Geospatial analysis and mapping of new HIV diagnoses, late presentations and GP testing practices in Amsterdam

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On behalf of the HIV Transmission Elimination Amsterdam Initiative
H-TEAM – a city approach for HIV

- 30% of individuals with a new HIV diagnosis present to care in late stage of infection
- Estimated 400 individuals are unaware of their infection

Development of better strategies to
- Diagnose HIV infection earlier
- Lowering proportion unaware of infection
Geographic Information System Mapping

1. Map distribution of new HIV diagnoses and proportions of late presenters across Amsterdam
2. Development of approach for identifying target areas for testing & prevention practices
3. Relate these to general practitioners’ (GPs) HIV testing practices and prevalence distribution of diabetes mellitus (DM) and cardiovascular disease (CVD)
Data sources at postal code 4 level

<table>
<thead>
<tr>
<th>Source</th>
<th>Type of data</th>
</tr>
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<tbody>
<tr>
<td>Stichting HIV Monitoring (SHM)</td>
<td>HIV Prevalence</td>
</tr>
<tr>
<td></td>
<td>HIV new diagnoses</td>
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<tr>
<td>Laboratories</td>
<td>Number of HIV tests</td>
</tr>
<tr>
<td>Nivel</td>
<td>Cardiovascular risk management and Diabetes</td>
</tr>
<tr>
<td>Onderzoek, Informatie en Statistiek (OIS)</td>
<td>Demographics</td>
</tr>
</tbody>
</table>
HIV prevalence is not equally distributed
Approach for identification of target areas

2 indicators per area

- New diagnoses (%)
  2011-2016

- Late presentations among new diagnoses* (%)
  2011-2016

*Late presentation is defined as a CD4 count of <350 or AIDS at diagnosis
### Top 10 target areas identified

<table>
<thead>
<tr>
<th>Postcode 4</th>
<th>Neighborhood</th>
<th>Area</th>
<th>Rank (total)</th>
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<tbody>
<tr>
<td>1104</td>
<td>Bijlmer Oost (E,G,K)</td>
<td>Amsterdam Zuidoost</td>
<td>114</td>
</tr>
<tr>
<td>1017</td>
<td>Grachtengordel-Zuid</td>
<td>Amsterdam Centrum</td>
<td>110</td>
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<tr>
<td>1015</td>
<td>Grachtengordel-W/Jordaan</td>
<td>Amsterdam Centrum</td>
<td>100</td>
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<td>1102</td>
<td>Bijlmer Centrum (D,F,H,)</td>
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<td>1107</td>
<td>Holendrecht/Reigersbos</td>
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<td>94</td>
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<td>Weesperzijde</td>
<td>Amsterdam Oost</td>
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<td>Amstel III / Bulewijk</td>
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<td>1052</td>
<td>Frederik Hendrikbuurt</td>
<td>Amsterdam West</td>
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<td>1059</td>
<td>Hoofddorppleinbuurt</td>
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<tr>
<td>1054</td>
<td>Helmersbuurt</td>
<td>Amsterdam West</td>
<td>91</td>
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*Preliminary*
Two examples of utilization of GIS

• 23% of all new diagnoses in Amsterdam are coming through the general practitioner (GP)
  • *HIV indicator condition-guided testing to reduce the number of undiagnosed patients and prevent late presentation in a high-prevalence area: a case-control study in primary care. (Sex Transm Infect, Joore et al., 2015)*

• Rationale behind combined testing based on prevalence of NCDs
HIV testing by GPs related to target areas

HIV test density*

* Each red dot represents 1 HIV test per 100 individuals in a neighborhood.
Comparing GP testing in target and non-target areas

1. Average number of tests per GP

2. Variance in number of tests per GP
Trend towards higher number of tests per GP in target areas

P = 0.0772

Average number of tests per GP

Non-target areas

Target areas
Significantly higher variance in number of tests in target areas

Note: Tests are per 1,000 individuals, normalized by the average number of tests.
Overlap of target areas with NCDs in Zuidoost

Target areas

Cardiovascular risk management

Diabetes

# Patients per 1,000 inhabitants

43.0 170.8

15.90 80.20
Conclusion

1. Working on approach for target area identification.
2. Number of tests among GPs within target areas significantly more varied.
3. Differences in testing may provide incentive for optimization and targeted training for GPs.
4. Localized distribution of people living with HIV across Amsterdam, as well as CVD and DM → rationale for combining testing in health check to lower barriers for testing
Acknowledgements

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- M. Groot Bruinderink

Amsterdam Medical Centre / AIGHD
- G.J. de Bree
Disclosure of speaker’s interest

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