Welcome!
- Introductions
- Food/Facilities
- Project Overview
- CEU’s
- Evaluations

Objectives for Training
- Understand the Performance Improvement Project (PIP) process
- Increase knowledge of the importance of pneumococcal vaccine (PPV) for MSHO members
- Understand the PPV administration protocol and the intervention options available
- Understand the Care Coordinators role and documentation requirements for the project

History
- CMS requirement for Medicaid programs administered by states
- Annual program
- Must be approved by DHS in collaboration with MPRO
- Program must demonstrate sustained statistical improvement
- Several health plans may work together on MSHO projects – UCare, Medica, and MHP

Rationale for choosing Pneumococcal
- Pneumococcal disease causes approximately 40,000 deaths each year in this country
- 50% of unvaccinated elderly didn’t know they need PPV
- 59% say their provider didn’t recommend it
- 47% believe they are not likely to get pneumonia
- In 2004, 67.9% of Minnesotans reported having received the pneumococcal vaccination
- Claim rate from the Health Plans in estimated to be low 20%

Pneumococcal Vaccination
MSHO Pneumococcal Performance Improvement Project
Kristin L. Nichol, MD, MPH, MBA
Professor of Medicine, University of Minnesota
Chief of Medicine, Minneapolis VA Medical Cent
Chair, MCAI
Bottom Line

- Pneumococcal disease is one of the “big two” vaccine preventable diseases
- The elderly and other chronically ill persons are at increased risk
- Vaccines are safe, effective, and underused
- Evidence-based strategies can help us improve

Annual Pneumococcal Disease Burden

- Community-acquired pneumonia
  - Etiologic agent in 25% to 50% of cases
  - Case fatality rates in persons hospitalized with positive sterile site culture
    - 13% to 23% in elderly
    - 18% with comorbidities (vs 5% without)
- Invasive disease (US)
  - Bacteremia — 50,000 cases
  - Meningitis — 3000 cases

Evidence-based strategies can help us improve

CXR: Pneumococcal Pneumonia

Gangrene from Pneumococcal Bacteremia

Risk Factors for Invasive Disease – Adults Ages 18 to 64 Years

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male sex</td>
<td>2.7 (1.7 – 4.3)</td>
</tr>
<tr>
<td>Black race</td>
<td>3.4 (2.0 – 5.6)</td>
</tr>
<tr>
<td>Chronic illness</td>
<td>2.6 (1.4 – 5.1)</td>
</tr>
<tr>
<td>Current smoker</td>
<td>4.1 (2.4 – 7.3)</td>
</tr>
<tr>
<td>Children in daycare &lt; 6 yrs old</td>
<td>3.0 (1.5 – 6.2)</td>
</tr>
</tbody>
</table>


Risk Factors for Death Due to Invasive Pneumococcal Disease

<table>
<thead>
<tr>
<th>Disease</th>
<th>Relative Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cirrhosis</td>
<td>5.8 (3.7, 9.2)</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>4.7 (3.3, 6.7)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2.9 (2.0, 4.3)</td>
</tr>
<tr>
<td>Chronic Lung Disease</td>
<td>2.8 (1.9, 4.0)</td>
</tr>
<tr>
<td>Asplenia</td>
<td>3.2 (1.1, 9.3)</td>
</tr>
<tr>
<td>AIDS</td>
<td>2.3 (1.5, 3.6)</td>
</tr>
<tr>
<td>HIV without AIDS</td>
<td>1.1 (0.6, 2.0)</td>
</tr>
<tr>
<td>Solid Organ Malignancy</td>
<td>3.7 (2.5, 5.4)</td>
</tr>
<tr>
<td>Hematologic Malignancy</td>
<td>2.2 (1.2, 4.3)</td>
</tr>
</tbody>
</table>

Influenza & Pneumococcal Diseases are the “Big Two” Causes of VPD Deaths

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cases (millions)</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>&gt; 500,000</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>~ 120,000</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>282,650</td>
<td>1,013</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>146,644</td>
<td>9,694</td>
</tr>
<tr>
<td>Measles</td>
<td>60,189</td>
<td>132</td>
</tr>
<tr>
<td>Mumps</td>
<td>24,075</td>
<td>7</td>
</tr>
<tr>
<td>Rubella</td>
<td>4412</td>
<td>21</td>
</tr>
<tr>
<td>Pertussis</td>
<td>53,634</td>
<td>65</td>
</tr>
<tr>
<td>Tetanus</td>
<td>486</td>
<td>77</td>
</tr>
</tbody>
</table>

90% in the elderly

11k from 1989-98 (actual is 5x to 10x higher)

VPD = Vaccine Preventable Disease
Source: CDC, IOM

VPD Deaths in Adults are Similar to Other Important Causes of Death in Adults

Source: CDC, NCHS (online data for 2000).

