

Comparative Effectiveness of Asthma Interventions within an AHRQ PBRN

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Carolinas HealthCare System

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

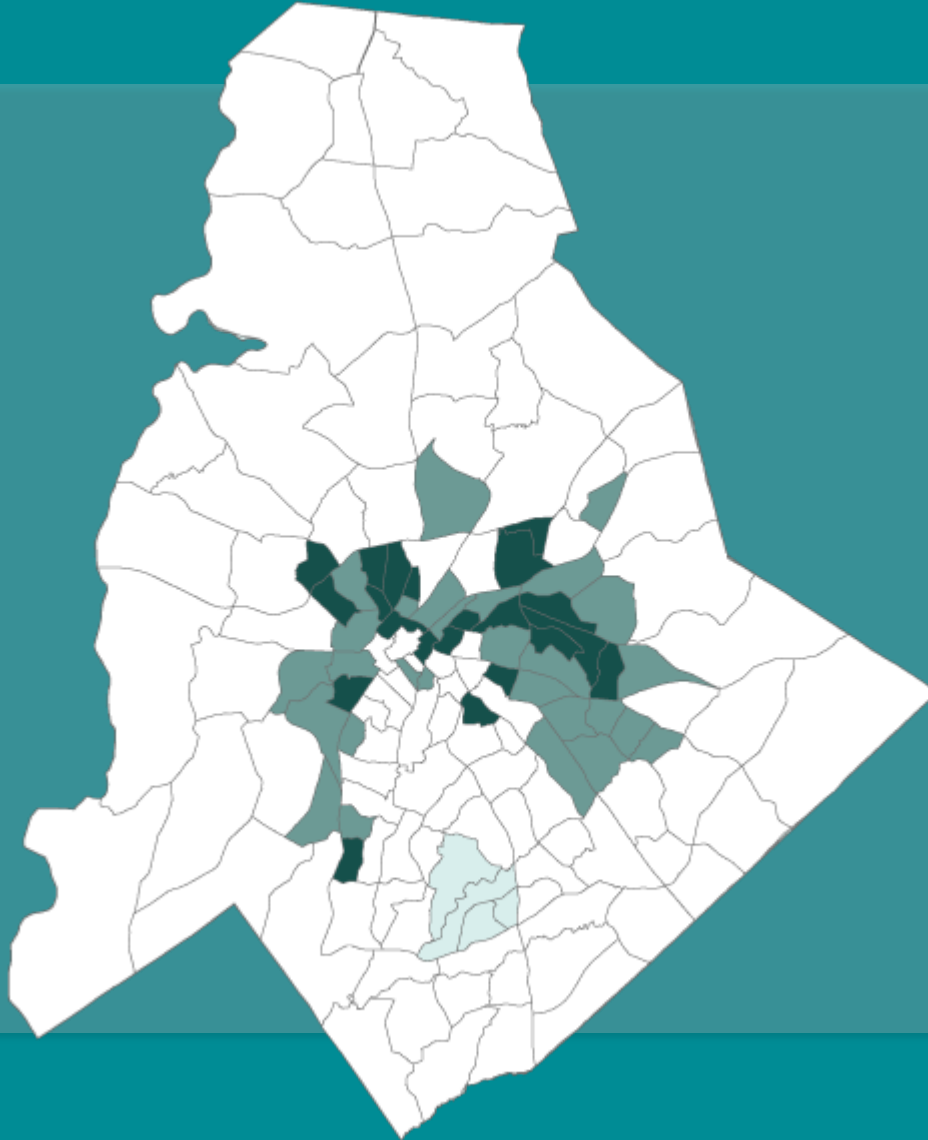
Carolinas HealthCare System (CHS), one of the **largest public healthcare system in the US**, cares for over 60,000 patients with asthma.

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

BACKGROUND



INTERVENTIONS

The Integrated Approach to Care (IAC)

A School-Based Care (SBC) Approach to Asthma

A Shared Decision Making (SDM) Approach

Data Sources



Carolinian HealthCare System

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



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

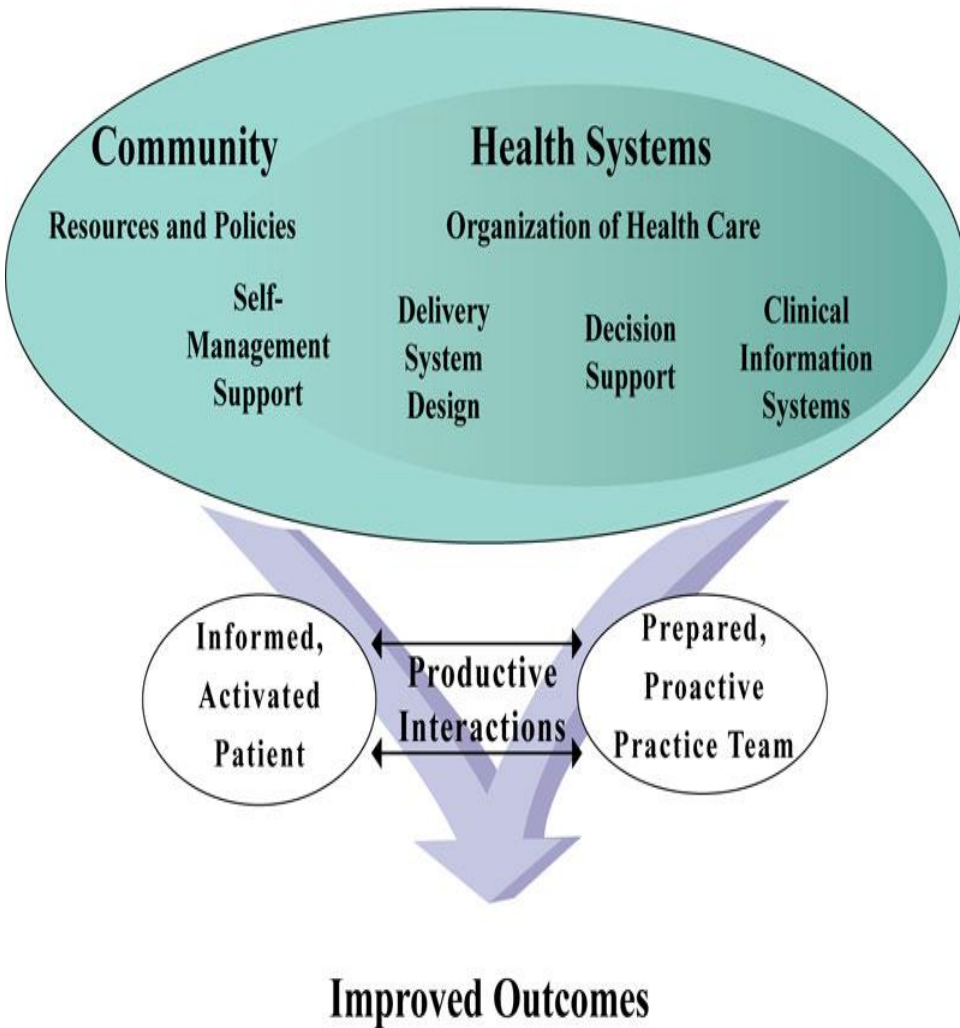
Asthma exacerbation: Hospitalization, ED visit, or Oral prednisone

