attending a TasP or a DoH clinic

Explanatory covariates: collected at referral (before HIV identification)
- Socio-demographic
- HIV-related
- Trial-related

Statistical method: multivariable logistic regression
Results
Selection of the study sample (1)

Individuals referred to clinics (N=2569)

- Inconsistent dates (N=9) or observation time ≤90 days if no linkage (n=5)
- «In care» at referral (N=1222)
- «Not in care» at referral (N=1333)

1323 individuals included

- Death (N=3) or out-migrated (N=7) before linkage to clinics within three months of referral

Individuals included with complete data (N=1218)
Selection of the study sample (2)

Inconsistent dates (N=9) or observation time ≤ 90 days if no linkage (n=5)

« In care » at referral (N=1222)

« Not in care » at referral (N=1333)

Death (N=3) or out-migrated (N=7) before linkage to clinics within three months of referral

1323 individuals included

Individuals included with complete data (N=1218)

« Not in care »
- Newly diagnosed: 43.0%
- Never in care, already diagnosed: 25.0%
- LTFU: 32.0%
  - 13-24 months: 16.1%
  - >24 months: 15.9%
### Description of the study sample

<table>
<thead>
<tr>
<th></th>
<th>Total (N=1218)</th>
<th>Women (N=880)</th>
<th>Men (N=338)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-29</td>
<td>41.7</td>
<td>45.3</td>
<td>32.3</td>
</tr>
<tr>
<td>30-39</td>
<td>27.9</td>
<td>26.0</td>
<td>32.8</td>
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<tr>
<td>40-49</td>
<td>15.3</td>
<td>14.0</td>
<td>18.6</td>
</tr>
<tr>
<td>50-84</td>
<td>15.1</td>
<td>14.7</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Education level (n(%))</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>37.5</td>
<td>35.8</td>
<td>42.0</td>
</tr>
<tr>
<td>Some secondary</td>
<td>33.2</td>
<td>33.3</td>
<td>32.8</td>
</tr>
<tr>
<td>At least completed secondary</td>
<td>29.3</td>
<td>30.9</td>
<td>25.2</td>
</tr>
<tr>
<td><strong>Occupational status (n(%))</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>16.4</td>
<td>13.0</td>
<td>25.4</td>
</tr>
<tr>
<td>Student</td>
<td>8.1</td>
<td>9.2</td>
<td>5.3</td>
</tr>
<tr>
<td>Other inactive</td>
<td>75.5</td>
<td>77.2</td>
<td>69.2</td>
</tr>
<tr>
<td><strong>Knowing HV+ family member (n(%))</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>37.7</td>
<td>41.4</td>
<td>28.1</td>
</tr>
<tr>
<td>No</td>
<td>62.3</td>
<td>58.6</td>
<td>71.9</td>
</tr>
</tbody>
</table>
Linkage to HIV care within three months of referral – by SEX

Overall linkage (%): 40.2%

Total: N=1218
- No linkage to clinics: 38.4%
- Linkage to DoH clinic only: 17.8%
- Linkage to TasP then to DoH clinics: 10.3%
- Linkage to DoH then to TasP clinics: 10.3%
- Linkage to TasP clinic only: 13.5%

Women: N=880
- No linkage to clinics: 37.7%
- Linkage to DoH clinic only: 16.2%
- Linkage to TasP then to DoH clinics: 9.0%
- Linkage to DoH then to TasP clinics: 9.0%
- Linkage to TasP clinic only: 20.3%

Men: N=338
- No linkage to clinics: 40.2%
- Linkage to DoH clinic only: 11.6%
- Linkage to TasP then to DoH clinics: 4.7%
- Linkage to DoH then to TasP clinics: 4.7%
- Linkage to TasP clinic only: 21.7%

p=0.42
Linkage to HIV care within three months of referral – by ARM

Overall linkage (%)

- Total: 38.4%
- Control: 37.8%
- Intervention: 39.2%

p = 0.60
Factors associated with linkage to HIV care within three months of referral (1)

**Multivariable analysis (1/3) – Socio-demographic characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Total (N=1218)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>aOR [95%CI]</td>
<td>aOR [95%CI]</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>457</td>
<td>48.4</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Some secondary</td>
<td>404</td>
<td>34.7</td>
<td>0.67 [0.48-0.95]</td>
<td>0.65 [0.43-0.98]</td>
</tr>
<tr>
<td>Completed secondary</td>
<td>357</td>
<td>30.0</td>
<td>0.57 [0.40-0.82]</td>
<td>0.56 [0.37-0.89]</td>
</tr>
<tr>
<td><strong>Occupational status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>200</td>
<td>42.5</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Student</td>
<td>99</td>
<td>18.2</td>
<td>0.48 [0.26-0.90]</td>
<td>0.54 [0.26-1.14]</td>
</tr>
<tr>
<td>Inactive</td>
<td>919</td>
<td>39.7</td>
<td>0.96 [0.69-1.34]</td>
<td>1.10 [0.71-1.70]</td>
</tr>
</tbody>
</table>

