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Diverse Stakeholder Perspectives to Improve OR's School Immunization Reporting Process

Aaron Dunn, Oregon Immunization Program Manager
Marcey Propp, Project Manager, HLN Consulting, LLC
May 16, 2018
Discussion Topics

- Project Context
- Project Approach
- What We Heard
- Models and Options
- Evaluation Criteria
- Next Steps

* Additional detail is provided in the appendix to these slides
Problem Statement

- While the current school immunization reporting process has been able to minimize the spread of disease, it is not sustainable.
Current Process

1. Parent submits CIS
2. School accesses IIS for missing IZs
3. School asks parent for missing IZs
4. Parents consult with clinician
5. School assesses record on CIS
6. School sends PRS to LPHA
7. LPHA enters data into IRIS
8. LPHA sends Exclusion Order to parent
9. OIP generates annual report from IRIS data
10. OIP sends reports to CDC

Note: “School” represents all required organizations
Impacted Stakeholders

- 34 local public health authorities (LPHAs)
- 3,300+ schools and children’s facilities
- Protecting 650,000+ children
- State department staff
Project Scope

- The Oregon Immunization Program (OIP) identified the need for an external contractor to assess our needs and options.

- The Oregon Health Authority (OHA) contracted with HLN Consulting, LLC to facilitate a process evaluation and to solicit the opinions and ideas of diverse stakeholder groups, both in-state and out-of-state.
Applying a standard project methodology, various methods and communication channels were leveraged to solicit stakeholder perspectives and to document their opinions and ideas.

From the start of the project, during the kickoff meeting, a few conceptual models were developed for further discussion and consideration in building a solution.
### Project Approach

**Project Governance**
- Applied project management framework to define the project charter and project plan
- Established approach and schedule to conduct sessions with key stakeholder groups
- Documented session notes and posted to the project wiki for reference

**Data Collection**
- Reviewed background information from prior efforts
- Developed pre-session questionnaire to solicit feedback in advance of sessions

**Stakeholder Engagement**
- Categorized stakeholder perspectives by theme
- Identified consistent challenges or barriers as impediments to recovery
- Facilitated roundtable discussions, telephone interviews, and small and large group dialogues
- Documented key messages and insights from the various stakeholder sessions
- Determined duplicative themes or issues expressed by multiple stakeholder groups
- Identified unique data points that differentiate stakeholder situations
- Derived high-level requirements to address/resolve stakeholder barriers/challenges
- Documented high level requirements and needs within the Requirements Traceability Matrix (RTM) to inform subsequent project phases
- Identified conceptual models to address many of the existing challenges and barriers
- Determined the criteria to evaluate the options by stakeholder group: State, LHPA, school/child care facility

**Key Findings**

**Requirements & Recommendation**

**Options**

<table>
<thead>
<tr>
<th>20 stakeholder engagement sessions culminated in:</th>
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<tbody>
<tr>
<td>- Solicitation of impacted stakeholders for perspectives and opinions of current/future state</td>
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<tr>
<td>- Documented and prioritized high level functional and non-functional needs (Requirements Traceability Matrix – RTM)</td>
</tr>
<tr>
<td>- Requirements categorized as</td>
</tr>
<tr>
<td>- R – Regulation</td>
</tr>
<tr>
<td>- E – Essential</td>
</tr>
<tr>
<td>- O – Optional</td>
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<tr>
<td>- Engagement session notes and key takeaways</td>
</tr>
<tr>
<td>- Conceptual models for selection/further refinement</td>
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Stakeholder Summaries

- **State Staff**
  - Several things working well with current process
  - Enhancements would be required in order for models to be considered as practical solution
  - Options must consider all sites (with and without SIS)
  - Need solution to decrease the workload on the state to test, develop new requirements, certify SIS

- **LPHAs**
  - Process timeframes are extremely tight – given the time of year with holiday and flu season
  - Difficult to keep up with changes made after exclusion letters printed
  - Inordinate amount of time spent conducting training, communicating with schools, and data entry

### Stakeholder Sessions (May 2017 - October 2017)

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Sessions (#)</th>
<th>Participants (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Staff</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>LPHAs</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>Schools</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Child Care Facilities</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Technical Partners</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>
Stakeholder Summaries (continued)

- Schools/Child Care Facilities
  - No consistent approach followed
  - IZ coverage far outside the realm of schools and child care providers
  - Recommend statewide computerized process

- Technical Partners
  - Opportunity to leverage ODE student ID as unique identifier within SIS
  - Would support potential for centralized assessment logic
What We Heard – Key Stakeholder Themes

- **Roles & Responsibility**
  - Dependence on school staff with limited knowledge, expertise and/or training in areas of immunizations or public health to accurately collect, assess and report on student immunization information.
  - Significant need raised for additional training resources with requests for online tutorials and fact sheets.