Appropriate care for asthma

Change in Quality of Life

School attendance and performance

The Chronic Care Model



Integrated Approach to Care Based on Chronic Care Model



Carolinan HealthCare System

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

December 2010 - 2013

Training on Decision Support Tools

An electronic Asthma Action Plan

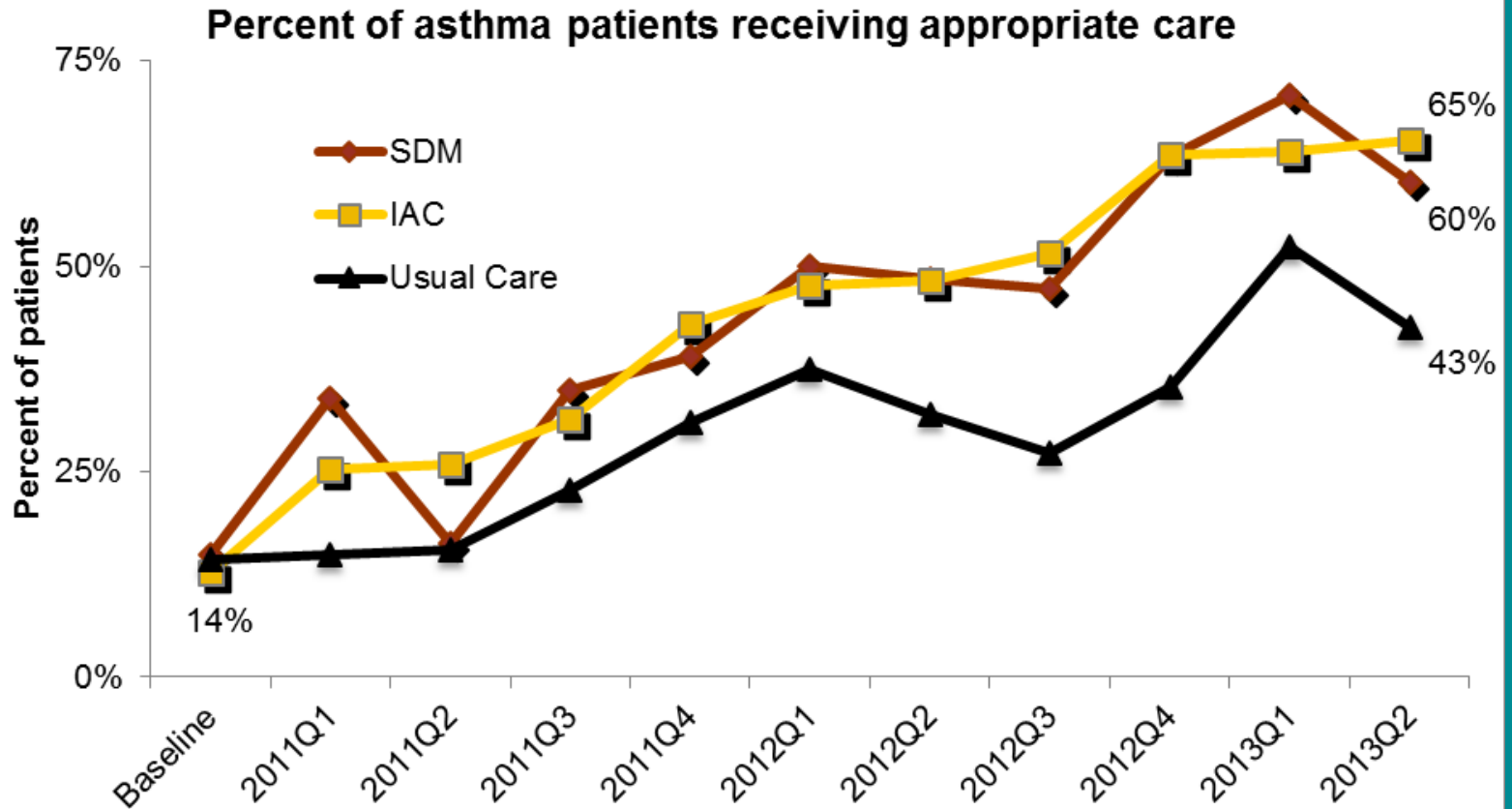
Population Management Tools

Quality Improvement Coaching

