Improving Alaska’s Immunization Coverage Rates

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Alaska Immunization Conference
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Vaccination coverage varied by state, with coverage for the combined vaccine series ranging from 59.5% in Alaska to 80.2% in Hawaii (Table 3).
What is happening with childhood vaccinations in Alaska??

Objectives

• Review NIS methodology

• Understand the chronicity and nature of Alaska’s immunization coverage deficiency

• Identify key areas in need of improvement

• Discuss best practices moving forward
  – Use evidence-based interventions
  – Foster more collaboration
  – Empower everyone to improve vaccination rates
Background: NIS Methodology

1. Phone survey
   - Random-digit dialing of parents across the US
   - Formerly landline only; in 2012, 50% cell phones

2. Provider survey
   - Form mailed to identified provider after parent survey
   - Provider to fill out vaccination record and mail back

3. Data analysis
   - Individual series, and composite markers

If Hib type unknown, assumed non-Merck product (Alaska almost exclusively uses Merck product, which is 3 doses instead of 4 in full series)
Caveats: NIS Methodology

• 1. Phone survey
  – Random-digit dialing of parents across the US
  – Formerly landline only; in 2012, 50% cell phones
  – Sample methods, small numbers ≠ cross-section of Alaska’s population

• 2. Provider survey
  – Form mailed to identified provider after parent survey
  – Provider to fill out vaccination record and mail back

• 3. Data analysis
  – Individual series, and composite markers
  – Reported marker changed this year (includes Hib)
  – If Hib type unknown, assumed non-Merck product (Alaska almost exclusively uses Merck product, with 3 doses instead of 4 in full series)
Correcting for Hib Vaccine Data

AK vs US: Hib Series (original NIS)

AK Hib Published
Hib US Average

75.9%

AK vs US: Hib Series (revised NIS)

AK Hib Revised
Hib US Average

81.7%
Correcting for Hib Vaccine Data

AK vs US: 4:3:1:3:3:1:4 (original NIS)

AK vs US: 4:3:1:3:3:1:4 (revised NIS)

Percent vaccinated

Year

59.5%

64.5%
More NIS Caveats

• We cannot interpret year to year variations without paying attention to error bars!
• No statistically significant change from 2011 to 2012
• Our benchmark should not be our ranking in relation to other states
  – We have no control over other states
  – We should focus on our own absolute rates and progress
  – With large error bars and close rates, ranking estimates are inherently volatile
Alaska's Rank among States, 4:3:1 Series, 19-35 month olds 2003-2012*

*Rank error bars represent 95% confidence interval for each rank (Monte Carlo trials based on NIS data)
Let’s Look at Some Other NIS Data

• Vaccination coverage rates are collected at many ages—not just composite 19-35 months
• Examining “on time” rates may yield valuable insights into our coverage gaps
  – Birth dose Hep B
  – DTaP series at several milestone ages
  – MMR and varicella at 13 months
  – 4:3:1* series at 19 months

*4 DTaP, 3 polio, 1 MMR
1 DTaP by 3 months

Percent Coverage

Year

National Rank

34 48 43 50 42 42 23 50 49 38

National Average

Top State

AK


Year
2 DTaP by 5 months

Percent Coverage

Year

National Rank

National Average

Top State

AK
4 DTaP by 19 months

National Rank

<table>
<thead>
<tr>
<th>Year</th>
<th>AK</th>
<th>National Average</th>
<th>Top State</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td></td>
<td></td>
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<tr>
<td>2003</td>
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<td>2012</td>
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<tr>
<td>2013</td>
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</tbody>
</table>
1 MMR by 13 Months

Percent Coverage

Year

National Rank


AK National Average Top State

National Rank

27 36 36 42 18 50 47 50 45 47
1 Varicella by 13 months

Percent Coverage

Year

National Average

Top State

National Rank


AK

National Average
Top State
Bottom Line: we have a chronic problem with low on-time vaccinations

- Where are we losing ground?
- Let’s explore the data differently, looking at average coverage rates over the last four years plotted against age
3 DTaP Vaccinations by Age, 2009-2012

Percent Coverage

Age (months)

AK
National Average
4 DTaP Vaccinations by Age, 2009-2012

Percent Coverage

Age (months)

AK
- National Average
1 MMR Vaccination by Age, 2009-2012

Percent Coverage

Age (months)

- AK
- National Average
4:3:1 Vaccination by Age, 2009-2012

Percent Coverage

Age (months)

AK

National Average
How does tribal health compare to the rest of AK in vaccination coverage?

