Surveillance, Risk Assessment and Policy (SRAP) Subgroup

Cost Utility Analysis of HIV, HCV, and HBV Screening of Blood Donations

Project funded by the ISBT TTID Working Party

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Transfusion Transmitted Infectious Diseases

Subgroups

- Bacteria
- Parasites
- Virology
- Surveillance, Risk Assessment & Policy
- Transmissible Spongiform Encephalopathy
Update

- The tool is complete and accessible at:
  http://www.isbtweb.org/working-parties/transfusion-transmitted-infectious-diseases/

Surveillance, Risk Assessment & Policy

Cost Utility Analysis Webtool for HIV, HBV and HCV

Access webtool here

https://interactive.basecase.com/home#!/summary?id=14143
Activities in last year

• Extensive QC of the underlying model and the web interface

• Switch to QALYs

• Addition of new part of Results reporting

• Alliance of Blood Operators (ABO) project
  – Complex issues related to disclosure of results have not been resolved
Introduction

This tool allows you to perform analysis of blood donation screening strategies for the following test combinations:

- HIV Ab + HCV Ab + HBsAg
- HIV Combo + HCV Combo + HBsAg
- All Mini Pool Multiplex NAT
- All Individual Donation Multiplex NAT
- Do nothing (HIV, HCV, HBV)

You can estimate the cost-effectiveness of screening interventions. Please make sure you have the data you will need, before you start entering data. For the data you will need to register an account. Please send your name, and organization to bcuster@bloodsystems.org or marinus.van.hulst.transfusion@gmail.com for information.

This application will guide you through the analysis steps. The steps are:

- Select a country from the list to the right that best matches your test strategy. The country will appear. These values can be replaced with default values, you can re-select the country in the drop-down.
  - If you can’t provide data for a particular strategy, continue.
  - Select the ‘Next Step >>’ in the lower right of each entry or results page.
  - On the ‘Results’ page you will be able to select the strategy to compare.

This tool was developed by the Surveillance, Risk Assessment and Infections Diseases Working Party (TTID WP) and BaseCase, and was funded by the ISBT TTID WP and Blood Systems Research Institute.
Infectious Window Periods

If you are interested in Minipool NAT for your setting, please specify a pool size on the right side of the table below. Optionally, you may also adjust the window periods of the tests. However, unless you have specific data on the window periods of the tests available in your setting, it is better to use the pre-loaded data.

<table>
<thead>
<tr>
<th>Test</th>
<th>Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV Ab</td>
<td>20.3 days</td>
</tr>
<tr>
<td>HBsAg</td>
<td>38.3 days</td>
</tr>
<tr>
<td>HBsAg (late stage)</td>
<td>24 days</td>
</tr>
<tr>
<td>HCV Ab</td>
<td>65 days</td>
</tr>
<tr>
<td>HIV Combo (Ab, p24)</td>
<td>15 days</td>
</tr>
<tr>
<td>HCV Combo (Ab, Ag)</td>
<td>12.5 days</td>
</tr>
<tr>
<td>HIV ID-NAT, Ab</td>
<td>6 days</td>
</tr>
<tr>
<td>HBV ID-NAT, HBsAg</td>
<td>21 days</td>
</tr>
<tr>
<td>HBV ID-NAT, HBsAg (late stage)</td>
<td>12.9 days</td>
</tr>
<tr>
<td>HCV ID-NAT, Ab</td>
<td>5 days</td>
</tr>
</tbody>
</table>

### Multiplex Minipool NAT

For the pool size you select the window periods will automatically be estimated.

<table>
<thead>
<tr>
<th>Pool Size</th>
<th>HIV MPNAT, Ab</th>
<th>HBV MPNAT, HBsAg</th>
<th>HCV MPNAT</th>
<th>HBV MPNAT, HBsAg (late stage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>9.59 days</td>
<td>28.75 days</td>
<td>6.97 days</td>
<td>13.03 days</td>
</tr>
</tbody>
</table>

[Advanced Inputs]
Reporting Options - Update

1. Infections remaining, costs (testing and disease) and QALYs

2. Incremental cost effectiveness ratios (ICERs)

3. ICER / GNI per capita
   - Ratio ≤ 1 – Cost effective
   - 1 < Ratio < 3 – Context dependent
   - Ratio > 3 – Not cost-effective

4. Cost-effectiveness plane, also known as the Efficiency Frontier

Download report
### Results

Please select the screening strategies you would like to compare for your setting. Results can be viewed in three different ways by selecting the tab for ICERs, Cost-Effectiveness Plane or Totals.

#### Infections remaining, costs and QALYs

<table>
<thead>
<tr>
<th>Screening Strategies</th>
<th>ICER</th>
<th>ICER / GNI per capita</th>
<th>CE Plane</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV Ab + HCV Ab + HBsAg</td>
<td>28.702</td>
<td>163.943</td>
<td></td>
</tr>
<tr>
<td>HIV Combo + HCV Combo + HBsAg</td>
<td>21.208</td>
<td>35.151</td>
<td></td>
</tr>
<tr>
<td>All Mini Pool (x) Multiplex NAT</td>
<td>12.353</td>
<td>17.858</td>
<td></td>
</tr>
<tr>
<td>All Individual Donation Multiplex NAT</td>
<td>7.918</td>
<td>13.779</td>
<td></td>
</tr>
<tr>
<td>Do Nothing (HIV, HCV, HBV)</td>
<td>417.460</td>
<td>1,103.443</td>
<td></td>
</tr>
</tbody>
</table>

#### Infections remaining, costs and QALYs

<table>
<thead>
<tr>
<th>Screening Strategies</th>
<th>AB+HBsAg</th>
<th>Combo+HBsAg</th>
<th>MP Multi NAT</th>
<th>ID Multi NAT</th>
<th>Compared to</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV Ab + HCV Ab + HBsAg</td>
<td>0.0</td>
<td>0.1</td>
<td>0.4</td>
<td>0.6</td>
<td>Do Nothing</td>
</tr>
<tr>
<td>HIV Combo + HCV Combo + HBsAg</td>
<td>3.3</td>
<td>6.4</td>
<td>9.4</td>
<td></td>
<td>AB+HBsAg</td>
</tr>
<tr>
<td>All Mini Pool (x) Multiplex NAT</td>
<td>12.2</td>
<td>17.3</td>
<td></td>
<td></td>
<td>Combo+HBsAg</td>
</tr>
<tr>
<td>All Individual Donation Multiplex NAT</td>
<td>28.5</td>
<td>MP Multi NAT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Objective: To compare the cost-utility of the same interventions in a list of countries with similar HDIs

Participants: Australia, Canada, Denmark, Finland, France, Netherlands, UK, USA (two other countries have been approached)

- Are patterns of similar cost-effectiveness/utility ratios evident?
- What aspects may exhibit substantial differences?
- Are there broader patterns with respect to blood safety for HIV, HBV, and HCV that can be discerned?
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