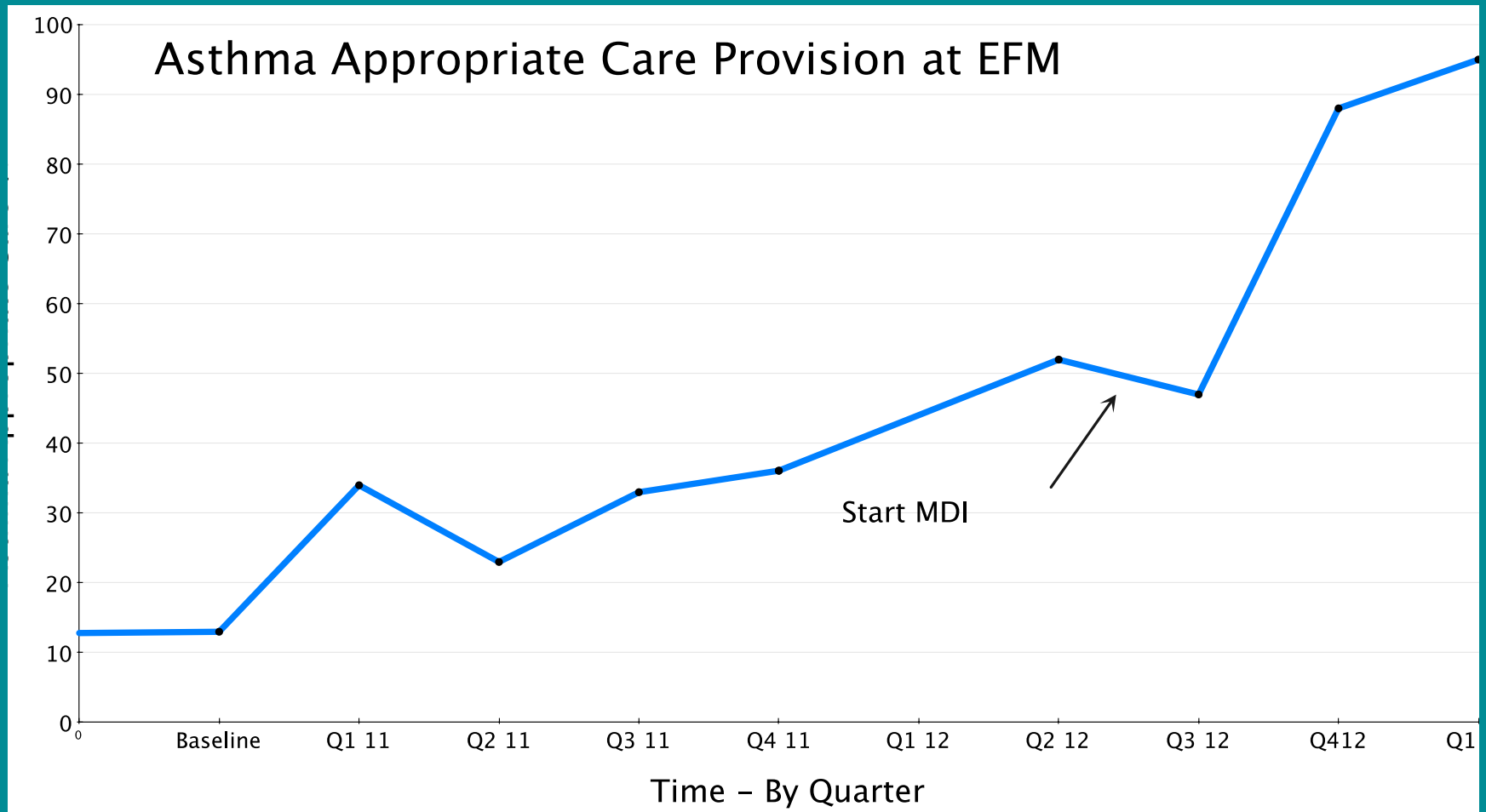
Linkages to Community Resources

DEPLOYED IN 77
PRIMARY CARE
PRACTICES

Asthma Appropriate Care



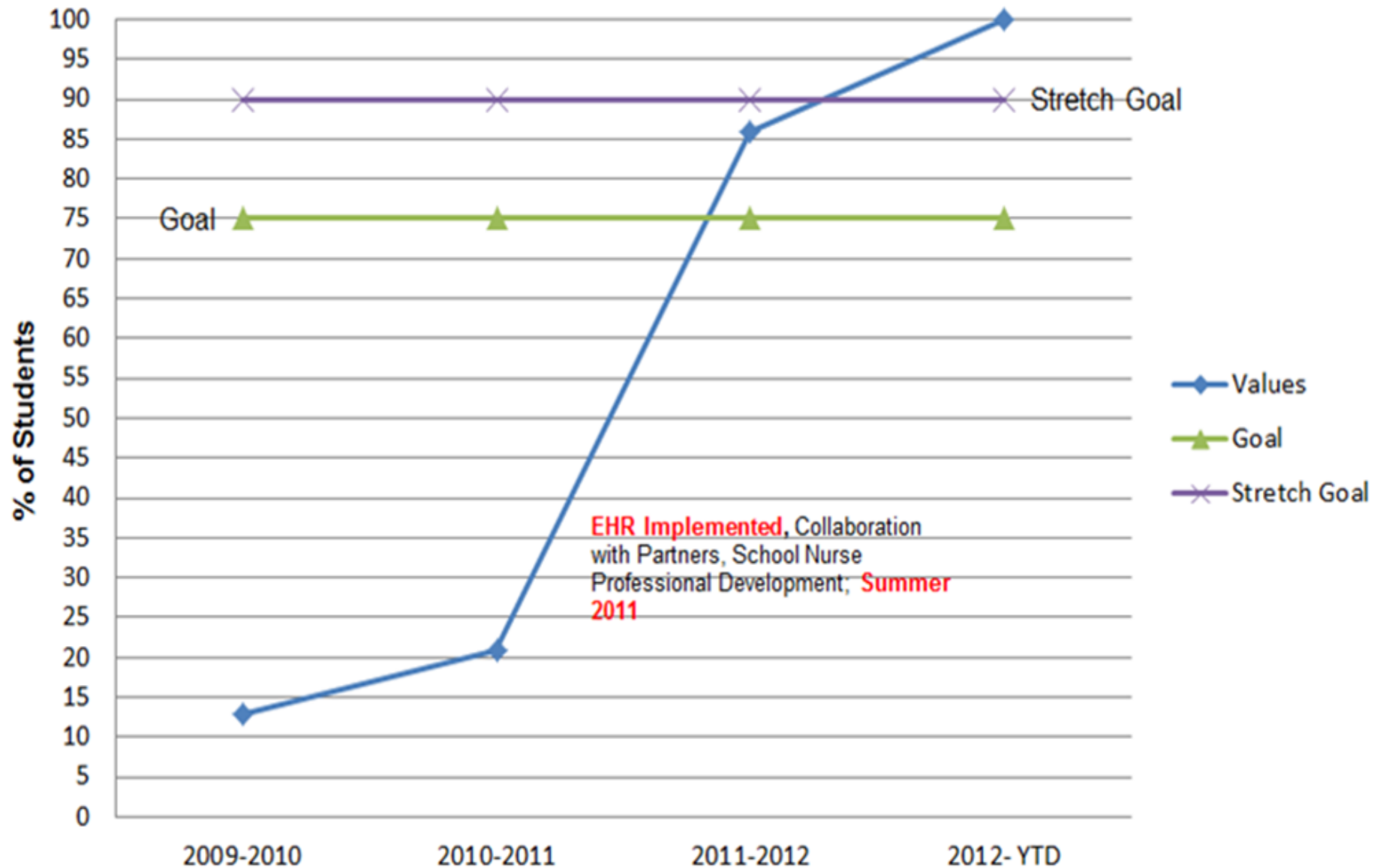
Asthma Appropriate Care



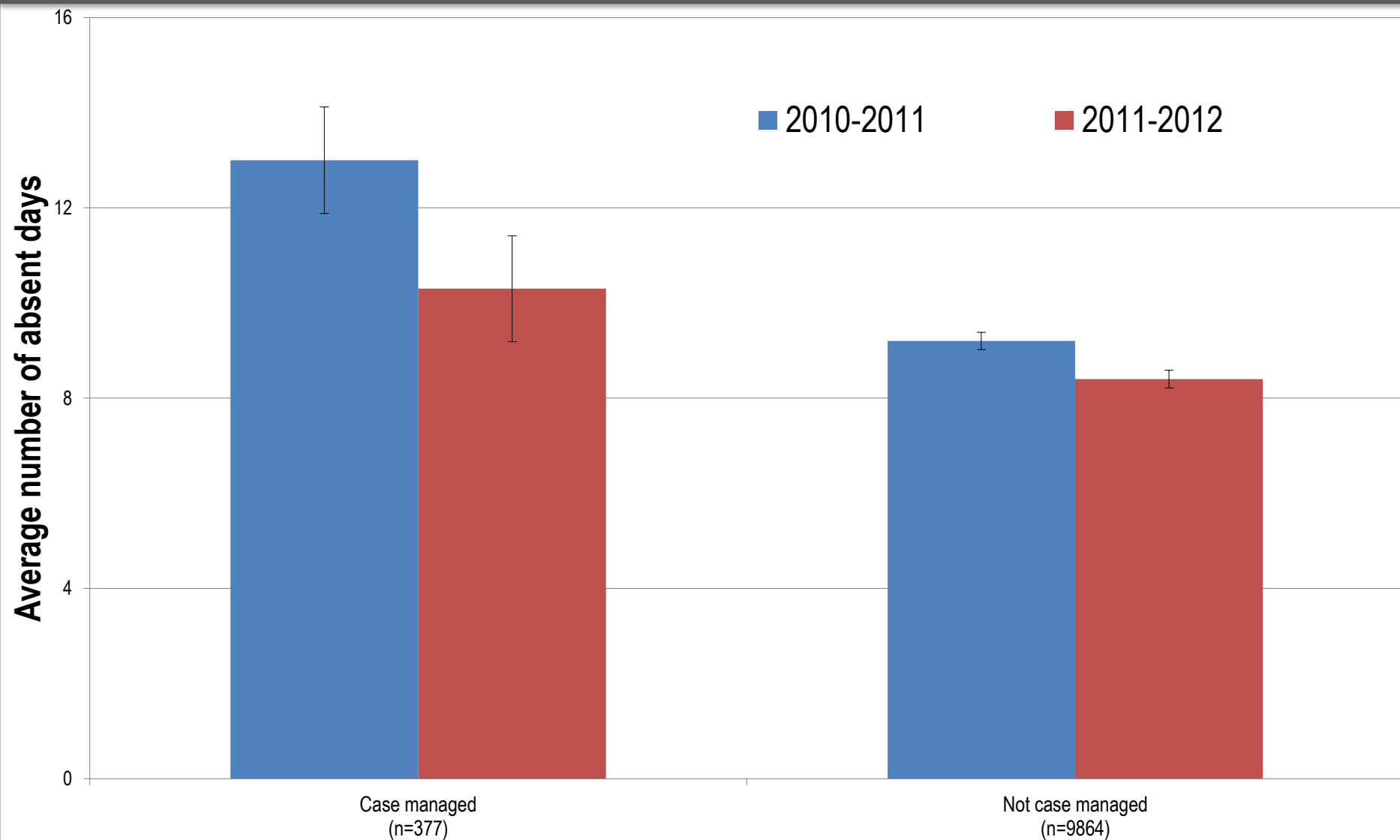
School based Interventions

- **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



Average Number of Absences During Academic Year by Case Management Status



Quality of Life

Average Quality of Life Scores Before and After intervention

<u>Study Group</u>	Adults		<u>Adjusted Mean Change (95% CI)^a</u>	-	Pediatrics		<u>Adjusted Mean Difference (95% CI)^a</u>
	<u>Pre</u>	<u>Post</u>			<u>Pre</u>	<u>Post^b</u>	
IAC	4.6	4.7	0.84 (0.40-1.28)		5.7	5.7	-0.40 (-0.76--0.04)**
SDM Exposed	3.6	3.6	0.17 (-0.32-0.67)		4.8	4.8	-0.36 (-0.77-0.06)*
SDM Toolkit	3.6	3.6	0.00 (ref)		5.2	5.6**	0.00 (ref)
Usual Care	4.2	4.2	0.47 (-0.06-1.00)		4.9	5.2	-0.21 (-1.15-0.73)