- **Process Inefficiencies**
  - Preponderance of manual, time-intensive and redundant steps within the process, including multiple handoffs and actors involved to maintain and store paper-based records.
  - Lack of capability or understanding to leverage the best source of electronic childhood immunization data, ALERT IIS.
  - Querying ALERT IIS typically done one student at a time with resulting data then manually entered into another system.
Stakeholder Themes (continued)

Process Timing

- Stakeholders inferred from the process timeframe that immunizations are critical for school attendance and disease prevention, but can wait until later into the school year (3rd week of Feb) to address with exclusion.
- The back and forth communication between parents and schools required to obtain complete student immunization records is a challenge for school staff in meeting allotted process timeframes.
- Difficult for parents to secure physician appointments by the exclusion date, particularly if well-child or other ‘full’ office visits are required for immunizations (i.e., often no immunization-only visits by providers).
- Difficult for LPHA staff to juggle many required activities: provide support to reporting sites, conduct secondary review, enter data into IRIS, and print and mail exclusion letters.
- Difficulty in completing VARR process steps during the holiday/influenza season.
Technology Platform

- Lack of a consistent process and technology to compile, store and share required information and support bidirectional communication between the State and stakeholders.
- Uncertainty as to the timing of the current IRIS application to be eliminated, and its replacement to improve the process.

Parents, don't let your child get left behind!

School Year 2018-2019

Oregon law requires the following shots for school and child care attendance*
Models and Options

- Models are provided:
  - As philosophical approaches to define a strategy
  - To inspire creative thinking to meet stakeholder needs and requirements
  - To be provocative in some cases to design an actual solution
  - To illustrate other State solutions, but are not solutions in and of themselves

- Models were evaluated based on defined criteria for:
  - State
  - LPHAs, Schools and Child Care Facilities
The following Radar diagram reflects one way of displaying the evaluation criteria by model.
Evaluation Criteria – State Perspective

- Process improvement
- Time to implementation
- Cost
- Staffing
- Interoperability
Evaluation Criteria – LPHAs, Schools and Child Care Facilities

- Simplicity
- Flexibility
- Minimize redundancy
- Leverage
- Consistency
- Total cost of ownership
- Organizational impact/change
- Incremental technical and user support
- Speed of implementation
Next Steps

- Unexpected benefits from the Project
  - Requirements Traceability Matrix
  - Low hanging fruit

- Next steps
  - Internal discussion of options
  - State IT context
  - Decision on state build versus vendor Request For Proposal
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APPENDIX X
Project Principles

Identified during the project kickoff meeting as defining principles of the proposed solution that included:

- **Collaboration.** Compliance is a collaborative activity between schools, parents, clinicians, and students.
- **Simplicity.** Business processes for schools/child care organizations, LPHAs, OHA should be defined and described in as simple terms as possible.
- **Flexibility.** System should be able to accommodate changes in regulation and processes.
- **Minimize redundancy.** Activities should not be duplicated across the system-as-a-whole.
  - Child vaccination data should be entered once, as close to the source as possible.
  - Reminder/Recall should only be done by one entity to the same family.
- **Leverage.** Existing systems should be leveraged when possible, but not at the expense of data quality or compliance objectives.
- **Consistency.** Implement a consistent approach across sites.
- **Ease of use.** Implement solutions that are easy to use for most users.
- **Timeliness.** Systems should facilitate the timely completion of process tasks.
Evaluation Criteria – State Perspective

- **Process improvement**
  - The primary goal for the SMILER project is to improve the efficiency of the process while also reducing the time and resources necessary for its completion.

- **Time to implementation**
  - The current LPHA reporting system, IRIS, must be migrated away from the legacy platform on which it resides.
  - Additionally, calls for process change at the LPHA and school/child care levels are growing and require a solution to better meet the needs of these stakeholder groups.

- **Cost**
  - Budgetary issues are an area of great concern and may necessitate a phased approach to implementing process improvements.
Evaluation Criteria – State Perspective

- **Staffing**
  - OHA hiring authority is difficult to obtain, and current staffing levels are insufficient to meet significant new or ongoing training needs for LPHAs, schools and child care facilities.

