Comparative Effectiveness of Asthma Interventions within an AHRQ PBRN

Michael Dulin MD, PhD
Hazel Tapp PhD
Lindsay Kuhn MHS, PA-C
WHAT IS Asthma?

• Asthma is a complex chronic illness that is difficult to manage

  • Disparities in health outcomes
  • Poor medical compliance
  • High healthcare costs
BACKGROUND

Carolinas HealthCare System (CHS), one of the largest public healthcare system in the US, cares for over 60,000 patients with asthma.

Study implemented in the Mecklenburg Area Partnership for Primary-Care Research (MAPPR), to compare interventions for patients with asthma
STUDY SAMPLE: Asthma patients were retrospectively identified from Carolinas HealthCare System billing data

- June 2009 - November 2010
- ICD-9 Codes 493.XX or 490
- Inclusion criteria:
  - At least 2 ambulatory visits with an asthma diagnosis
  - 1 clinic visit and 1 inpatient stay or emergency department visit for asthma
  - Physician referral into the shared decision making intervention
The Integrated Approach to Care (IAC)

A School-Based Care (SBC) Approach to Asthma

A Shared Decision Making (SDM) Approach
Data Sources

- CHS Billing Data
- CHS Clinical Data (EMR)
- CHS Chart Abstraction Data
- Patient Surveys
- CMS School Performance Data
- CMS School Nurse Data
- Community Data
- CCPGM Medicaid ED & Hospitalization Records
Asthma exacerbation: Hospitalization, ED visit, or Oral prednisone
Appropriate care for asthma
Change in Quality of Life
School attendance and performance

These outcome measures were selected to assess the comparative effectiveness of IAC and IAC plus SDM versus usual care for asthma in the primary care setting.
Integrated Approach to Care Based on Chronic Care Model

Community
- Resources and Policies
  - Self-Management Support

Health Systems
- Organization of Health Care
  - Delivery System Design
  - Decision Support
  - Clinical Information Systems

Improved Outcomes
- Informed, Activated Patient
- Productive Interactions
- Prepared, Proactive Practice Team

Developed by The MacColl Institute © ACP-ASIM Journals and Books
December 2010 - 2013

Training on Decision Support Tools
An electronic Asthma Action Plan
Population Management Tools
Quality Improvement Coaching
Linkages to Community Resources

DEPLOYED IN 77 PRIMARY CARE PRACTICS
Asthma Appropriate Care

Percent of asthma patients receiving appropriate care

- SDM
- IAC
- Usual Care


Percent of patients

0% 14% 25% 50% 75%

60% 65% 43%
Asthma Appropriate Care

Asthma Appropriate Care Provision at EFM

Time - By Quarter

Start MDI
School based Interventions

- **HealthMasters** – Electronic Medical Record System
  Increased documentation on students with asthma

- **Piloted a Communications System**
  students had a message sent to PCP with information on their asthma status if at one of the 6 ambulatory clinics participating in SDM

- **Case Management**
  • A total of 159 students were identified via hospital reports
  • Case managed students had a readmission rate of 31% compared to 57% for students that were not case managed
Case Management of Students Hospitalized with Asthma

- **Stretch Goal**
- **Goal**

- **Values**
- **Goal**
- **Stretch Goal**

_EHR Implemented, Collaboration with Partners, School Nurse Professional Development; Summer 2011_
Average Number of Absences During Academic Year by Case Management Status

Average Number of Absences During Academic Year by Case Management Status

Case managed (n=377)

Not case managed (n=9864)
# Quality of Life

## Average Quality of Life Scores Before and After Intervention

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Adults</th>
<th></th>
<th></th>
<th>Pediatrics</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Adjusted Mean Difference (95% CI)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Adjusted Mean Change (95% CI)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Pre</td>
<td>Post</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAC</td>
<td>4.6</td>
<td>4.7</td>
<td>0.84 (0.40-1.28)</td>
<td>5.7</td>
<td>5.7</td>
<td>-0.40 (-0.76--0.04)**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SDM Exposed</td>
<td>3.6</td>
<td>3.6</td>
<td>0.17 (-0.32-0.67)</td>
<td>4.8</td>
<td>4.8</td>
<td>-0.36 (-0.77-0.06)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDM Toolkit</td>
<td>3.6</td>
<td>3.6</td>
<td>0.00 (ref)</td>
<td>5.2</td>
<td>5.6**</td>
<td>0.00 (ref)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usual Care</td>
<td>4.2</td>
<td>4.2</td>
<td>0.47 (-0.06-1.00)</td>
<td>4.9</td>
<td>5.2</td>
<td>-0.21 (-1.15-0.73)</td>
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</tr>
</tbody>
</table>