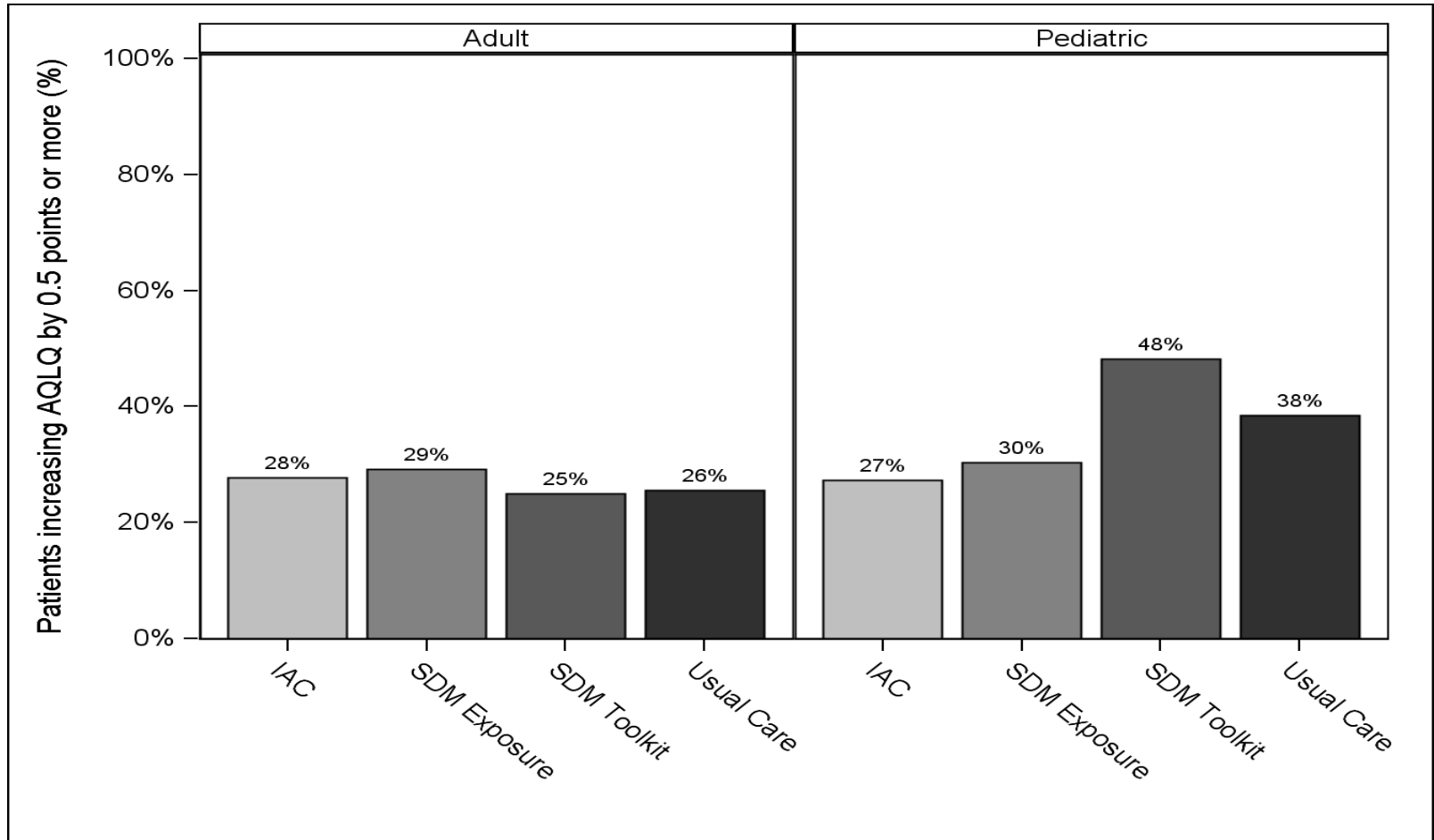
*p<0.10, **p<0.05

^aModels adjusted for age gender and insurance status; SDM Toolkit is reference group.

^bSignificance indicates significant difference from pre-intervention score in unadjusted analysis.

IAC, integrated approach to care; SDM, shared decision making

Distribution of Clinically Significant Increase in Quality of Life



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

3-Month FLOW Dissemination of SDM Toolkit into Practices

Weeks 9-12


Practice Implementation Begins

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

Selected Components of Asthma Shared Decision Making Toolkit

SHARED DECISION MAKING (SDM) MATERIALS

ACE STUDY




Asthma Comparative Effectiveness

FOR USE WITH PATIENTS

12 YEARS & OLDER

ASTHMA CONTROLLERS



Symbicort

Asmanex Twisthaler

Singular

Advair Diskus

Advair HFA

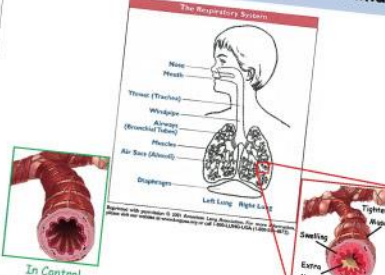
Quar

Flovent HEA

Pulmicort Respules

Pulmicort Flexhaler

Form #4: Facts About Asthma



The Respiratory System

In Control

NOT in Control

Asthma is a disease of the airways in your lungs. When someone with asthma breathes in one of their "triggers," it causes their airways to get smaller. Doctors call this "bronchospasm." This makes it harder to breathe and can lead to an asthma attack.

3 main things cause the airways to get smaller:

- Swelling/Inflammation
- Extra Mucus
- Tightening Muscles

Medication Options to Control Asthma
12 Years and Older
Medicaid Insurance

Step 1: Preferred: Albuterol 2 puffs q4h; Alternative: Levalbuterol 1 puff q4h; Less Preferred: Albuterol 1 puff q4h.

Step 2: Preferred: Levalbuterol 1 puff q4h; Alternative: Levalbuterol 1 puff q4h; Less Preferred: Albuterol 2 puffs q4h.

Step 3: Preferred: Levalbuterol 1 puff q4h + Singulair 1-2 bid; Alternative: Levalbuterol 1 puff q4h + Singulair 1-2 bid; Less Preferred: Levalbuterol 1 puff q4h + Singulair 1-2 bid.

Step 4: Preferred: Levalbuterol 1 puff q4h + Singulair 1-2 bid; Alternative: Levalbuterol 1 puff q4h + Singulair 1-2 bid; Less Preferred: Levalbuterol 1 puff q4h + Singulair 1-2 bid.

Step 5: Preferred: Levalbuterol 1 puff q4h + Singulair 1-2 bid + Advair Diskus 1 puff bid; Alternative: Levalbuterol 1 puff q4h + Singulair 1-2 bid + Advair Diskus 1 puff bid; Less Preferred: Levalbuterol 1 puff q4h + Singulair 1-2 bid + Advair Diskus 1 puff bid.

FORM #2: HOW WELL CONTROLLED IS YOUR ASTHMA?



Well Controlled: My asthma is doing great! I don't bother me much at all.

Moderately Well Controlled: My asthma is not bad but it could be better-sometimes.

Poorly Controlled: My asthma bothers me more often than not. It could definitely be better.

Very Poorly Controlled: My asthma bothers me a lot and keeps me from doing things I want to do.

FORM #9: MEDICATION PLANNER

FEATURES THAT MATTER TO ME	CURRENT PLAN	OPTION 1	OPTION 2	OPTION 3
	Albuterol 2 puffs prn	Advair Diskus 100/50 1 puff bid	Quar 80 2 puffs bid	Quar 80 - 1 puff bid + Singulair 10mg daily
Control	(-)	+++	++	+
Cost	S	SS	SS	More
Side Effects	Slight	Few	Few	More
Convenience	+	+++	++	++
Other				

EMR STICKER

SITES

- **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



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JUNE 2011 THROUGH
SEPTEMBER 2013