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>3 DTaP by 7 mo</th>
<th>4 DTaP by 19 mo</th>
<th>4 DtaP 19-35 mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 AK Tribal Health System Combined*</td>
<td>50%</td>
<td>63%</td>
<td>83%</td>
</tr>
<tr>
<td>All Alaska 2009-12 NIS</td>
<td>52%</td>
<td>55%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Data courtesy of Dr. Ros Singleton and Tania Smallenberg, ANTHC

Up To Date DTaP by Age: Comparison of AK, US, and AK Tribal Health

*Note: Blue line includes Alaska Natives, as well
Putting it all together:

Absolute difference: 10.5%
Statistically significant: \( p = 0.005 \)
(2x2 comparison, Open Epi)

*4 DTaP, 3 Polio, 1 MMR, 3 Hep B, 3 Hib, 1 Varicella, 4 PCV doses
How does tribal health compare to the rest of AK in vaccination coverage?

**Similarities to rest of AK**
- Regional variability
- Low on-time vaccination rates in infancy
- Overall rates lower than Healthy People 2020 Goals

**Differences from rest of AK**
- Much better catch-up by end of toddler period
- Better integration of all recommended doses
- Thus, significantly higher coverage for 19-35 month composite series
How does tribal health compare to the rest of AK in care delivery?

**Similarities to rest of AK**
- Vaccines delivered in clinic or PHC setting
- Vaccines typically delivered during well child care

**Differences from rest of AK**
- Guaranteed access to primary care services without co-pays
- Integrated care model with robust data-sharing
- Designated point people regionally and statewide who monitor, give feedback on vaccination rates
- ? less hesitancy about individual vaccines
What about vaccine hesitancy?

- It is real, but this is not unique to Alaska
- Defining hesitancy is slippery, but most data show it is more common among higher-educated, white families
- We have no evidence of a substantial effect of hesitancy on Alaska’s 19-35 month coverage rates
Did he just say that hesitancy is not our major coverage problem?

• Between 90-94% of our 19-35 month olds are up to date on polio and Hep B series
• Over 97% of our kindergarteners were up to date on polio and Hep B series in 2011-12
• Thus, outright refusal represents a very small portion (~10%) of our coverage deficit. It is also the portion where we have the least evidence we can effect change at the state level.
  – What about parent-initiated delays? Where’s the data…
  – What about MMR delay/refusal?
MMR Coverage, 19-35 month olds in Alaska (NIS Data), 1995-2012

Anti-vaccine milestones:
- Wakefield article
- Thimerosal controversy begins
- David Kirby publishes *Evidence of Harm*
- Jenny McCarthy on Oprah

Year
- 1995
- 1997
- 1999
- 2001
- 2003
- 2005
- 2007
- 2009
- 2011

Percent Coverage
- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%
Why the focus on hesitancy?

• The squeaky wheel gets the grease
  – The anti-vaccine lobby is loud and has media appeal
  – Patient-care anecdotes that provoke strong personal reactions have sticking power
  – We have more awareness of families who come to clinic and voice concerns than those who would gladly get vaccinated but don’t make it in

• Having a villain (the anti-vaccine crowd) offloads some responsibility from ourselves in dealing with our low coverage rates
Summary of problem

• We have long struggled with low vaccination rates in 19-35 month olds. There is no evidence of acute worsening of this problem.

• The key challenge is timely follow-up for vaccines (and well child care) starting in early infancy.

• Vaccine hesitancy is a challenging issue, but should not be overly emphasized as a barrier to achieving goal 19-35 month coverage in Alaska.
What are known barriers to timely vaccination?

- Childhood poverty and housing stress
  - Documented in NIS nationally and at the county level
  - Most pronounced for multi-dose series
What are specific factors associated with lower on-time rates?*

<table>
<thead>
<tr>
<th>Low SES</th>
<th>Inadequate provider support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying for immunizations</td>
<td>Lack of available health structures</td>
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<tr>
<td>Lack of health insurance</td>
<td>Transportation and accessibility issues for immunization clinics</td>
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<tr>
<td>Low parental education</td>
<td>Lack of knowledge about vaccines and diseases</td>
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<td>Younger maternal age</td>
<td>Negative beliefs/attitudes</td>
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<tr>
<td>Large family size</td>
<td>Fear/safety concerns</td>
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<tr>
<td>Not remembering vaccination schedules and appointments</td>
<td>Skepticism/doubts about medical information provided</td>
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<tr>
<td>Delayed well child visits</td>
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<tr>
<td>Sick child delays</td>
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</tbody>
</table>

Are there socioeconomic disparities in Alaska’s vaccine coverage?

