Using an Immunization Information System for Program Management, New York City

Program Managers Meeting
July 10, 2014
Jane R. Zucker, MD, MSc
New York City Department of Health and Mental Hygiene, Bureau of Immunization
Outline

• Background: Citywide Immunization Registry (CIR)
• Seminal event: linking VFC vaccine distribution to CIR reporting
• Increased use of CIR for program management
  ─ 31/38 (82%) grant objectives
  ─ Overview by IPOM unit
• Summary
Background: Citywide Immunization Registry (CIR)

• Started in 1997
• Vital records (birth certificates) loaded 2X/week
  — ~125,000 births annually
• Mandatory reporting of all immunization administered to children 0-18 yrs, voluntary for adults >19 yrs with consent
  — City Health Code, New York State Law
• ~1,800 pediatric provider sites
  — >90% report regularly
  — 85% (1,530) participate in VFC
VFC Program Linked to CIR Reporting

• In 2006, linked VFC ordering to CIR reporting
  ─ Created CIR-generated VFC doses administered report (DAR) for each provider (# doses reported / # doses received)
  ─ Reduced VFC orders of providers with DAR <80%

• Resulted in large increase in reporting
  ─ Seen for both young children and adolescents
  ─ Increase has been sustained
  ─ More complete data made possible the use of CIR data for VFC and dose level accountability, and other program functions
VFC Eligibility Capture: Percent of Reported Doses with VFC Eligibility Indicated
Unit A:
Program Stewardship and Accountability

- CIR provides data for completion of PES and CAT
  - SCHIP vaccines needs
  - Used to submit quarterly reports of SCHIP vaccine used
  - Number of underinsured children (317 funds)
- DOHMH clinic EMR built on backbone of CIR
  - Provides information on children served under delegation of authority
  - Number of adult doses administered
317 Funds for Underinsured Children

- In 2013, >50% cut in 317 vaccine budget
- Prompted us to review which facilities reported seeing underinsured children
- Initially identified those providers reporting >10% of their patients as underinsured
  - Citywide, ~1%-1.5% of children were thought to be underinsured
- Conducted site visits
- Nearly all were misclassifying children with private insurance or those VFC-eligible as underinsured
Results of 317 Vaccine Accountability Efforts

- 88% reduction in number of underinsured children
- Nearly all seen by private providers
- 74% reduction in vaccine needs

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<thead>
<tr>
<th></th>
<th>CAT CY 2013</th>
<th>CAT CY 2015</th>
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<tr>
<td>Number of underinsured children</td>
<td>26,151</td>
<td>3,224</td>
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<tr>
<td>Projected costs of vaccine</td>
<td>$2,198,045</td>
<td>$580,972</td>
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<td>(317 funds needed)</td>
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CIR Supports Functions for VFC Providers

- Annual re-enrollment
  - Provider profile based on actual reporting to CIR
- Vaccine accountability at the dose level
  - CIR generates doses administered reports
- All vaccine ordering done on line through the CIR along with reporting returns and wastage
- Vaccine inventory management
- Vaccine storage temperature monitoring
Reduced Vaccine Distribution and Costs Savings: 2008 - 2012

- VFC vaccine doses distributed decreased 15%, from 2,922,580 to 2,497,499
- Using DTaP and IPV vaccine, estimated a savings of $2,467,449
- These reductions have not affected immunization coverage and VFC provider participation
Unit B: Assessing Program Performance

- Use CIR data to monitor coverage
  - Population-based
- Provides current and timely feedback
- Allows for immediate interventions
- Since June 2006, have been sending all pediatric care providers quarterly coverage feedback reports
- Allows for tracking provider performance measures over time
In Q4-2012, BOI began reporting 4:3:1:3:3:1:4 coverage. 4:3:1:3:3:1:4 coverage is shown as red bars; 4:3:1:3:3:1 coverage is in blue bars. Data sources: NYC DOHMH Citywide Immunization Registry (numerators) and NYC DOHMH Epiquery and 2010 US Census (population estimates). EpiServices adjusted the number of young children downwards after analyzing Census 2010, which increased coverage compared to previous QPRs. For comparison, the most recent NYC coverage for 4:3:1:3:3:1:4 series was 62.8 +6.5% according to the National Immunization Survey 2012.
Data sources: NYC DOHMH Citywide Immunization Registry (numerators) and NYC DOHMH Epiquery and 2010 US Census (population estimates). EpiServices adjusted the number of adolescents upwards after analyzing Census 2010, which lowered coverage compared to previous QPRs. Note that ACIP recommended routine use of quadrivalent HPV vaccine in males on October 25, 2011. 2012 NIS-Teen: Female ≥1 HPV 53.6±8.9, ≥3 HPV 37.3±8.9; Male ≥1 HPV 27.3±9.5, ≥3 HPV NA.
Enables Geographic Assessment of Coverage: HPV Initiation among Females by ZIP Code
Percent of Children Ages 6 Months Through 59 Months with ≥1 Influenza Vaccine Given During the Season

Data sources: NYC DOHMH Citywide Immunization Registry (numerators) and NYC DOHMH Epiquery and 2010 US Census (population estimates).

*Coverage as of 4/30/2014, and entered <5/18/2014.