- **Interoperability**
  - Data exchange between student information systems and ALERT IIS or a new school reporting system will have to be managed and supported, and it may not be possible to mandate or incentivize compliance.
Evaluation Criteria – LPHAs, Schools and Child Care Facilities

- **Simplicity**
  - The option supports improvements to streamline the VARR process

- **Flexibility**
  - The option should be able to accommodate future changes in regulation and processes

- **Minimize redundancy**
  - The option features and functions should not be duplicated across the system as a whole

- **Leverage**
  - Existing systems should be leveraged when possible, but not at the expense of data quality or compliance objectives

- **Consistency**
  - The option should implement a consistent approach across sites
Evaluation Criteria – LPHAs, Schools and Child Care Facilities

- Total cost of ownership
  - The direct and indirect cost of the option including implementation and operational expenses for all stakeholders

- Organizational impact/change
  - The option’s overall impact on the processes, staffing, and resource requirements of the stakeholder organizations involved in VARR

- Incremental technical and user support
  - The incremental level of technical and ongoing user support required for the option post implementation

- Speed of implementation
  - The amount of time from selection of the option to its implementation
Model 1: Leveraging ALERT IIS Data

Main Features:

- Much simpler process
- ALERT IIS is the “System of Record” for school immunizations – all data entered directly into IIS by clinicians and schools
- Parents can view (only) ALERT IIS records
- Paper CIS forms eliminated in establishing the initial student record, though may be used to supplement missing immunization/exemption data
- School establishes cohort in ALERT IIS to track students
- PRS, Exclusion Orders, OIP State statistics generated directly from ALERT IIS
Model 2: Introducing a New System of Record

Main Features:

- SMILER is “system of record” for VARR data (only) - New system houses all school immunization data for all children
- Query capability to ALERT IIS
- School establishes cohort in SMILER to track all students
- Paper CIS forms used to submit missing/new immunization or exemption data
- Exclusion Orders conveyed as paper documents, but available in SMILER
- PRS, OIP State statistics generated directly from new system
- Option: Parent access could be provided to ALERT IIS
Model 3: Replacing IRIS/Implementing a Personal Health Record

Main Features:

- New system replaces IRIS, no more no less
- Increased automated data flows between systems
- PHR intermediary facilitates data collection from parents informed by query to ALERT IIS
- CIS forms remain for parents who do not access PHR
- PRS initially sent on paper, but move to electronic interface as SIS become capable
- Exclusion Orders, OIP State statistics generated directly from new system, though conveyed as paper documents
Model Comparison: Barriers*

*Illustrative purposes only
Development of short questionnaire sets for assessing vaccination hesitancy on surveys

Stacie Greby

48th National Immunization Conference
May 16, 2018
Vaccine Hesitancy
Vaccination hesitancy

- Planned or actual delay in acceptance or permanent refusal of recommended vaccine(s) despite availability of vaccination services
  - In behavior
    • Planned or actual delay
  - In cognitive terms
    • Acceptance, reluctance, or hesitation that is affected by trust, confidence, and beliefs

Source: James Gillray, 1802
Measuring vaccination hesitancy

- Overall coverage rates for recommended childhood vaccinations remain at or near historical highs
  - School and daycare entry laws provide a safety net for vaccination coverage

- Vaccination is and always has been the choice of individuals or their parents

- Benefits of monitoring changing attitudes toward vaccination
  - Identify if vaccination hesitancy levels are changing
  - Identify reasons for refusing/delaying vaccinations
  - Identify reasons that could facilitate vaccinations
Measuring vaccination hesitancy

- Surveys used to measure vaccination hesitancy
- Varied results from different surveys
- Possible reasons for different results
  - Variation in mode, method, and target population between surveys
  - Lack of consistency or continuity of questions between surveys
  - Different understanding of "vaccination hesitancy" between parents and researchers
Vaccination hesitancy questionnaire project

- Develop a series of survey modules suitable for assessing vaccination hesitancy issues in routine and rapid response surveys
  - Inventory of current vaccination hesitancy questions
    - Literature review of existing questionnaire sets
      - Included the Parent Attitudes about Childhood Vaccines (PACV) Survey Tool
    - Conduct parent/guardian focus groups and develop question sets
    - Develop 1-, 3-, 5-minute questionnaire sets
      - Depending on time available and information needed
  - Cognitive testing of questionnaire sets
    - Assess understanding of questions by survey subjects
  - Include varied populations
    - Parents of infants, schoolchildren, teens
    - Adults, including special populations like pregnant women
Vaccination hesitancy questionnaire project

- National Center for Health Statistics (NCHS) Collaborating Center for Questionnaire Design and Evaluation Research (CCQDER)
  - Conduct question evaluation studies in order to test and develop survey questions
  - Identify constructs the survey questions are capturing
  - Primarily use cognitive interviewing
Vaccine Hesitancy Questionnaire Project
Goals of Childhood Vaccination Hesitancy Questionnaire Design and Evaluation Project