258

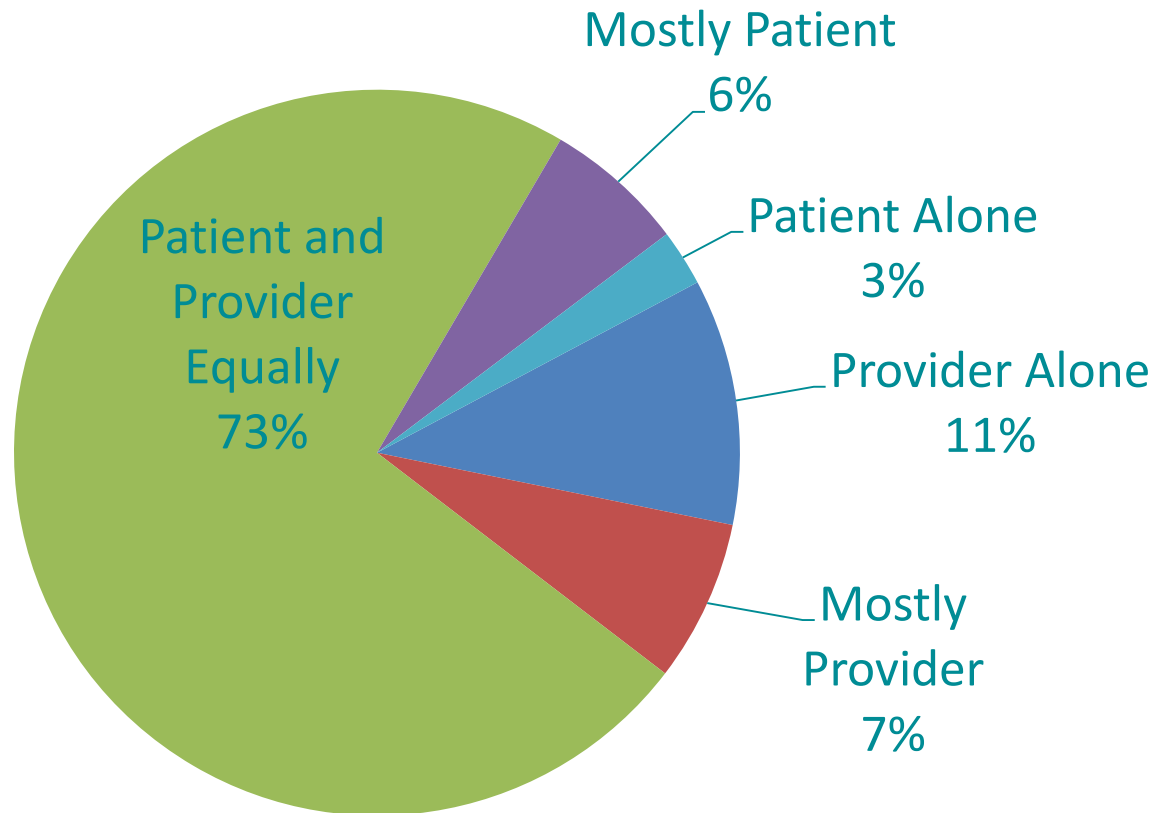
English & Spanish,
Adult, and Pediatric
patients participated in
358 SDM Half-Day
Clinic Visits

319

surveys were administered to
determine who shared in the
decision during the SDM visit

SDM Survey Responses: Who Made the Treatment Decision?

n = 319



Of the 319 patients surveyed, 86% reported the decision was shared between the patient and provider, with 73% stating it was shared equally

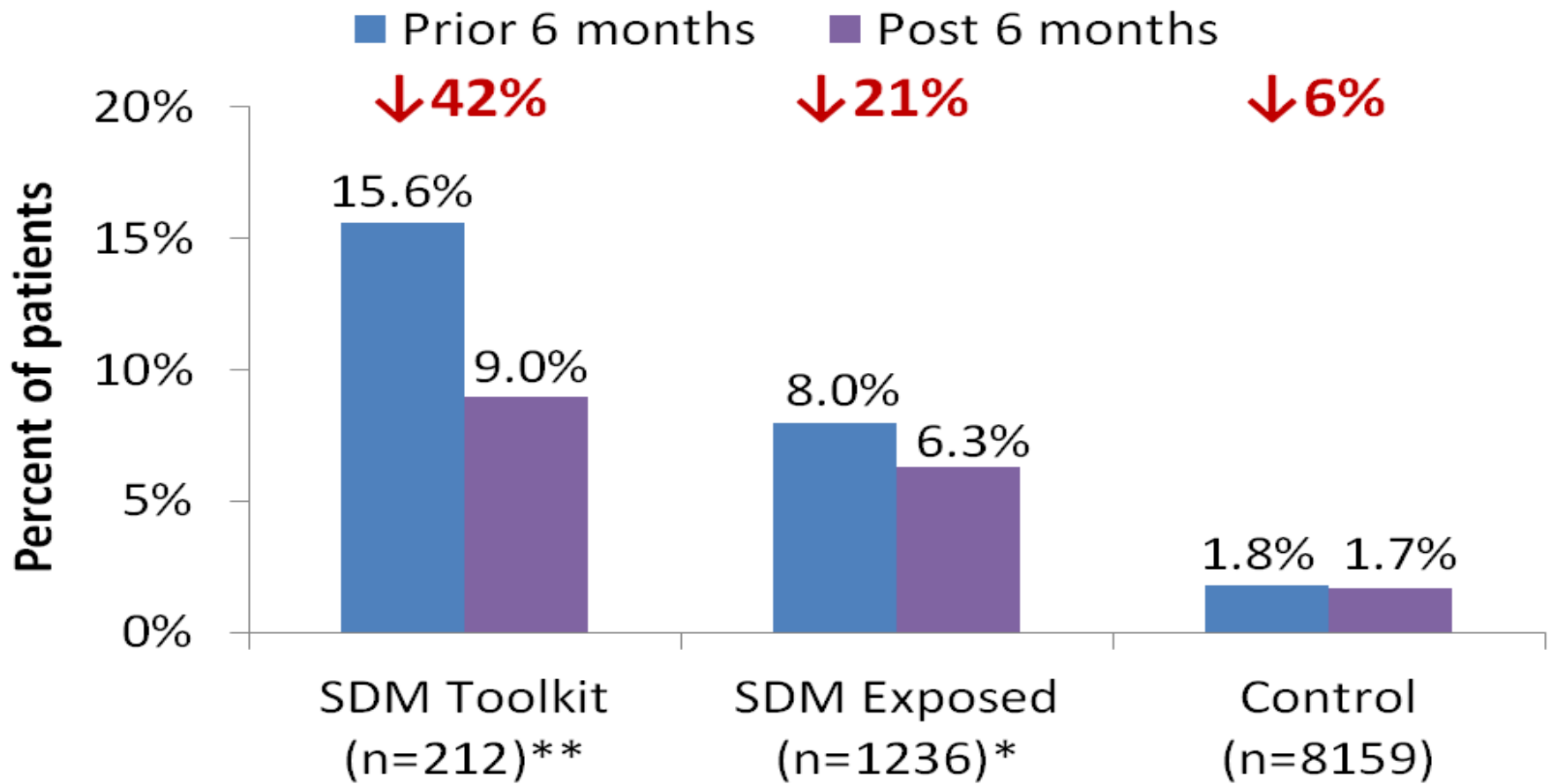
Qualitative Data:

Quotes from Focus Groups

“... It’s very educational... It helped me a lot.”

