Disclaimer

The research studies presented here were supported by funding from the Centers for Disease Control and Prevention (CDC) and the National Vaccine Program Office. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of CDC or NVPO.
Background

- Little is known about the costs of providing vaccinations to adults at the practice level
- Costs are difficult to estimate, because they are primarily driven by staff time which occurs at different points in a patient visit
- Because of this little is known about the profit or loss associated with adult vaccination
- We recently conducted two studies assessing the costs and profit/loss associated with providing vaccinations at a sample of practices

Methods: Data

Both studies had a similar design with three components:

1. **Time-study**
   - One week in each practice
   - Data collector shadowed practice staff for each patient visit where a patient was recommended for vaccination
   - Recorded the time spent on all vaccination related activities

2. **Management survey**
   - Time on administrative activities such as ordering, managing inventory, and activities that happen in batches daily
   - Annualized cost of storage equipment
   - Costs of materials such as sharps
   - Disposal costs

3. **Finance survey**
   - Payments for vaccines
   - Cost of vaccine doses
Methods: Analysis

- We used the data to construct measures of the cost per vaccination of
  - Time with patients that were vaccinated
  - Time with patients that were not vaccinated
  - Management time and materials

- We examined total cost as the sum of the three cost metrics

- We examined profit/loss as average payment for vaccination administration minus cost per vaccination

Sample

<table>
<thead>
<tr>
<th>Type</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practices</td>
<td>Observed Patients</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>4</td>
<td>101</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>4</td>
<td>108</td>
</tr>
<tr>
<td>Community Health Clinic</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>OBGYN</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>282</td>
</tr>
</tbody>
</table>

Table 1. Number of Practices and Observed Patients, by Type
## Results

### Table 2. Time Costs of Vaccination-Related Activities for Adults, by Provider Type – Study 1

<table>
<thead>
<tr>
<th>Practice type</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost for Vaccinated Patient</td>
<td>Cost for Patient not Receiving Vaccination</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>$6</td>
<td>$4</td>
</tr>
<tr>
<td>Family medicine</td>
<td>$6</td>
<td>$4</td>
</tr>
<tr>
<td>OBGYN</td>
<td>$14</td>
<td>$1</td>
</tr>
<tr>
<td>Community Health Clinic</td>
<td>$10</td>
<td>$3</td>
</tr>
</tbody>
</table>

### Results: Fraction of Patients not Receiving a Vaccination

### Table 4. Fraction of Patients Declining Vaccination, by Provider Type

<table>
<thead>
<tr>
<th>Practice type</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal medicine</td>
<td>44%</td>
<td>49%</td>
</tr>
<tr>
<td>Family medicine</td>
<td>15%</td>
<td>32%</td>
</tr>
<tr>
<td>Community Health Clinic</td>
<td>32%</td>
<td>-</td>
</tr>
<tr>
<td>OBGYN</td>
<td>37%</td>
<td>69%</td>
</tr>
</tbody>
</table>
### Results: Fraction of Patients not Receiving a Vaccination

#### Table 5. STUDY 1 - Income from Vaccine Administration, by Practice Type and Payment Type

<table>
<thead>
<tr>
<th>Practice type</th>
<th>At Minimum Payment</th>
<th>At Maximum Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal medicine</td>
<td>$0</td>
<td>$20</td>
</tr>
<tr>
<td>Family medicine</td>
<td>$20</td>
<td>$41</td>
</tr>
<tr>
<td>OBGYN</td>
<td>$1</td>
<td>$21</td>
</tr>
<tr>
<td>Community Health Clinic</td>
<td>-$4</td>
<td>$14</td>
</tr>
</tbody>
</table>

#### Table 6. STUDY 2 – Income from Vaccine Administration, by Practice Type and Payment Type

<table>
<thead>
<tr>
<th>Practice type</th>
<th>Medicare</th>
<th>Medicaid</th>
<th>Private Payers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal medicine</td>
<td>$20.47</td>
<td>$9.62</td>
<td>$19.37</td>
</tr>
<tr>
<td>Family medicine</td>
<td>$15.14</td>
<td>$9.67</td>
<td>$16.7</td>
</tr>
<tr>
<td>OBGYN</td>
<td>-$0.28</td>
<td>-$12.45</td>
<td>$6.77</td>
</tr>
</tbody>
</table>

### Limitations

- These studies were based on convenience samples of practices. Results may not be generalizable to a different sample of practices.
- The studies were conducted in a random week at each practice, but may not represent a typical week in the practice especially for small practices.
Conclusions

- The two primary drivers of variation in costs across the studies were:
  1. Number of vaccines administered
     - More vaccinations reduces average fixed cost per vaccination leading to economies of scale
  2. Fraction of patients that decline vaccination
     - Time spent with patients not receiving a vaccination can be substantial but are generally not able to be recouped through billing.

- These are actionable findings for reducing costs and increasing financial viability of vaccination
  - Practices can seek ways to maximize identification of patients that are recommended for vaccination
  - Practices can work to improve counseling for vaccination to increase acceptance of vaccination