VPD’s Take the Highest Death Toll Among Adults

• Adults: 99% of VPD Deaths
  - 30,000 to 70,000 deaths each year
• Children: 1% of VPD Deaths
  - 100 to 300 deaths each year

PPV Protects Against 23 Invasive Disease Serotypes in Adults


<table>
<thead>
<tr>
<th>Serotypes in vaccines</th>
<th>All Ages (n = 2610)</th>
<th>2 – 64 (n = 1644)</th>
<th>65+ (n = 1021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-valent</td>
<td>62.0%</td>
<td>62.7%</td>
<td>56.2%</td>
</tr>
<tr>
<td>9-valent</td>
<td>64.5%</td>
<td>62.0%</td>
<td>56.0%</td>
</tr>
<tr>
<td>11-valent</td>
<td>76.0%</td>
<td>83.5%</td>
<td>65.3%</td>
</tr>
<tr>
<td>23-valent</td>
<td>88.1%</td>
<td>NA</td>
<td>80.9%</td>
</tr>
</tbody>
</table>


Effectiveness of PPV Against Invasive Disease

Overall 57% (45% to 66%)

Patients with:
- Diabetes 84% (50% to 95%)
- CV disease 73% (23% to 90%)
- CHF 69% (17% to 88%)
- COPD 65% (26% to 83%)
- Anatomic asplenia 77% (14% to 95%)
- Immunocompetent elderly 75% (57% to 85%)

Butler JC. JAMA. 1993;270:1826.

Safety and Acceptability of PPV in NTS

Survey of 636 / 1136 (56%) elderly persons vaccinated in MN MVNA Clinics 1999-00

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre-Vaccination</th>
<th>Post-Vaccination</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>3%</td>
<td>3%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Under the weather</td>
<td>4.2%</td>
<td>2.2%</td>
<td>.06</td>
</tr>
<tr>
<td>Muscle aches</td>
<td>3.6%</td>
<td>1.4%</td>
<td>.02</td>
</tr>
<tr>
<td>URI Symptoms</td>
<td>5.8%</td>
<td>0%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Cut down on usual activities</td>
<td>2.6%</td>
<td>0.6%</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Overall health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same as usual</td>
<td>94.8%</td>
<td>92.0%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Better than usual</td>
<td>2.4%</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>Worse than usual</td>
<td>2.8%</td>
<td>7.4%</td>
<td></td>
</tr>
<tr>
<td>Any Local Symptoms</td>
<td>15.1%</td>
<td>18.9%</td>
<td></td>
</tr>
</tbody>
</table>

**Safety of Pneumococcal Revaccination**

- Occurrence of sizeable local reaction
  - 11% (revacc) vs 3% (initial vacc)
  - RR = 3.3 (95% CI 2.1 – 5.1)
- Days to resolution
  - Median = 3 days


**Target Groups for Influenza & Pneumococcal Vaccinations**

**Influenza Vaccinations**
- High priority groups
  - High risk
  - Likely to be high risk
  - People who can transmit
- Others may also be vaccinated
- Frequency: annual

**Pneumococcal Vaccinations**
- High priority groups
  - High risk
- Frequency
  - Generally 1x
  - Revaccination
    - Once if >= 65 now & previously vacc > 5 yrs ago when < 65
    - Others

**PPV -- Revaccination**

- Antibody levels decline over 5 to 10 years
  - Polysaccharide antigens do not induce immune memory
- Revaccination
  - Increases antibody levels (but no anamnestic response)
  - Recommended after 5 years for
    - Asplenia, immunocompromised, if >= 65 and < 65 when 1st vaccinated

**PPV -- Revaccination**

- Local redness or swelling higher w/ re-vaccination (p = .001)
  - Re-vacc: 13.1%
  - First time: 4.4%
  - Unsure: 1.4%
- In multivariate analyses:
  - Local symptoms (P < .001)
  - Re-vaccination (P < .001)
- Patient satisfaction:
  - Very convenient: 96.2%
  - Very satisfied: 97.0%
  - Would recommend to family/friend: 99.4%


**Disparities by Age: Influenza & Pneumococcal Vaccination of High Risk Persons, 2003**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Influenza</th>
<th>Pneumococcal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly</td>
<td>69.9%</td>
<td>64.2%</td>
</tr>
<tr>
<td>Diabetes &lt; 65</td>
<td>49%</td>
<td>37.1%</td>
</tr>
<tr>
<td>Asthma &lt; 65</td>
<td>34%</td>
<td>30%</td>
</tr>
</tbody>
</table>