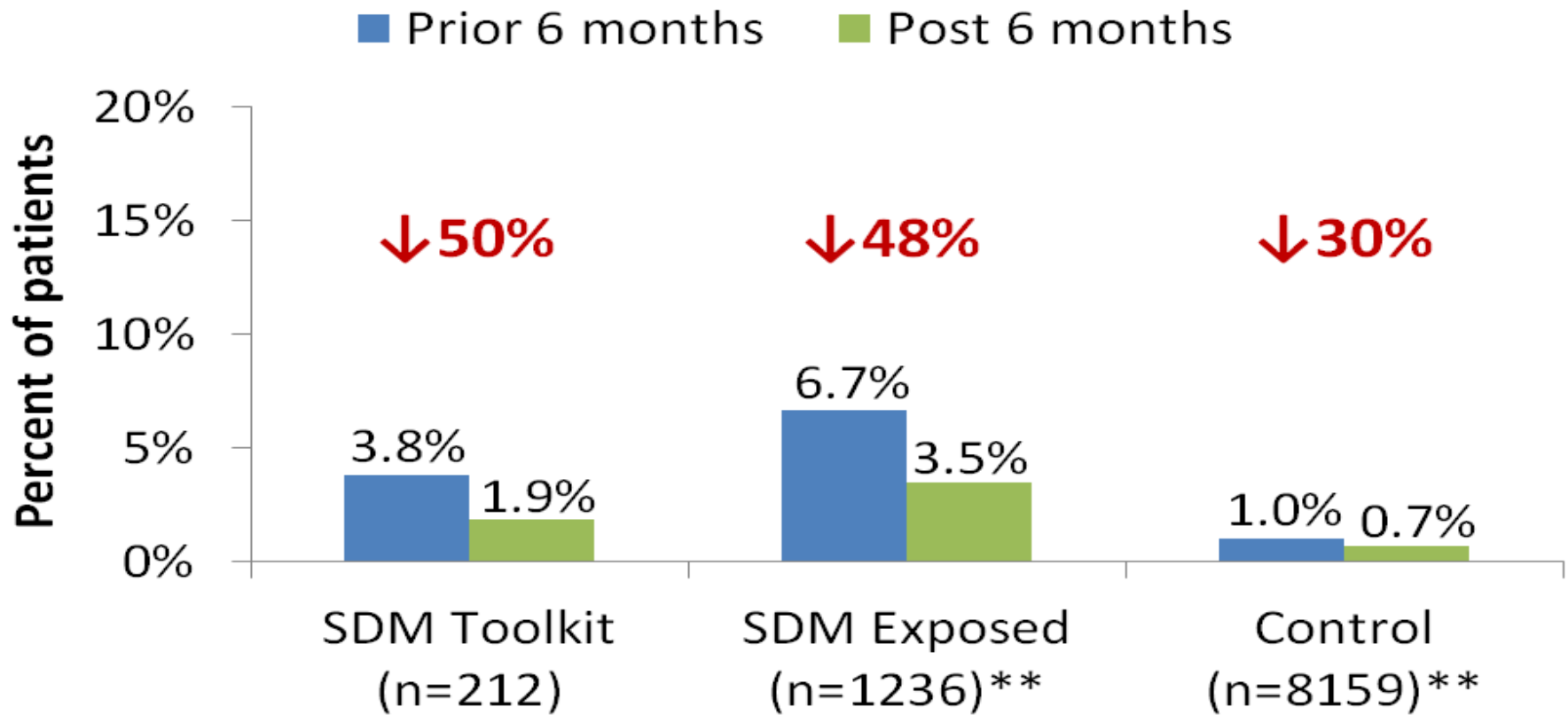
“ I used albuterol and Qvar for my asthma and didn’t know when to use which one. When I went there they told me that I was not using the right medication at the right time. But then when they taught me how to use it, I started to feel much better later on.”

Change in Asthma ER Visits



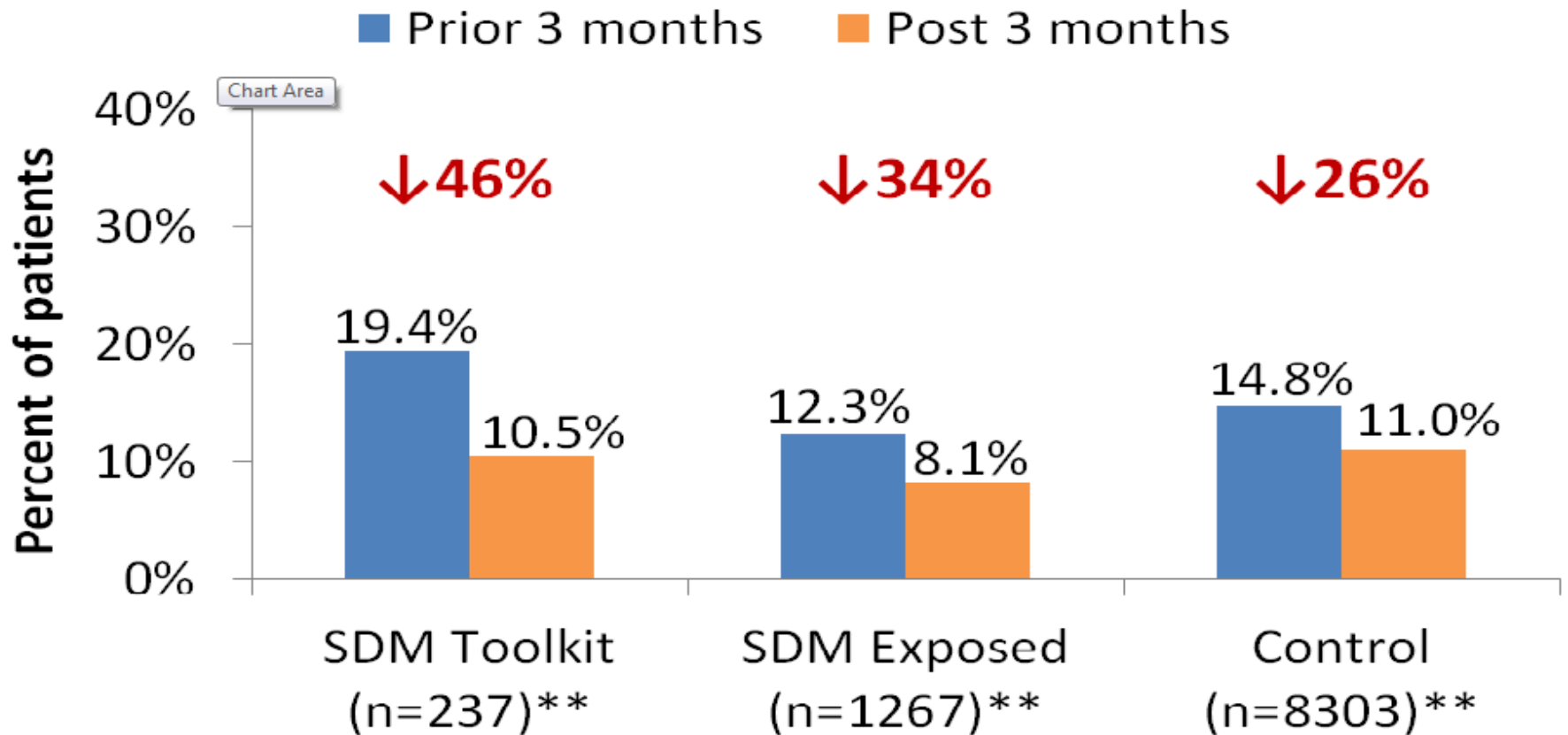
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Change in Asthma Hospitalizations



