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# Strategies to Leverage IIS Capabilities to Improve Outreach to Children with Chronic Conditions



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## Background

- Children with chronic conditions have increased risk of complications from influenza (flu) and have historically had low seasonal flu vaccination rates.
- Opportunities exist to enable immunization information systems to target children with high-risk conditions (HRCs) for flu vaccination reminders.

## Objective

To explore the feasibility of using administrative claims data to enable a statewide immunization information system (IIS) to target flu vaccine reminders for children with HRCs.

## Methods

### Setting

- The Michigan Care Improvement Registry (MCIR), a statewide Immunization Information System (IIS).

### Creation and Evolution of the High-Risk Indicator

- A chronic condition indicator in MCIR was populated using cases identified for children ≤18 years with ≥1 claim meeting diagnosis code criteria (**Table 1**) from:
  - the Michigan Medicaid or Children's Special Health Care Services (CSHCS) program, starting in 2006.
  - the Blue Cross Blue Shield of Michigan/Blue Care Network (BCBSM/BCN) commercial health plans, starting in 2010.

### Role of the High-Risk Indicator

- The high-risk indicator:
  - triggers a pop-up reminder when a child's immunization record in MCIR is accessed during influenza season; and,
  - identifies children targeted for mailed influenza vaccination reminders to children with HRCs.

### Outcomes Measured

- The feasibility of populating a high-risk indicator in MCIR was measured by:
  - the number of children with HRCs identified using Medicaid/CSHCS and BCBSM/BCN claims data; and,
  - the percentage of asthma HRC cases identified in MCIR confirmed by parent report of physician-diagnosed asthma.

## High-Risk Definition

**Table 1. ICD-9 CM Diagnosis Codes Used to Populate the High-Risk Indicator in the Michigan Care Improvement Registry (MCIR).**

<b>Pulmonary</b>	Asthma and reactive airway disease 493.0–493.9, 519.1 Cystic fibrosis 277.0 Bronchopulmonary dysplasia 770.7 Bronchiectasis 494.0–494.1 Congenital lung anomalies 748.4–748.6 Chronic respiratory disease or failure 518.83–518.84, 519.9 Postinflammatory pulmonary fibrosis 515
<b>Cardiovascular</b>	Congenital heart disease 745.0–747.4 Chronic pulmonary heart disease 416.0–416.9 Valvular or endocardial disease 424.0–424.3 Rheumatic heart disease 391.0–391.9, 392.0, 393–398.99 Cardiomyopathy 425.0–425.4, 429.1, 429.3 Heart failure 428.0–428.9
<b>Renal</b>	Nephrotic syndrome 581.0–581.9 Chronic glomerulonephritis 582.0–582.9, 583.0–583.9 Chronic renal failure 585–586 Congenital renal anomalies 753.0–753.1
<b>Hematologic</b>	Thalassemia 282.4 Sickle cell anemia 282.6 Other hemoglobinopathies 282.7 Aplastic anemia 284.0–284.9 White blood cell disorders 288.0–288.2
<b>Immunosuppressive disorders or therapies</b>	Hereditary immunodeficiency 279.0–279.9 HIV infection 042, V08 Malignancy 140.0–160.0, 160.2–208.9, 235.0–239.9 Systemic lupus erythematosus 710.0 Organ or bone marrow transplantation V42.0–V42.9 Radiation or chemotherapy V58.0–V58.1 Asplenia 759.0
<b>Metabolic</b>	Diabetes 250.0–250.9 Amino acid disorders 270.0, 270.2–270.9 Carbohydrate disorders 271.0–271.1, 271.4–271.9 Lipid disorders 272.1–272.3, 272.5–272.9 Other metabolic disorders 277.1–277.3, 277.5–277.6, 277.8–277.9
<b>Diseases associated with aspirin therapy</b>	Kawasaki disease 446.1 Rheumatoid arthritis 714.0–714.9
<b>Other conditions</b>	Cerebral palsy 343.0–343.9 Muscular dystrophy 359.0–359.3 Down syndrome 758.0

## Results

### Children Identified using Claims Data

- Since 2006, 206,347 children with HRCs have been identified in Medicaid/CSHCS claims and successfully loaded into the MCIR chronic condition indicator.
- The 2010 expansion yielded nearly 32,000 additional cases identified from BCBSM/BCN claims.

### HRC Indicator Validity

- Evaluation results indicate that 89% of asthma HRC cases identified in MCIR had physician-diagnosed asthma.

**Table 2. Characteristics of Children with High-Risk Conditions in the Michigan Care Improvement Registry (MCIR) (n=238,346).**

	Medicaid / CSHCS (n = 206,347)	Blue Cross / Blue Shield – Blue Care Network (n = 31,999)
<b>Characteristic</b>	%	%
<b>Age (years)</b>		
0-4	14	15
5-9	38	23
10-14	28	28
15-18	20	34
<b>Gender</b>		
Male	57	53
Female	43	47

## Conclusion

- It is feasible to use administrative claims to populate a high risk indicator in a statewide IIS.
- Administrative claims may be an effective mechanism to identify children with HRCs in IIS to improve influenza vaccination rates among priority groups.

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