1. Understand how parents think and talk about the decision whether or not to vaccinate their children
2. Understand which sources parents trust and distrust when considering this decision, and determine how they weigh the perceived risks and benefits of childhood vaccination
3. Compile a set of questions that will measure the constructs of “vaccine acceptance,” “hesitancy,” and “vaccine confidence.”
4. Iteratively reduce this set of questions until three question sets with 1-, 3-, and 5-minutes of burden that measure these three key constructs are developed.
Process

1. Parent/guardian focus groups
2. Questionnaire design
3. Iterative cognitive interviews
4. 1-, 3-, 5-minute questionnaires
Parent/Guardian Focus Groups

- Designed to start the question design with a broad qualitative base for incorporating parents’ language, motivations, and understandings into the final questions
- n=5
- Conducted in the Questionnaire Design Research Lab at NCHS
- Purposive sampling—groups were homogeneous on race (Black/All Other Races) and education (Less than College/BS or Greater)
Focus Group Findings

- Vaccination decision-making is complex, and requires parents to make a risk/benefit analysis that takes into account:
  1. Their perceived level of knowledge about vaccination
  2. Their level of trust in various information sources
  3. The benefits they believe that vaccines provide and the risks they believe they carry
Focus Group Findings

- Trust in healthcare system/vaccine recommendations is mixed—distrust the system as a whole, but trust individual parts of it
  1. Largely based on idea that healthcare is a business, and doesn’t always have child’s best interests in mind
    - More trust for participant’s own doctors over doctors in general
  2. For some groups and individuals, historic reasons for distrust (i.e. Tuskegee Experiments)
Distrusted Sources
Questionnaire Design

- Initial list of questions compiled/written using focus group findings and other sources
- Initial design was loosely based on an “Andersen Model”—a conceptual model that pulls together the factors that lead to healthcare utilization
- 7 Sections Overall
  - Vaccination outcomes, healthcare access, hesitancy/risk factors, confidence in childhood vaccines, benefits of childhood vaccines, trust in information sources, health conditions
- Total of 98 questions
Behavioral Model* for Vaccine Hesitancy

*Model is based on Behavioral Model of Health Service Use (Andersen, 1995) and the Health Belief Model (Becker, 1974).
Iterative cognitive interviews

- Successive rounds
  - 5 rounds of interviews
  - 50 total interviews
- Conducted in different locations
  - Hyattsville, MD (QDRL)
  - New Orleans, LA
  - Philadelphia, PA
  - Pittsburgh, PA
- Sampling
  - Purposive
  - Parents of children 18 years and younger
Iterative cognitive interviews

- Round 1:
  - 98 questions, 25 minutes of burden on average
- Round 2:
  - 80 questions, 18 minutes of burden on average
- Round 3:
  - 78 questions, 14 minutes of burden on average
- Round 4 (vaccine hesitant parents)
  - 16 questions, 3.5 minutes of burden on average
- Round 5
  - 24 questions, 4.5 minutes of burden on average
Cognitive interview lessons

- Parents understand “shot” to mean all types of vaccinations, regardless of administration method
- Concerns about vaccination in general and concerns that affected vaccination behavior are difficult to separate
  - Found that framing the question as “Did concerns over X impact your decision to get your child vaccinated” focused the respondents
- Confidence questions originally presented as binary choice, changed to a 3-point scale (Very confident, Somewhat confident, Not at all Confident)
Cognitive interview lessons

- Added a question about what schedule parents chose
  - Trying to find best language for “CDC/Government Recommended Schedule”
- Added a question about whether parents choose a provider because they offered the standard schedule
  - Important to capture information on why respondents are “not at all hesitant”
- Added a question on personal familiarity with somebody who had a “serious, long-term side effect” from a vaccine
1-, 3-, 5-minute questionnaire sets

- 1-minute set
  - Schedule
  - Self-reported hesitancy
  - Concern about number of vaccines
  - Concern about serious long-term side effects
  - Personally know anyone who has had side effects from a vaccine
  - Most trusted source of information about childhood vaccines

- 3-minute set
  - Concerns, confidence, and beliefs

- 5-minute questionnaire
  - Vaccine delay, refusal, choice of doctor, concerns, discussions with medical professionals and family
Next steps
Limitations

- Vaccine hesitancy and vaccine confidence may not be directly correlated
  - Expect to see low hesitancy where there is high confidence
  - Assess by using questionnaire sets in existing surveys
    - Focus groups to final data collection
Vaccine hesitancy questionnaire project

- NCHS Q-Bank
  - [https://wwwn.cdc.gov/qbank/home.aspx](https://wwwn.cdc.gov/qbank/home.aspx)

- Include 1-minute vaccination hesitancy questionnaire set on surveys to evaluate timing and functionality
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- NCIRD
  - Carla Black
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