MMWR 2004; 53: 1007
Disparities by Race:
Influenza & Pneumococcal Vaccination of Elderly Persons, 2004

Vaccination Rates of Persons 65+,
2004 BRFSS

NHIS early release estimates, Jan – Jun 2004

Improving Vaccination Rates – Provider Issues

- Know the facts
- Recommend vaccinations to your patients
- Get organized & use systems approaches
  - Ensure offering & administration of vaccine
  - Automatic processes that empower nurses are effective
  - Address convenience, efficiency, durability
- Evaluate & provide feedback
- Consider new paradigms

Provider Recommendation Can Overcome Negative
Attitudes Among Patients

Vaccination Rates Among HR Patients With Negative Attitudes


Improving Vaccination Coverage
Task Force on Community Preventive Services

- Increase demand
  - Patient reminders
  - Multifaceted programs including education
  - Regulation
- Enhance access
  - Reduce cost
  - Walk-in clinics
- Address provider barriers
  - Reminders / Feedback
  - Standing orders & policies

Standing Orders Are Among the Most Effective Strategies

- Nonphysicians offer and administer vaccinations
  - No direct MD involvement at the time of the visit
- Established with physician approved policies and protocols
- Locations:
  - Clinics, hospitals, and nursing homes

MMWR 1999; 48 (RR-8)
Standing Orders More Effective than Education or MD Reminders for Inpatients


Inpatient Computer-Based Standing Orders vs. MD Reminders


Standing Orders Programs for Influenza & Pneumococcal Vaccinations in LTCFs


1999 Survey of Generalist and Medical Subspecialty MDs

<table>
<thead>
<tr>
<th></th>
<th>Generalists</th>
<th>Medical Subspecialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very strongly recommend vaccinations to elderly patients</td>
<td>86%</td>
<td>75%</td>
</tr>
<tr>
<td>Influenza</td>
<td>81%</td>
<td>64%</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>&lt;30%</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>Use systems strategies to promote vaccination (patient reminders, special clinics, or standing orders)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td>&lt;30%</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>&lt;30%</td>
<td>&lt;20%</td>
</tr>
</tbody>
</table>


Multifaceted Program Improved Success & Sustainability

<table>
<thead>
<tr>
<th>Increase Demand</th>
<th>Annual reminder to pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance Access</td>
<td>Walk-in Clinics</td>
</tr>
<tr>
<td>Address Provider</td>
<td>Institutional Policy</td>
</tr>
<tr>
<td>Barriers</td>
<td>Standing Orders</td>
</tr>
<tr>
<td></td>
<td>Standardized Forms</td>
</tr>
<tr>
<td></td>
<td>Efficient Clinic Flow</td>
</tr>
<tr>
<td></td>
<td>Ongoing Measurement &amp; Evaluation</td>
</tr>
</tbody>
</table>

Bottom Line

- Pneumococcal disease is one of the “big two” vaccine preventable diseases
- The elderly and other chronically ill persons are at increased risk
- Vaccines are safe, effective, and underused
- Evidence-based strategies can help us improve

This project is important.
It will make a difference!

Internet Resources

- CDC’s National Immunization Program
  - www.cdc.gov/nip
- CMS
  - www.cms.hhs.gov
- Immunization Action Coalition
  - www.immunize.org
- MN Dept of Health
  - www.health.state.mn.us/immunize
- Stratis Health
  - www.stratishealth.org

MIIC
Minnesota Immunization Information Connection

presented by Karen White
Epidemiologist/Business Analyst

MIIC Objectives for 12/31/2005

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% of local health</td>
<td>100% of local health</td>
</tr>
<tr>
<td>departments</td>
<td>departments</td>
</tr>
<tr>
<td>65% of primary care</td>
<td>72% of primary care</td>
</tr>
<tr>
<td>providers</td>
<td>providers</td>
</tr>
<tr>
<td>75% of children 0-5</td>
<td>69% of children 0-5</td>
</tr>
<tr>
<td>years of age with 1+ shots</td>
<td>years of age</td>
</tr>
</tbody>
</table>
Clients in MIIC from July 2003 through February 3, 2006

Across the lifespan...

