INTRODUCTION
Hepatitis C virus (HCV) is a leading cause of liver-related morbidity and mortality worldwide. An estimated 71 million people are affected by chronic HCV infection and a significant number of those chronically infected progress to cirrhosis or liver cancer if left untreated. Recent advances in direct acting anti-viral (DAA) treatment of HCV has reinvented public health initiatives aimed at identifying affected individuals.

AIM
The goal of this study was to use a new modelling approach, grounded in real-life cohort data of diagnosed and treated patients in Italy, to compare different linkage to care scenarios to the overall HCV infected population in the country. We forecasted the impact of different disease management scenarios on virologic infections, liver related morbidity and mortality through 2030 in order to identify a potential scenario to achieve the World Health Organization (WHO) Targets in Italy.

METHOD
Two Markov-disease burden models were developed to assess the current and future HCV disease burden in Italy. The ‘Italy Polaris’ model is grounded in the natural history of HCV progression and forecasts the HCV impact in the general population in Italy. A similar HCV disease burden model, grounded in the current distribution of liver-related care patients of the PITER (Italian Platform for the Study of Vital Hepatitis Therapies) cohort was also developed. We modelled the impact on HCV disease burden according to different linkage to care scenarios. Two general population scenarios (built in the Italy Polaris model) describe the forecasted disease burden through 2030 and three scenarios based on PITER data evaluate the impact of linkage to care on virologic prevalence.

RESULTS

Table 1. Inputs of the Italy Polaris model

<table>
<thead>
<tr>
<th>Italy-Specific Model</th>
<th>Parameters</th>
<th>Year</th>
<th>Value (Range)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Viremic Population</td>
<td>2015</td>
<td>849,000</td>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>Viremic Prevalence</td>
<td>2015</td>
<td>1.39%</td>
<td>(0.6-2.0)%</td>
<td>(5)</td>
</tr>
<tr>
<td>Viremic Diagnosed Population</td>
<td>2015</td>
<td>357,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Disease Number Treated</td>
<td>2015</td>
<td>31,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2a. Inputs of the Base 2016 and PITER Scenarios, 2015-2030

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>PITER</td>
<td></td>
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</tr>
</tbody>
</table>

There were an estimated 849,000 viremic individuals in Italy in 2015 (Table 1), and around 70% of the infected (F0–F3) individuals were within the 1948 to 1978 birth cohorts. Considering the 2016 standard of care, liver related mortality is expected to decline by 65%, achieving the WHO mortality target.

- Under the 40% linked to care scenario, eligible patients to be treated will be depleted by 2025, resulting in a treatment rate decline moving forward. A targeted screening strategy in the 1948-1978 birth cohorts could capture the pool of diagnosed patients by finding 75% of F0–F3 cases (Table 3).
- Under the PITER 60% linked to care scenario, the eligible pool of patients for treatment are expected to run out in 2028. If treatment is maintained at 33.700 through 2030, a screening strategy focusing on individuals born in the years 1958-1978 could be useful to capture 55% of eligible infected patients for treatment (Table 3).
- Under the PITER 80% linked to care scenario, the pool of eligible patients to be treated is expected to be depleted by 2031, with screening limited to those born in the years 1968-1978, which would capture 25% of infected cases, would be sufficient to sustain treatment levels required to achieve the WHO Targets (Table 3).

CONCLUSIONS
Italy has been considered the country with the highest HCV prevalence rate in Western Europe. However, due to expanded DAA access policies in the past, Italy is on track to achieving the WHO targets, if current treatment levels are sustained. In the three PITER linkage to care scenarios, the eligible pool of patients to be treated will run out between 2025 and 2031, leaving a significant proportion of infected individuals undiagnosed and without access to care. Targeted screening strategies are required in order to achieve the WHO targets and sustain universal access to DAs.

ACKNOWLEDGEMENTS
Authors wish to thank the PITER collaborating group available at www.progettopiter.it; Center for Disease Analysis Foundation’s Polaris Observatory, which collaborated on this project on a voluntary basis; Antonietta Coratella and Italian Drug Agency for providing detailed DAA treatment data used in this study.

This study was funded by the Polaris Observatory through grants from the John C. Martin Foundation and Center for Disease Analysis.

REFERENCES

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