Global Cascade of Care for HBV and HCV

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On behalf of the Polaris Observatory Collaborators

June 16, 2018
Conflict of Interest Statement

- H. Razavi has not received any remuneration from pharmaceutical companies.
- He has been a member of advisory boards for Gilead and AbbVie. All proceeds went to CDA Foundation.
- He is the managing director of Center for Disease Analysis (CDA).
- CDA has received research funding from Gilead Sciences, AbbVie, & Intercept Pharma.

This work was funded by the John C Martin Foundation
CDAF is a non-profit organization with the goal of assisting countries in achieving the 2030 hepatitis elimination targets.

We work to **study, model & eliminate** hepatitis. We accomplish this through our two major initiatives:

- **Study**
  - Provide collaborators with epidemiological data, modeling tools, training and decision analytics to support eliminating Hepatitis B and C globally by 2030.

- **Model**

- **Eliminate**
  - Improve access to medicines and diagnostics, and develop scalable, sustainable funding mechanisms for low and middle-income (LMIC) countries. Provide optimized hepatitis elimination programs.
The Polaris Observatory keeps track of how countries are progressing toward hepatitis elimination targets.

http://cdafound.org/polaris/
A modified Delphi process is used to develop consensus estimates for all inputs.

<table>
<thead>
<tr>
<th>STUDY</th>
<th>MODEL</th>
<th>ELIMINATE</th>
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<tr>
<th>Identify Experts</th>
<th>Literature Search</th>
<th>Meeting 1: Review Inputs</th>
<th>Analysis &amp; Modeling</th>
<th>Meeting 2: Develop Strategies</th>
<th>Final Report &amp; Follow up</th>
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<tr>
<td>MoH Representatives</td>
<td>Indexed Journals, Gov Reports</td>
<td>Review Inputs ID Data Gaps</td>
<td>Gather Unpublished Data</td>
<td>Review Inputs &amp; Build Consensus</td>
<td>Refine Analysis Draft Report</td>
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<td>Public Health Specialists</td>
<td>International Reports</td>
<td>ID Data Sources/ Unpublished Data</td>
<td>Analyze Data</td>
<td>Review Outputs &amp; Build Consensus</td>
<td>Draft Manuscript Draft/ Submit Abstracts</td>
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<td>Epidemiologists</td>
<td>Cancer Registries</td>
<td>Discuss Analogues</td>
<td>Populate &amp; Calibrate Model</td>
<td>Assess Potential Scenarios</td>
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<td>Hepatologists, Gastro.</td>
<td>Liver Transplant Registries</td>
<td>Discuss Risk Factors</td>
<td>Generate Analyses</td>
<td>Agree on Final Desired Strategies</td>
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<td>ID Specialists Economists</td>
<td>Risk Group Reports</td>
<td>Discuss Age Distribution</td>
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<td>Discuss Regional Variations</td>
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Globally, ~80% of the HCV infected population remains undiagnosed and 93% remain untreated.

Source: Polaris Observatory
The good news: HCV treatment is increasing over time.

Source: Polaris Observatory
The bad news: Most of the increase in treatment has been occurring in middle-income countries.

Source: Polaris Observatory
The number of treated patients is decreasing in high-income countries as the pool of diagnosed & under-care patients is depleted.

Source: Polaris Observatory
In 2017, we estimate there were 12 countries on the path to achieving the WHO 2030 elimination targets.

Source: Polaris Observatory (http://cdafound.org/polaris/ accessed June 14, 2018)
In contrast, only 20 countries will not make the 2030 and 2020 targets for HBV prevalence among 5 year olds.

Source: Polaris Observatory (http://cdafound.org/polaris/ accessed June 14, 2018)

Angola
Burkina Faso
Cameroon
Central African Republic
Chad
Côte d'Ivoire
Ethiopia
Gabon
Ghana
Indonesia
Iraq
Kiribati
Mauritania
Mozambique
Myanmar
Nigeria
Papua New Guinea
Philippines
Senegal
Syrian Arab Republic
Despite our progress, 1.8 million (1.6–2.2 million) 5-year olds were HBsAg+; prevalence of 1.4% (1.2%–1.6%) in 2016.
An estimated 292 million (252–341 million) individuals were HBsAg+ with an overall prevalence of 3.9% (3.4 – 4.6%) in 2016.
90% of HBV patients remain undiagnosed, and 95% of treatment eligible patients remain untreated.

Source: Polaris Observatory
The diagnosed and treatment rates drop with country income.

Source: Polaris Observatory
Conclusions

• The global HCV and HBV populations remain largely under-diagnosed and under-treated
• The global number of HCV treated patients is increasing
• The number of treated HCV patients in high-income countries is decreasing as pools of diagnosed under-care patients are depleted
• HBV prophylaxis (BD, HBIG, antiviral) remains low in low income countries
• Treatment of HBV remains less than 1% in low and lower-middle income countries