Improve Competency with Evidence Based Immunization Practice Education

By

Pamela K. Strohfus, MA, DNP, RN, CNE
Setting – Idaho, United States
Aim
An evidence-based immunization educational program was implemented and analyzed to:

• Increase immunization rates & vaccine effectiveness through improving competency of healthcare personnel

Goals
• Develop fiscal responsibility of resources
• Improve internal processes
• Enhance learning and education
• Increase patient safety through effective vaccination.
• Disease outbreaks occur when herd immunity is not achieved.
Idaho is among the worst states in the US in vaccination coverage.

Only 57% of 19 month to 35 month old Idaho children are protected from preventable illnesses.

Outbreak of pertussis in southwest Idaho in 2009-2011 (117 cases). Poor coverage due to:

- Personnel knowledge gaps
- Liberal parent refusals
- Outdated legislation
- Individualized schedules
Storage Issues affects Vaccine Efficacy:

- Improper storage temperatures reduces vaccine potency
- Up to 20% of provider offices do not meet the necessary requirement of vaccine storage and handling
- Up to 45% percent of all immunizations expire before they are used.
- Diminished potency of the vaccine affects natural immune response and inadequately protects against diseases.
Healthcare Personnel (HCP) knowledge deficits can compromise Vaccine Efficacy:

Survey conducted: Immunization Knowledge Assessment Tool (IKAT). Provider knowledge analysis reveals:

1. Vaccines may be ineffective due to storage & handling knowledge gaps, and
2. HCPs in Idaho require more education.
**Background - continued**

**Immunization Errors** in administration and storage of vaccines affect Vaccine Efficacy. Why?

- “Don’t know what they don’t know”
- Secondary vaccine failure
- Compromised storage and handling
- Complicated schedules

- Confusing multiple vaccine requirements
- Immunizations administered too early
- Extraneous immunizations
- Missed opportunities resulting in late or missing immunizations
Kotter’s (1996) model of transformational change to address Idaho's low immunization rates through education:

- Culture of competency
- Create Urgency
- Build a Coalition
- Create Strategy
- Communicate
- Educate
- Short term gains
- Larger gains

Increase Immunization Rates
Methods

- Twenty-seven medical offices participated in educational program in US rural/urban area.
- Knowledge-based testing of immunization practices conducted: pre-education, post-education, and 12-months post-education.
- Initial participants = 178 medical assistants, licensed practical nurses, registered nurses, nurse practitioners, and physicians.
- Medical office immunization rates assessed before-education and 18-months post-education.
- 118 participants completed testing pre-education, post-education, and 12-months post-education. 4 hours education provided.
## Outcomes

<table>
<thead>
<tr>
<th>Project Outcome(s)</th>
<th>Instrument Data</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop &amp; implement immunization educational program</td>
<td>Education provided</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>HCP knowledge increases by 10%</td>
<td>IKAT: Pre-post and 12 month post-education</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>Standing orders use increases by 20%</td>
<td>IKAT: Pre-post and 12 month post-education</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>Increase reminder &amp; appointment by 10% via Immunization Registry</td>
<td>IIS Registry data</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>Increase immunization coverage rates by 10% in 30 medical offices</td>
<td>CoCASA data</td>
<td>Baseline Data</td>
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# Budget

## Statement of Operations

<table>
<thead>
<tr>
<th>Revenues</th>
<th>Amount</th>
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<tr>
<td>Jeker Trust Fund</td>
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<tr>
<td>Regence Foundation</td>
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<tr>
<td>Central District Health Department</td>
<td>$20,000</td>
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<tr>
<td>Boise State University</td>
<td>$5,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$93,900</strong></td>
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<table>
<thead>
<tr>
<th>Expenses</th>
<th>Amount</th>
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<th>Expenses</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
<td><strong>$0</strong></td>
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</table>
Results

Significant findings:
1. Immunization rates increased by 10.3%,
2. Knowledge overall increased by 7.8 %,
3. Use of standing orders increased by 84%,
4. Medical assistants and family practice medical office personnel did not pass test before or after education,
5. Registered nurses and pediatric medical offices passed test before and after education,
6. Knowledge did not improve overall in ‘storage’ category.
Results

7. Mean score at 12 months post-test higher than pre education mean score overall ($\Delta = 1.23$, $P < 0.01$).
8. Significant knowledge increases in categories vaccine knowledge, schedule, route, and contraindications.
9. Mean difference between post-education and 12 month post-education in all groups and job types significantly decreased overall ($\Delta = -0.54$, $P < 0.01$) = decreased retention of knowledge over time.
10. RNs and Pediatric Practices demonstrate significantly more knowledge before, after and 12 month post education and training.
Results

Practice Passing Percentages

**Family Practice**
- Pre-testing
- Post-testing

**Pediatrics**
- Pre-testing
- Post-testing
- 12 Month Post-testing
# Results

<table>
<thead>
<tr>
<th>Subject</th>
<th>12-Month Post-Test</th>
<th>Pre-Test</th>
<th>Difference in Means</th>
<th>SE</th>
<th>95% CI on Difference</th>
<th>UCL</th>
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</thead>
<tbody>
<tr>
<td>Overall</td>
<td>113 18.40</td>
<td>177 17.18</td>
<td>1.23</td>
<td>0.33</td>
<td>0.33</td>
<td>&lt;0.01</td>
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<td>Knowledge</td>
<td>113 4.69</td>
<td>177 4.39</td>
<td>0.30</td>
<td>0.14</td>
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<td>0.03</td>
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<td>Storage</td>
<td>113 2.72</td>
<td>177 2.71</td>
<td>0.01</td>
<td>0.12</td>
<td>0.12</td>
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<td>Route</td>
<td>113 3.82</td>
<td>177 3.58</td>
<td>0.24</td>
<td>0.07</td>
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<td>Contraindication</td>
<td>113 2.71</td>
<td>177 2.31</td>
<td>0.40</td>
<td>0.09</td>
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<td>Schedule</td>
<td>113 4.47</td>
<td>177 4.19</td>
<td>0.28</td>
<td>0.10</td>
<td>0.10</td>
<td>&lt;0.01</td>
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Immunization Practice Improvement Strategies:

• Education! Education! Education! saves resources, decreases errors, & increases immunization rates.

• Registered nurses are well suited to manage, administer, and handle vaccines.

• Unlicensed personnel are less able to manage, administer, and handle vaccines without formal and continuous education and administrative support.

• Use office protocols! (Saves time, decreases errors, & increases immunization rates if congruent to ACIP recommendations).

• Document immunizations in IRIS daily.

• Storage and handling education must be reviewed intermittently to assure compliance.

• Use appointment reminder systems and registries.
Evidence-based immunization practices: education, standing orders, immunization registries, and thermoregulation guideline adherence.

- Increases immunization rates
- Increase vaccine efficacy
- Increases knowledge
- Protects communities from preventable diseases
Available upon request at pamstrohfus@boisestate.edu