Flu Season

- 2007-08: 30.8%
- 2008-09: 37.1%
- 2009-10: 48.1%
- 2010-11: 47.6%
- 2011-12: 49.0%
- 2012-13: 65.2%
- 2013-14: 61.3% *

* by 12/31 (entered 5/18)  by 6/30
Quarterly Provider Report

• Coverage reports sent to all pediatric care facilities 4 times/year, includes:
  – DAR by quarter for VFC providers only
  – Coverage for 19-35 month-olds - every quarter
  – Coverage for 13-17 year-old adolescents - Q2 & Q3
  – Coverage for influenza - Q4 & Q1
  – Percentile rankings

• Tool to help quality improvement
  – Promote reminder/recall
Unit B: Assessing Program Performance II

• School compliance
  – NYC DOE queries CIR for immunizations for all public school new entrants, 6th graders (Tdap), and excludables
  – For 2013-14, DOE received 6.5M immunizations for 272,120 children
  – Official child health exam forms required for day care, camp, and new entrants to school exist in CIR and prepopulate with immunization information

• Routine surveillance
  – Surveillance database queries CIR for immunization histories of suspect cases and their contacts
  – Adverse event reporting module
  – Vaccine safety: recall
All AFIX is Conducted through CIR

- Since July 2010, all patients
- Allowed expansion to include adolescents and larger proportion of the population
- Provide recall list and assess coverage 3-4 months later

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<tr>
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<th>2006 (Chart Review)</th>
<th>2013 (IIS)</th>
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<tr>
<td>Number of sites assessed</td>
<td>197 (15% of VFC sites)</td>
<td>483 (34% of VFC sites)</td>
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<tr>
<td>Number of children assessed</td>
<td>8,001*</td>
<td>240,367**</td>
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* 24-35 month olds
** 63,060 19-35 month-olds; 177,307 13-17 year-olds
Unit C: Assuring Access to Vaccines

- Delegation of authority/deputization reporting
- Perinatal Hepatitis B program
  - CIR provides immunization information for infants being followed by the program
  - Perinatal database queries the CIR and imports the vaccine information
  - Hepatitis B birth doses populated in CIR from the birth certificate
  - Used to track hospital level birth dose coverage
  - Saved significant amount of staff time
Unit D: Immunization Information Technology Infrastructure

- EHR-IIS interoperability
- Dose level accountability
- VFC eligibility
- VFC ordering and VTrckS
  - All providers order VFC vaccine online through the CIR
  - Uploaded to VTrcks
  - Linked to inventory management module
  - Recommended ordering quantities based on CIR reporting
Immunizations Reported to the CIR, by Reporting Method


HL7 Web Service Online Registry Flat File
**Improved VFC and Lot Number Capture**

<table>
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<tr>
<th>Data source</th>
<th>Percent of immunizations with VFC status*</th>
<th>Percent of immunizations with lot number**</th>
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<tbody>
<tr>
<td>Flat File</td>
<td>88.1</td>
<td>59.0</td>
</tr>
<tr>
<td>Online Registry</td>
<td>93.6</td>
<td>45.3</td>
</tr>
<tr>
<td>HL7 Web Service</td>
<td><strong>94.1</strong></td>
<td><strong>97.4</strong></td>
</tr>
<tr>
<td>Total</td>
<td>90.5</td>
<td>68.4</td>
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* Data from all newly administered immunizations reported to the CIR during calendar year 2013 for patients < 19 years

** Data from all newly administered immunizations reported to the CIR during calendar year 2013
Unit E: Improve and Maintain Preparedness

• Surveillance and outbreak response
• Emergency preparedness
• Pandemic influenza planning
• Seasonal influenza
  — Track uptake and coverage
  — Partnerships with pharmacies and adult vaccination
Use of CIR for Measles Outbreak Response

- Send blast email alerts to providers citywide
- Identify pediatric facilities in affected communities (analysis based on ZIP codes)
  - Determine up-to-date coverage for each facility
  - Generate lists of unvaccinated children
  - Print recall letters and mail to families
- Look up immunization status of cases, contacts
  - Used CIR contact info for outreach
- Facilitate ordering, distribution of additional MMR vaccine to facilities in affected areas
In response to a measles outbreak in Orthodox Jewish communities in Brooklyn, on June 4, 2013 the NYC Department of Health recommended that providers administer the first dose of MMR vaccine to all Orthodox Jewish infants aged 6 months and older living in affected neighborhoods. BOI used the CIR to track vaccine uptake in real time.
CIR and H1N1

• Required reporting of all vaccine doses, including for adults immunizers
  — Established relationships with adult immunizers
• Facilitated H1N1 vaccine distribution, tracking of uptake, and helped re-supply during shortage
• Post H1N1 enhancements improved CIR functions for day-to-day operations and preparedness for a future pandemic
• Vaccine effectiveness
Summary

• Investment in CIR has transformed the way the program is managed
• Provides data used in nearly all areas of program management
• Timely and population-based
• Saved money and vaccine
• Improved staff efficiency
• Result of over 8 years of investment and incremental improvements and adjustments
What Does This Mean For Your Program?

• There are many similar experiences from other programs in the way they use their data
  – Invite you to share your experience
• Other programs may face obstacles
  – What are they?
• How do we collectively support each other?
• Identify initial steps to take
• Technical support
  – Through CDC, AIRA, AIM WG?
Thank You!

• Discussion and questions?
• Acknowledgement
  — Could only be accomplished with dedicated and talented CIR staff
  — Amy Metroka, Director of CIR
• Contact information
  — jzucker@health.nyc.gov