Proportion of MIIC Clients* by Age Group
February 3, 2006

Age Group

0-1 yrs
2-5 yrs
6-20 yrs
21-64 yrs
65+ yrs

Proportion
12%
4%
31%
44%
12%

* with one or more shots

Median Number of Shots per Person by Age Group
February 3, 2006

Age Group

0-1 2-5 6-20 21-64 65+

Median Number of Shots
9 15 12 2 2
Project Goal

- Improve pneumococcal immunization rate by 5% for MSHO community members
- Create permanent record in MIIC of pneumococcal (PPV) status members that have received the vaccination
Implementation

- Assess every community member for PPV vaccination status
- Provide member education
- Understand the protocol for vaccination recommendations
- Determine the most appropriate method for member to receive vaccination
- Share data with MIIC (Minnesota Immunization Information Connection) for permanent record in the immunization registry

Measurement

Overall Rate
- Baseline - estimate low 20%
- Measure 1 – Q1, 2007
- Sustained remeasure 1 – Q1, 2008
- Sustained remeasure 2 – Q1, 2009

Process Measures
- Self-report, refused, contraindicated, home visit, community clinic, claim + MIIC rate, etc.

Project Timeline

ICSI Guideline for Pneumococcal administration

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19-39 Years</th>
<th>40-64 Years</th>
<th>65 Years and Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumococcal (PPV 23)</td>
<td>Immunize high-risk groups once. Re-immunize those at risk of losing immunity after 5 years.</td>
<td></td>
<td>Immunize at 65 if not done previously. Re-immunize if 1st received &gt;5 years ago and before age 65.</td>
</tr>
</tbody>
</table>

Intervention Options

Health Care Clinic
- Primary means for members to get their PPV administration
- Clinics may share vaccine status with MIIC

Home visit
- Frail and elderly
- MVNA available for referral throughout state
- Health plans will coordinate process with MVNA
- If using alternative Home Health Agency, you will need to coordinate and inform Health Plan of intervention
**Intervention Options**

**Community Clinic**
- Community clinics offered throughout state by MVNA (during flu season)
- Project will be evaluating need for hosting community clinics for ethnic populations and provide as needed
- State Fair
- Check in your community for additional opportunities

**Expectations**

- Action list sent to primary Care Coordinator (CC) contact
  - One time list of members who have been vaccinated
  - Ongoing (every other month) list of members who have no claim from Health Plan
- CC’s use list and MIIC registry to help determine who may need PPV
- Real-time report to health plan of home visits/MVNA referrals
- CC’s report back electronically on assessment results and intervention status
- Health Plans update database with CC and claim data and send out updated list

**Health Plan Expansion Counties**
- Medica (11)
- UCare (28)
- Medica & MHP (1)
- UCare & Medica (20)
- UCare & MHP (1)
- Medica, MHP, UCare (4)

**PPV Process Flow**

1. Cross check list of eligible study members with MIIC database
2. Home health agency sets up home visit
3. Health plan is billed
4. Home health agency is contacted with lists of those consenting to intervention
5. Completed interventions counted in measurement year and data sent to MIIC
6. Health plans identify eligible study group members through admin. claims data pull
7. Member refuses intervention
   a. Remains in study denominator
   b. Member referred back to primary care
8. Care System/County lead divides and distributes lists to appropriate care coordinator
   a. Member home? Yes
   b. No
   c. Member placed in queue for another attempt
9. Member reached?
   a. Yes
   b. No
   c. Document why not and forward to HP
10. Member interviewed and recalls having pneumococcal vaccination, Declines intervention
11. Member interviewed, has not had pneumococcal vaccination. Declines intervention
12. Member does not recall whether or not they received pneumococcal vaccine. Declines intervention
13. Member interviewed, hasn’t had pneumococcal vaccination. Accepts intervention
14. Member does not recall whether or not they received pneumococcal vaccine. Accepts intervention
15. Member referred to primary care
16. Care coordinator refers member for PPV
17. Second attempt, member not home, is considered refusal for intervention
   a. Yes
   b. No
   c. Document why not and forward to HP
18. Member referred to community clinic
19. Member referred for home care visit

**Action List Mock up**

- MIIC sends data back to health plans to enhance admin. claims data
- No
- Yes
Reporting Cycle

Care Coordinator send to the health plan

- May 1
- July 1
- September 1
- November 1
- January 1
- March 1
- May 1
- Etc.

Health Plan send to the Care Coordinator

- May 15
- July 15
- September 15
- November 15
- January 15
- March 15
- May 15

Questions?

Internet Resources

- Pneumococcal VIS (vaccine information statement)
  www.cdc.gov/nip/publications/VIS/vis-ppv.pdf
- PPV administration guideline
  www.csi.org -look for the adult preventive guideline
- CDC’s National Immunization Program
  www.cdc.gov/nip/diseases/pneumo
- CMS
  www.cms.gov/AdultImmunizations
- Immunization Action Coalition
  www.immunize.org
- MN Dept of Health
  www.health.state.mn.us/divs/dep/cd/pneumococcal

Bibliography