*Multivariable model including age, education level, occupational status, assets, distance to clinic, ARV perceptions, HIV care status at referral, stigma, round of HIV testing, trial arm*
Factors associated with linkage to HIV care within three months of referral (2)

*Multivariable analysis (2/3) – HIV knowledge and perception*

<table>
<thead>
<tr>
<th></th>
<th>Total (N=1218)</th>
<th>Women (N=880)</th>
<th>Men (N=338)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% linkage</td>
<td>aOR [95%CI]</td>
</tr>
<tr>
<td><strong>Knowing HIV+ family member</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>759</td>
<td>35.7</td>
<td>1.00</td>
</tr>
<tr>
<td>Yes</td>
<td>459</td>
<td>42.9</td>
<td>1.44 [1.12-1.85]</td>
</tr>
<tr>
<td><strong>Would take ARVs if HIV+</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No/DKN</td>
<td>78</td>
<td>26.9</td>
<td>1.00</td>
</tr>
<tr>
<td>Yes</td>
<td>1140</td>
<td>39.2</td>
<td>2.00 [1.16-3.45]</td>
</tr>
</tbody>
</table>

*Multivariable model including age, education level, occupational status, assets, distance to clinic, ARV perceptions, HIV care status at referral, stigma, round of HIV testing, trial arm*
Factors associated with linkage to HIV care within three months of referral (3)

Multivariable analysis (3/3) – Trial-related characteristics

<table>
<thead>
<tr>
<th></th>
<th>Total (N=1218)</th>
<th>Women (N=880)</th>
<th>Men (N=338)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% link.</td>
<td>aOR [95%CI]</td>
</tr>
<tr>
<td><strong>Distance to the closest TasP clinic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1 km</td>
<td>443</td>
<td><strong>45.8</strong></td>
<td>1.00</td>
</tr>
<tr>
<td>1-2 km</td>
<td>431</td>
<td><strong>34.3</strong></td>
<td>0.58 [0.44-0.78]</td>
</tr>
<tr>
<td>2-5 km</td>
<td>344</td>
<td><strong>34.0</strong></td>
<td>0.57 [0.42-0.78]</td>
</tr>
<tr>
<td><strong>HIV care status at referral</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTFU 13-24 months</td>
<td>196</td>
<td><strong>57.1</strong></td>
<td>1.00</td>
</tr>
<tr>
<td>LTFU &gt;24 months</td>
<td>193</td>
<td><strong>43.0</strong></td>
<td>0.57 [0.38-0.87]</td>
</tr>
<tr>
<td>Already diagnosed</td>
<td>305</td>
<td><strong>32.8</strong></td>
<td>0.40 [0.27-0.59]</td>
</tr>
<tr>
<td>Newly diagnosed</td>
<td>524</td>
<td><strong>33.0</strong></td>
<td>0.40 [0.28-0.57]</td>
</tr>
</tbody>
</table>

Multivariable model including age, education level, occupational status, assets, distance to clinic, ARV perceptions, HIV care status at referral, stigma, round of HIV testing, trial arm.
Discussion
Summary of results

- <40% linkage to HIV care within three months of referral after home-based HIV testing, irrespective of gender

Factors associated with lower linkage to HIV care

- **Socio-demographic:** high education level, being a student
- **HIV knowledge and perception:** don’t know HIV+ family member, would not take ARV’s if HIV+
- **Trial related characteristics:** longer distance to clinic, never been in HIV care before referral

For men: the patterns of association with linkage to HIV care were similar to those seen in women, but few reached statistical significance

- Lack of statistical power?
Interventions to increase linkage to HIV care (1)

**Intervention 1.**

Text messages (SMS) reminders of clinic appointments to all enrollees
Interventions to increase linkage to HIV care (2)

**Intervention 1.**

Text messages (SMS) reminders of clinic appointments to all enrollees

**Intervention 2.**

Counselling and motivational support with Health System Navigators

- Phone
- Face to face visits at home or in a neutral place
- Escort to clinic

For those not linked within one month of referral
Interventions to increase linkage to HIV care (3)

**Intervention 1.**
Text messages (SMS) reminders of clinic appointments to all enrollees

**Intervention 2.**
Counselling and motivational support with Health System Navigators
- Phone
- Face to face visits at home or in a neutral place
- Escort to clinic

For those not linked within one month of referral

For those not linked after Intervention 2

**Intervention 3.**
Home-based ART initiation and care with CD4 point-of-care (with the aim to encourage people to go to clinic)
Acknowledgements

- Trial participants
- Africa Centre staff
- Traditional Authorities
- Department of Health, South Africa
- Merck/Gilead

- The IAS organizers for the scholarship