**Introduction**

- Despite advances in treatment, approximately 2 million people acquired HIV in 2015 and in total 36.7 million individuals live with the virus worldwide.
- Given the high effectiveness of ART, HIV transmission and the associated mortality are largely attributed to the substantial number of HIV-infected individuals who are not on treatment and/or undetectable.
- Aiming to HIV infection elimination, UNAIDS set the 90-90-90 target by 2020.
- Unless a sufficient number of people with HIV (PLHIV) are engaged in all stages of the HIV care continuum (HCC), public health benefits will be fully limited from ART.
- While a 4-stage CoC provides useful public health information, additional stages, such as the ascertainment of the diagnosed people who are initiating treatment and the proportion of people among those started treatment who are retained in care, could have added value, particularly for the "hard to" current policy.

**Aim**

- We aimed to propose and construct a 6-stage CoC in Greece, overall and by risk group, along with qualitative indicators, to depict the situation toward the UNAIDS goal and to assess risk group and stage-specific weaknesses.

**Patients and Methods**

- The CoC was constructed combining information from the HIV/AIDS surveillance system operated by the Hellenic Center for Disease Control and Prevention (HCDCP) and from the Athens Multicenter AIDS Cohort Study (AMACS), a nationwide cohort in Greece.
- The CoC included:
  1. i) number of people living with HIV (PLHIV) by the end of 2013
  2. a) proportion of PLHIV ever diagnosed. The number of diagnosed individuals retrieved from the HIV/AIDS registry at the HCDCP
  3. proportion of diagnosed linked to care individuals with at least one CD4 measurement reported, an AIDS diagnosis or who initiated ART, were considered as linked to care.
  4. The estimate of the number of people linked to care was obtained based on HCDCP data, which was then cross-checked with the number of the participant who diagnosed in the ambulatory setting and attended the laboratory and primary care.
  5. b) proportion of linked who ever initiated ART, according to HCDCP data, irrespective of treatment guidelines or antiretroviral regimens. The proportion of initiating ART among the AMACS participants was also estimated and compared to that reported from the RCDCP
  6. The proportion of treated who retained in care, estimated using AMACS data. All patients with at least one clinic visit, on treatment or with laboratory test data between 15/07/2012 and 31/12/2013, were considered as being retained in care. Adjustments for AMACS coverage and representativeness were made as well.
  7. Proportion of the retained in care who are virologically suppressed estimated using AMACS participants who reported at least two consecutive viral load measurements with undetectable viral load.
- The interval from seroconversion (SC) to diagnosis was estimated based on a regression and method while the time from diagnosis to treatment initiation was based on the AMACS database.

**Results**

**Group**

<table>
<thead>
<tr>
<th>Group</th>
<th>All</th>
<th>MSM</th>
<th>PWH</th>
<th>MSW</th>
<th>PWH</th>
<th>MSW</th>
<th>PWH</th>
<th>MSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosed</td>
<td>11096 (78.4)</td>
<td>5133 (88.0)</td>
<td>1325 (80.7)</td>
<td>2454 (77.5)</td>
<td>5133 (88.0)</td>
<td>1325 (80.7)</td>
<td>2454 (77.5)</td>
<td></td>
</tr>
<tr>
<td>Linked to care</td>
<td>9544 (86.0)</td>
<td>4988 (87.7)</td>
<td>1070 (88.8)</td>
<td>2291 (93.4)</td>
<td>9544 (86.0)</td>
<td>4988 (87.7)</td>
<td>1070 (88.8)</td>
<td></td>
</tr>
<tr>
<td>Retained on care</td>
<td>6466 (66.4)</td>
<td>3692 (60.0)</td>
<td>611 (87.4)</td>
<td>1623 (85.8)</td>
<td>6466 (66.4)</td>
<td>3692 (60.0)</td>
<td>611 (87.4)</td>
<td>1623 (85.8)</td>
</tr>
<tr>
<td>Virally suppressed</td>
<td>5832 (87.7)</td>
<td>3241 (87.8)</td>
<td>438 (71.7)</td>
<td>1449 (88.8)</td>
<td>5832 (87.7)</td>
<td>3241 (87.8)</td>
<td>438 (71.7)</td>
<td>1449 (88.8)</td>
</tr>
<tr>
<td>Ever treated</td>
<td>80</td>
<td>20</td>
<td>80</td>
<td>20</td>
<td>80</td>
<td>20</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>Virtually suppressed (of PLHIV, %)</td>
<td>42.6</td>
<td>59.1</td>
<td>80</td>
<td>48.9</td>
<td>80</td>
<td>48.9</td>
<td></td>
<td></td>
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<tr>
<td>Median (IQR)</td>
<td>Median (IQR)</td>
<td>Median (IQR)</td>
<td>Median (IQR)</td>
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</tr>
</tbody>
</table>

**Diagnosis to ART initiation (months)**

| Migrants | 6.29 (1.38-3.72) | 8.62 (1.40-43.01) | 9.67 (7.23-32.55) |

**Figure 2**. Cascade of care for men who have sex with men (MSM), people who inject drugs (PWID) and women who have sex with men (MSW) are the number of diagnosed HIV infected individuals. The numbers on the arrows between the bars correspond to proportion of the previous stage, while the numbers above the bars correspond to proportions of PLHIV for MSM, PWH and MSW and to proportions of diagnosed for migrants.

**Figure 3**. MSW, MSM and PWID (PWH) proportion (%). The bars represent the estimated proportions of the previous stage, while the numbers above the bars correspond to proportions of PLHIV for MSM, PWH and MSW and to proportions of diagnosed for migrants.

**Conclusions**

- By the end of 2013, Greece was far from reaching the UNAIDS 90-90-90 goal. Barriers to achieving this goal differed by risk group. Reduced rate of HIV diagnosis is a problem in all groups but particularly among MSW. Suboptimal linkage to care or reduced numbers of people who started treatment were key issues among PWID and migrants. Interestingly, among those who initiated treatment, retention in care was substantially higher than among those who never had started treatment. These data provide useful information for policy makers. Updated CoC is urgently needed to assess progression and the effects of the introduction of new treatment guidelines.

- The current surveillance report shows that the HIV diagnosis rate is not decreasing except for PWID, in fact, finding that underlines the importance of timely diagnosis, and of engaging and retaining in care for PLHIV. Targeted interventions are necessary focusing on early diagnosis and timely linkage. A high risk group 6-stage CoC accompanied with quality indicators provide useful public health data and should be implemented when possible.