India – Covid vaccine supplies and capacities

Based on current capacities from Serum and Bharat Biotech (BB), India’s sustainable daily vaccination rate is <3m doses

- Serum’s current monthly production of Covishield is trending at 70m doses, while BB’s monthly production of Covaxin stands at 10-15m doses. Based on current production capacities of Serum and BB, India’s daily vaccination rate can sustain only at 2.7-2.8m doses.

- India has administered ~150m doses so far and daily vaccination rate (based on 7-day average) had peaked at around 3.5m doses in early-Apr. Absolute daily peak was 4.3m doses administered on 2nd Apr. Since then, 7-day average daily vaccination rate has declined to 2.5m doses currently.

- The higher rate of daily vaccinations during the earlier period was owing to the inventory stockpiled by Serum and BB even before receiving approval and launch in India. Serum and BB had stockpiled 50m and 10m doses, which they supplied to the government. Hence, because of doses available from stockpiled inventory, India saw peak daily vaccination rate at 3.5m doses.

- As the inventory has got utilized, the daily vaccination rate has come down to the currently monthly production limits of manufacturers. The raw material supply issues from the US are not impacting current productions for Serum and BB, as both of them have secured vendor supply chains for Covishield and Covaxin resp. Only Serum’s Novavax vaccine production (likely launch in Oct-21) could be impacted owing to raw material supply issues.

Figure 1: India’s daily vaccination rate is now trending in-line with monthly production capacities of Serum and Bharat Biotech

![Daily Covid vaccine doses administered (7-day avg.)](image)

Source: Company, IIFL Research
With supplies expected from Dr. Reddy’s Sputnik-V and Cadila’s ZyCov-D, India’s daily vaccination rate can improve to 6m doses by Sep-21

- Existing suppliers (Serum and BB) are targeting to ramp-up production capacities, with Serum expected to achieve monthly run-rate of 100m Covishield doses by Aug-21 vs. 70m doses currently. While we estimate Bharat Biotech to ramp-up monthly supply of Covaxin to 50-60m monthly doses by Nov-21, Covaxin’s uptake could be lower than expected owing to higher pricing (Rs400 for State Governments and Rs1200 for private market for Covaxin per dose vs. Rs300 for State Governments and Rs600 for Covishield per dose).

- With additional vaccine approvals and launches lined up (Dr. Reddy’s Sputnik-V and Cadila’s ZyCov-D) in the next couple of months, India’s daily vaccination rate can improve to 5.5-6m doses by Sep-21. However, given the challenges faced by all manufacturers while ramping-up production capacities, we estimate that India might struggle to improve its daily vaccination rate beyond 5m doses before Sep-21.

India could fully vaccinate 40-55% of its population by CY21. 40% looks more like an achievable number

- Launch of foreign vaccines (Pfizer, Biological E/J&J, and Novavax) can help us to accelerate the daily vaccination rate to 7.5-8m doses by Nov/Dec-21. However, we estimate limited supply for Pfizer’s vaccine (35m doses for India in CY21) owing to logistical challenges given need to import from the US (no manufacturing agreements are there yet for Pfizer’s vaccine with Indian manufacturers). Given Phase-3 studies are on-going for Biological E/J&J and Novavax vaccine candidates, we expect their launches in 4QCY21.

- Based on these assumptions, we estimate India’s monthly Covid vaccine supplies to ramp-up from ~90m doses currently to ~240-250m doses by Nov/Dec-2021. Assuming everything goes on as planned, India on a best-case basis could fully vaccinate 55% of its population (with 2 doses per person) in CY21. However, given the production and supply bottlenecks, we estimate that 40% of India’s population would most likely get fully vaccinated by CY21. As of Apr-21 end, India has just vaccinated 9% of its population with the first dose and 2% of its population with both the doses. Assuming 2 doses per person, 5.5% of India’s population is vaccinated, which we believe can improve to 40% by the end of this year.

<table>
<thead>
<tr>
<th>Supplier/ Doses (mn)</th>
<th>Serum Covishield Covaxin</th>
<th>Bharat</th>
<th>Dr. Reddy’s Sputnik - V</th>
<th>Cadila ZyCoV-D</th>
<th>Pfizer Biological E JNJ</th>
<th>Serum Covovax</th>
<th>Total doses (mn)</th>
<th>Daily Rate (mn)</th>
<th>% of population vaccinated (full)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan - Apr-21</td>
<td>130</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>150</td>
<td>3.2</td>
<td>5%</td>
</tr>
<tr>
<td>May-21</td>
<td>70</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>95</td>
<td>3.2</td>
<td>3%</td>
</tr>
<tr>
<td>Jun-21</td>
<td>85</td>
<td>30</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>120</td>
<td>4.0</td>
<td>4%</td>
</tr>
<tr>
<td>Jul-21</td>
<td>90</td>
<td>30</td>
<td>10</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>135</td>
<td>4.5</td>
<td>5%</td>
</tr>
<tr>
<td>Aug-21</td>
<td>100</td>
<td>35</td>
<td>15</td>
<td>10</td>
<td>3</td>
<td>-</td>
<td>163</td>
<td>5.4</td>
<td>6%</td>
</tr>
<tr>
<td>Sep-21</td>
<td>100</td>
<td>40</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>-</td>
<td>180</td>
<td>6.0</td>
<td>6%</td>
</tr>
<tr>
<td>Oct-21</td>
<td>100</td>
<td>45</td>
<td>25</td>
<td>20</td>
<td>8</td>
<td>10</td>
<td>213</td>
<td>7.1</td>
<td>8%</td>
</tr>
<tr>
<td>Nov-21</td>
<td>100</td>
<td>50</td>
<td>25</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>230</td>
<td>7.7</td>
<td>9%</td>
</tr>
<tr>
<td>Dec-21</td>
<td>100</td>
<td>60</td>
<td>25</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>250</td>
<td>8.3</td>
<td>10%</td>
</tr>
<tr>
<td>Total 2021</td>
<td>870</td>
<td>336</td>
<td>125</td>
<td>90</td>
<td>35</td>
<td>45</td>
<td>1,531</td>
<td>55%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Source: Company, IIFL Research
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