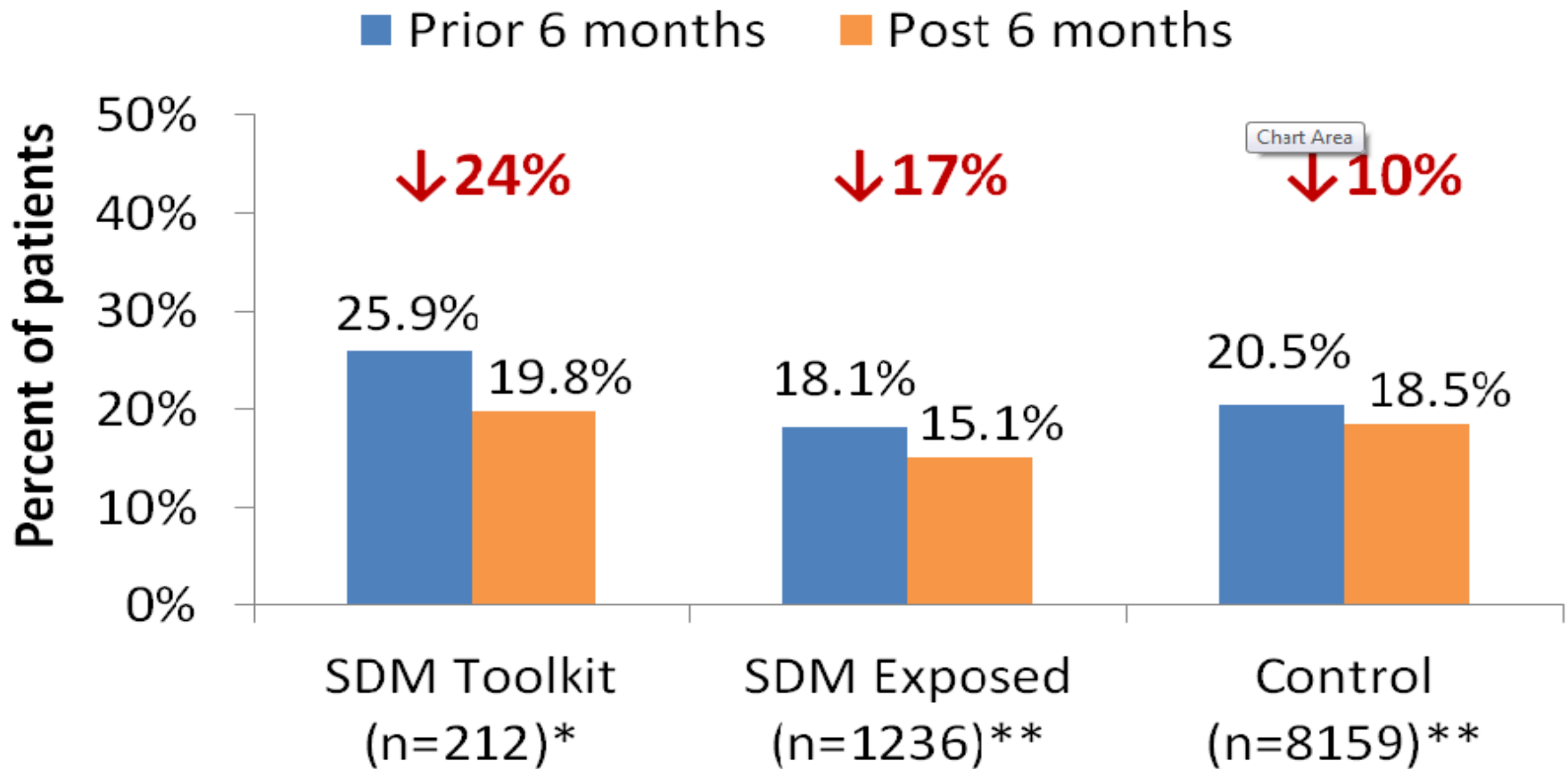
*p<0.10; **p<0.05

Change in Prednisone Use (3 Months)



*p<0.10; **p<0.05

Change in Prednisone Use (6 Months)



*p<0.10; **p<0.05

Asthma.CarolinasHealthcare.Org

Asthma Action Plan - Microsoft Internet Explorer provided by Carolinas HealthCare System


https://asthma.carolinashealthcare.org/

File Edit View Favorites Tools Help


Favorites Web Slice Gallery

Asthma Action Plan

Page Safety Tools



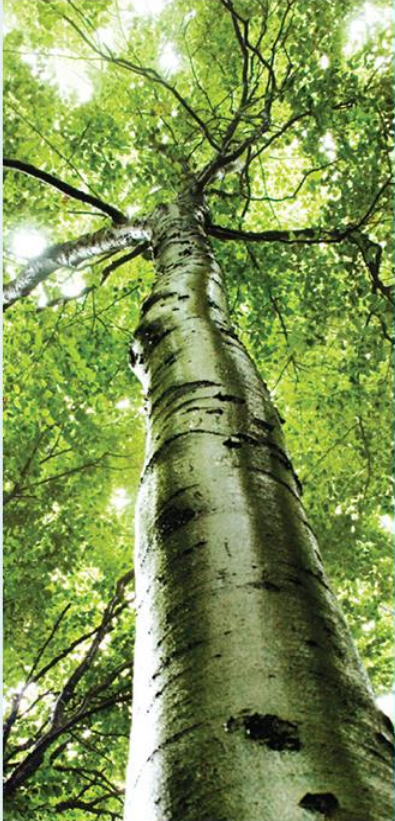
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Primary Care Asthma Tools

Helping providers make clinical decisions at the point of care.

- > [Asthma Action Plan Generator](#)
- > [Shared Decision Making Toolkit](#)
- > [Implementation Resources](#)



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ASTHMA COMPREHENSIVE EFFECTIVENESS

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**



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- The Research Teams At DA² and Department of Family Medicine and our many collaborators, stakeholders, practices, staff and patients involved.



Carolina's HealthCare System

QUESTIONS?