*<sup>p</sup><0.10, **<sup>p</sup><0.05<br>

<sup>a</sup>Models adjusted for age gender and insurance status; SDM Toolkit is reference group.<br>
<sup>b</sup>Significance indicates significant difference from pre-intervention score in unadjusted analysis.<br>
IAC, integrated approach to care; SDM, shared decision making
Distribution of Clinically Significant Increase in Quality of Life

Patients increasing AQLQ by 0.5 points or more (%)

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<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAC</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>SDM Exposure</td>
<td>29%</td>
<td>30%</td>
</tr>
<tr>
<td>SDM Toolkit</td>
<td>25%</td>
<td>48%</td>
</tr>
<tr>
<td>Usual Care</td>
<td>26%</td>
<td>38%</td>
</tr>
</tbody>
</table>
WHAT IS shared decision making intervention

A participatory approach engaged core members from each practice, including a physician champion.

Providers, staff and health coaches were trained in SDM decision support toolkit.

The resulting asthma SDM visits were individualized to capture each practice’s unique culture, focusing on sustainability and productivity.
**Weeks 0-8**

Practice Facilitator Visits Practices Weekly
- Introduction to Participatory Approach and the Shared Decision Making Toolkit
- Scheduling Logistics for Each Practice
- Patient Recruitment
- Toolkit Training
- Role of Patient-Provider Interaction

**Weeks 9-12**

Practice Implementation Begins
- Shared Decision Making Begins
- Practice Facilitator Leads
- Weekly Feedback and Trouble-Shooting

**3-Month FLOW Dissemination of SDM Toolkit into Practices**
Selected Components of Asthma Shared Decision Making Toolkit
• **North Park Family (NP)**
  Largely Hispanic and pediatric
• **Teen Health Connection (THC)***
  Adolescent sub-specialty
• **Biddle Point Family (BP)**
  Urban, predominantly African American
• **Elizabeth Family Medicine (EFM)**
  Residency program, >50% African American
• **Myers Park Pediatrics (MPP)**
  Residency program, high proportion Hispanic
• **Myers Park Internal Medicine (MPIM)***
  Residency program, medically complex

*Additional Clinics*
English & Spanish, Adult, and Pediatric patients participated in 358 SDM Half-Day Clinic Visits. Surveys were administered to determine who shared in the decision during the SDM visit.
Of the 319 patients surveyed, 86% reported the decision was shared between the patient and provider, with 73% stating it was shared equally.
“... It’s very educational... It helped me a lot.”

“I used albuterol and Qvar for my asthma and didn’t know when to use which one. When I went there they told me that I was not using the right medication at the right time. But then when they taught me how to use it, I started to feel much better later on.”
Change in Asthma ER Visits

- **SDM Toolkit (n=212)**: 9.0% before vs. 6.3% after, **↓42%**
- **SDM Exposed (n=1236)**: 8.0% before vs. 6.3% after, **↓21%**
- **Control (n=8159)**: 1.8% before vs. 1.7% after, **↓6%**

* *p<0.10; **p<0.05*
Change in Asthma Hospitalizations

<table>
<thead>
<tr>
<th>Group</th>
<th>Percent of Patients</th>
<th>Prior 6 months</th>
<th>Post 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDM Toolkit (n=212)</td>
<td>3.8%</td>
<td>1.9%</td>
<td>3.5%</td>
</tr>
<tr>
<td>SDM Exposed (n=1236)**</td>
<td>6.7%</td>
<td>48%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Control (n=8159)**</td>
<td>1.0%</td>
<td>0.7%</td>
<td></td>
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* p<0.10; ** p<0.05
Change in Prednisone Use (3 Months)

- SDM Toolkit (n=237)**: 19.4% ↓ 10.5% (46%)
- SDM Exposed (n=1267)**: 12.3% ↓ 8.1% (34%)
- Control (n=8303)**: 14.8% ↓ 11.0% (26%)

* p<0.10; ** p<0.05
Change in Prednisone Use (6 Months)

- *SDM Toolkit (n=212)*: Prior 6 months 25.9% → Post 6 months 19.8% (↓24%)
- *SDM Exposed (n=1236)**: Prior 6 months 18.1% → Post 6 months 15.1% (↓17%)
- *Control (n=8159)**: Prior 6 months 20.5% → Post 6 months 18.5% (↓10%)

* p<0.10; ** p<0.05
Primary Care Asthma Tools
Helping providers make clinical decisions at the point of care.

- Asthma Action Plan Generator
- Shared Decision Making Toolkit
- Implementation Resources
Dissemination/Spread

CHS | UNC | DUKE | ECU

Asthma dissemination Around Patient-centered Treatments in North Carolina

ADAPT-NC
Overall Results

(1) Improved quality of asthma care delivery

(2) Reduced asthma exacerbations

(3) Improved pediatric quality of life

(4) Reduced school absenteeism
Acknowledgements

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QUESTIONS?