• Let’s look at current kindergarteners in two large Alaska school districts
• We can see how old they were when they received each of their milestone vaccines
• We can stratify the data by race and socio-economic status (children who qualify for free and reduced school lunch vs those who do not)
District 1 Aggregate Data: Non-Native Students

% Non-Native Kindergarteners UTD on DTaP by Age in One AK School District

Percent Coverage

Age (months)
District 2 Aggregate Data: Non-Native Students

% Non-Native Kindergarteners UTD on DTaP by Age in AK School
District 2
Socioeconomic Disparities in District 1

% Current Non-Native Kindergarteners UTD on DTaP: Socioeconomic Comparison in One AK School District

Average Disparity 7-15 mos: 18.2%
Average Disparity 19-35 mos: 13.4%
Socioeconomic Disparities in District 2

% Current Non-Native Kindergarteners UTD on DTaP: Socioeconomic Comparison in AK School District 2

Average Disparity 7-15 mos: 11.1%
Average Disparity 19-35 mos: 8.1%
Are there socioeconomic disparities in Alaska’s vaccine coverage?

YES
What are known facilitators of on-time vaccination

• Reducing or eliminating barriers to primary care and vaccine access
• Clinic and PHC systems that effectively track and recall patients who need primary care
• Use of a robust immunization information system for this purpose
• Having more pediatricians per population served in an area
What are best practices to promote immunization?

Policy Statement—Increasing Immunization Coverage

Recommendations Regarding Interventions to Improve Vaccination Coverage in Children, Adolescents, and Adults

Task Force on Community Preventive Services


Abstract

In 1977, the American Academy of Pediatrics issued a statement calling for universal immunization of all children for whom vaccines are not contraindicated. In 1995, the policy statement “Implementation of the Immunization Policy” was published by the American Academy of Pediatrics, followed in 2003 with publication of the first version of this statement, “Increasing Immunization Coverage.” Since 2003, there have continued to be improvements in immunization coverage, with progress toward meeting the goals set forth in Healthy People 2010. Data from the 2007 National Immunization Survey showed that 90% of children 19 to 35 months of age have received recommended doses of each of the following vaccines: inactivated poliovirus (IPV), measles-mumps-rubella (MMR), varicella-zoster virus (VZV), hepatitis B virus (HBV), and Haemophilus influenzae type b (Hib). For diphtheria and tetanus and acellular pertussis (DTaP) vaccine, 84.5% have received the recommended 4 doses by 35 months of age. Nevertheless, the Healthy People 2010 goal of at least 80% coverage for the full series (at least 4 doses of DTaP, 3 doses of IPV, 1 dose of MMR, 3 doses of Hib, 3 doses of HBV, and 1 dose of varicella-zoster virus vaccine) has not yet been met, and immunization coverage of adolescents continues to lag behind the goals set forth in Healthy People 2010. Despite these encouraging data, a vast number of new challenges that threaten continued success toward the goal of universal immunization coverage have emerged. These challenges include an increase in new vaccines and new vaccine combinations as well as a significant number of vaccines currently under development; a dramatic increase in the acquisition cost of vaccines, coupled with a lack of adequate payment to practitioners to buy and administer vaccines; unanticipated manufacturing and delivery problems that have caused significant shortages of vaccines; and...
Increasing Community Demand

• **Strongly Recommended**
  – Client reminder/recall
  – Multicomponent interventions that include education plus at least one additional activity

• **Recommended**
  – Vaccination requirements for daycare, school

• **Insufficient Evidence**
  – Community-wide education-only interventions
  – Clinic-based education-only interventions
  – Client/family incentives
  – Client-held medical records
Enhancing Access to Vaccination Services

• **Strongly recommended**
  – Reduce out-of-pocket costs
  – Expand access in health care settings during intervention
    • Reduce distance from setting to population
    • Increase or change hours of vaccination services
    • Deliver in settings where not previously available
    • Reduce clinic admin barriers (e.g. drop-in, express lane)

• **Recommended**
  – Vaccination programs in WIC settings (assess up-to-date status, offer vaccine on site, or refer elsewhere with either voucher or free vaccine)
    – Home visits (can also include telephone, mail reminders)

• **Insufficient evidence**
  – School or childcare center based vaccination programs
Provider-Based Interventions

- **Strongly recommended**
  - Provider reminder/recall
  - Assessment and feedback

- **Recommended**
  - Standing orders (strongly recommended in adults, insufficient evidence of efficacy in children)

- **Insufficient evidence**
  - Provider education only
Do these interventions work?

