Drive-Through Efficiency: How to Prepare for and Execute a Mass-Vaccination Event

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BACKGROUND

- The 2019 Novel Coronavirus (Covid-19) quickly became one of the most critical public health crises of this century.
- As of August 2021, the death toll was over 4.5 million people worldwide.1
- In January 2021, the US Center for Disease Control and Prevention (CDC) estimated that 41.1 million Covid-19 vaccine doses had been distributed across the country, but only 22.7 million vaccines had been administered.2
- Drive-through vaccination clinics have been successful in previous public health events, including influenza immunizations.3
- Covid-19 drive-through testing centers have shown to be superior to traditional models.4,5
- Early on, news media outlets reported length wait times and lack of clarity around eligibility and how to get a vaccine. Thus, there was some skepticism about the feasibility of an efficient drive-through mass-vaccination clinic.6,7

AIMS

- Design and implement a novel, real-time data collection tool to collect time study data.
- Utilize the collected data to inform the intentional analysis and process improvement strategies to design and operate an efficient Covid-19 drive-through mass-vaccination clinic in Denver, CO that is replicable in other locations worldwide.

METHODS

1. Assemble a Diverse Team
   - IT, Logistics, EMS, Operations, Facilities, Traffic and Parking Control
2. Finding a Suitable Location
   - Colorado Rockies Parking at Coors Field
3. Scheduling Appointments
4. Utilizing Process Improvement
   - Initial Pilot Study
   - Intentional Analysis
   - Real-Time Data Collection
5. Close Collaboration with IT Team
6. Contingency Planning
7. Instituting Incident Command System
   - FEMA’s National Incident Management System’s Incident Command System

PROJECT STAKEHOLDERS

State of Colorado, City and County of Denver, Colorado Department of Public Health & Environment, Denver Police Department, Colorado Rockies, UCHealth, CU Anschutz Medical Campus

RESULTS

<table>
<thead>
<tr>
<th>Initial Workflow</th>
<th>Total Time in Clinic (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>12.02</td>
</tr>
<tr>
<td>1st Quartile</td>
<td>20.90</td>
</tr>
<tr>
<td>Median</td>
<td>22.40</td>
</tr>
<tr>
<td>3rd Quartile</td>
<td>25.22</td>
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<tr>
<td>Maximum</td>
<td>51.05</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Revised Workflow</th>
<th>Total Time in Clinic (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>6.85</td>
</tr>
<tr>
<td>1st Quartile</td>
<td>9.75</td>
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<tr>
<td>Median</td>
<td>14.37</td>
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<tr>
<td>3rd Quartile</td>
<td>18.15</td>
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<tr>
<td>Maximum</td>
<td>49.62</td>
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</tbody>
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DATA-DRIVEN ITERATIVE DESIGN

- Intentional Experimentation
  - 53 sec. decrease in vaccination time with student + vaccinators
  - Observation Area
    - Reworked observation area to reduce bottlenecks
  - Communication
    - Increased message boards to direct traffic
  - Registration + Vaccination
    - Queueing Theory: Combining two steps increased coefficient of variation but reduced total time spent in clinic

DISCLOSURES

The authors of this poster have no conflicts of interest to disclose. IRB Exempt.

REFERENCES