Applying Value Assessment to the Health Care Sector for COVID-19

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If this graph can tell us anything, it is that clinical effectiveness combined with economic evaluation are critical to finding a sweet-spot in health system efficiency.
Value Assessment

Cost-effectiveness is a function of Cost... and... Clinical Benefit

\[
\text{Incremental Cost-Effectiveness Ratio (ICER)} = \frac{\text{Cost}(\text{New}) - \text{Cost}(\text{SOC})}{\text{Benefit}(\text{New}) - \text{Benefit}(\text{SOC})}
\]

“New” implies new technology to manage COVID-19 cases (e.g. treatment, vaccine)
“SOC” implies current standard of care for COVID-19 (e.g. critical care)
Opportunity Costs

Pricing is not the only purpose – or primary reason – for applications of cost-effectiveness analysis

Understanding the importance of Opportunity Costs in Healthcare Decision-making can improve efficiency of spending on COVID-19 care, but at what threshold?
Opportunity Costs of COVID-19

- Becker estimated the impact that a pandemic could have on the US economy in 2009:
  - $20 trillion economy
  - 1/100 of probability of pandemic in a given year
  - Net Present Value = $200 billion

- But now we have certainty in a current pandemic
  - $21.43 trillion economy
  - 100/100 certainty of pandemic
  - ~25% impact on nationwide productivity
  - Net Present Value = $5.36 trillion

- **Opportunity Cost** = $128,000 per working-age American
  - 205 million working-age Americans
  - Finance solution over 5-years to eliminate a pandemic

- This value falls within the upper range of typical cost-effectiveness thresholds
  - Typically between $50,000-$150,000 per quality-adjusted life year (QALY)
  - Reflects opportunity costs whereby spending above a threshold restricts resource allocation to other priorities
Economic Evaluation of COVID-19 Health Technology

Preprints with THE LANCET

Economic Value of Treatment and Vaccine to Address the COVID-19 Pandemic: A U.S. Cost-Effectiveness and Budget Impact Analysis

### ECONOMIC IMPACT

<table>
<thead>
<tr>
<th>Comparator</th>
<th>Cost ($B)</th>
<th>ΔCost ($B)</th>
<th>Effectiveness (QALYs)</th>
<th>ΔEffectiveness (QALYs)</th>
<th>ICER ($/QALY)</th>
<th>Program Cost ($B)</th>
<th>Budget Impact ($/person per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Nothing</td>
<td>2.115</td>
<td></td>
<td>0.874</td>
<td></td>
<td></td>
<td>697.83</td>
<td>176.22</td>
</tr>
<tr>
<td>Social Distancing</td>
<td>1.738</td>
<td>-0.377</td>
<td>0.875</td>
<td>0.001</td>
<td><em>Dominates</em></td>
<td>548.85</td>
<td>138.60</td>
</tr>
<tr>
<td>Treatment</td>
<td>1.299</td>
<td>-0.885</td>
<td>0.877</td>
<td>0.003</td>
<td><em>Dominates</em></td>
<td>66.56</td>
<td>16.81</td>
</tr>
<tr>
<td>Vaccination</td>
<td>999.9</td>
<td>-1.115</td>
<td>0.892</td>
<td>0.019</td>
<td><em>Dominates</em></td>
<td>9.90</td>
<td>2.50</td>
</tr>
</tbody>
</table>

- At any reasonable price, new health technologies for COVID-19 "dominate" standard care
  - Vaccines and treatments cost less
  - Vaccines and treatments offer greater clinical benefit
- This suggests that Cost-effectiveness Analysis is not a good tool for pricing out solutions
- We should consider budget impact and other tools to explore value-for-money to ensure...
  - Prices of COVID-19 health technology make them accessible to patients
  - Prices remunerate innovations, short timelines and opportunity costs of manufacturers

Conclusions

• We need to prepare to use a Value Framework in order to explore value-for-money that COVID-19 health technology may deliver in the near-future

• Cost-effectiveness analysis may be challenging to advise U.S. healthcare on all fronts, especially when it comes to price of these health technologies

• Both Cost-effectiveness Analysis and Budget Impact should be used in tandem to explore value and advise manufacturers and insurers on price points that achieve:
  • Access of individual patients
  • Renumeration for manufacturers that innovate
  • Ensure that opportunity costs do not exceed payer budgets to serve the needs of multiple patient populations, besides just COVID-19
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