Improving the Quality of Immunization Delivery to an At-Risk Population: A Comprehensive Approach

abstract

OBJECTIVE: Immunization quality improvement (QI) interventions are rarely tested as multicomponent interventions within the context of a theoretical framework proven to improve outcomes. Our goal was to study a comprehensive QI program to increase immunization rates for underserved children that relied on recommendations from the Centers for Disease Control and Prevention’s Task Force on Community Preventive Services and the framework of the Chronic Care Model.

METHODS: QI activities occurred from September 2007 to May 2008 at 6 health centers serving a low-income, minority population in Washington, DC. Interventions included family reminders, education, expanding immunization access, reminders and feedback for providers, and coordination of activities with community stakeholders. We determined

RESULTS: We found a 16% increase in immunization rates overall and a 14% increase in on-time immunization by 24 months of age. Improvement was achieved at all 6 health centers and maintained beyond 18 months.

CONCLUSION: We were able to implement a comprehensive immunization QI program that was sustainable over time. Pediatrics 2012;129:e496–e503
What is needed in Alaska?

• Regional-level immunization coordination
• Support for implementation of best practices at the local level in clinics and public health centers
  – Immunization Program is currently implementing AFIX plan with baseline assessments of all clinics in the state and plans quarterly tracking
  – Pair this with provider need for QI projects for their maintenance of certification
  – Promote the full ACIP immunization schedule
What is needed?

• Good markers within our state to track progress so that NIS is not relied upon
  – VacTrak reliability should increase with time; providers must clean data and input legacy vaccines
  – For 7 month olds, anticipate full uptake of records since birth statewide by end of 2013. For 19 month olds, by end of 2014.

• Timely, guided, and confidential feedback to providers is key (AFIX)
What is needed?

• Effective and ongoing partnerships among
  – Immunization program
  – Public health nursing
  – Individual providers
  – Professional organizations (AAP, AAFP, ANA, APNO)
  – Community advocates
What is needed?

• Addressing access barriers is key to improving immunization coverage and reducing health disparities for Alaska’s children
Key Next Steps

- Immunization Program/Epidemiology
  - Provide outreach and feedback to providers
  - Analyze Alaska-specific data to identify focus areas

- Professional Societies
  - Endorse vaccination QI proposals for MOC
  - Recommend and incentivize best practices

- Providers and public health nursing
  - Assess and improve reminder/recall processes
  - Promote timely vaccination and birth dose Hep B
  - Expand clinic hours and outreach efforts

- Everyone
  - Rebuild Vaccinate Alaska Coalition
  - Identify and remove barriers to accessing care
Questions?

• Please write down additional feedback, questions, observations, recommendations.
• Please join the Vaccinate Alaska Coalition. Meeting is tomorrow (Thursday) at 11:45.
Supplemental Slides Follow
What is unknown?

• Role of specific barriers that parents in Alaska face to timely vaccination and well child care
  – How socioeconomic status limits access at local and regional level

• Variations in provider practice patterns
  – Current reminder/recall efforts?
  – Alternative vaccine schedules?

• Good data regarding regional variations in coverage rates
  – No evidence that VacTrAK yields reliable coverage estimates in the large population centers of AK
VacTrAK Limitations in Surveillance

- Movement in and out of state
- Movement in and out of military system
- Inconsistent provider usage before new statewide requirements started
- Increasing provider usage of VacTrAK increases denominator of kids, but lack of legacy data will under-represent numerator of coverage
- Biased estimates skew gap between groups by rural vs urban and beneficiary vs non-beneficiary
VacTrAK Data Bias Illustrated

% of patients in VacTrak w/ 2+ vax

New provider uptick, mainly without legacy data, yielding incomplete records

Tribal health and PHC records w/ legacy data

Current 19-35 month-olds born

Mean # vaccines per VacTrak patient