Reducing Racial and Ethnic Asthma Disparities among Children in Eastern N.C. (An Intervention Pilot Project)

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REACH QI Symposium

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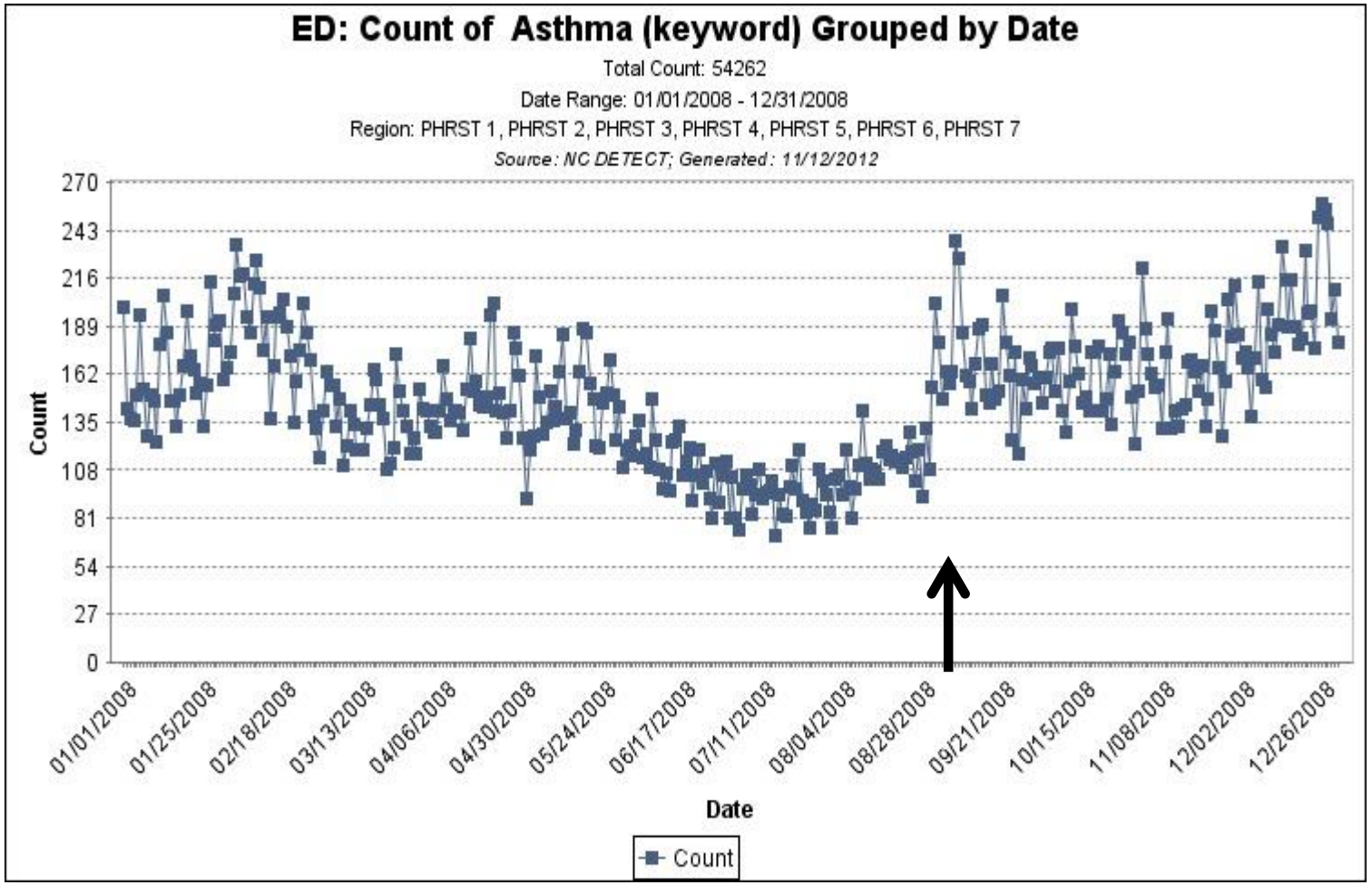
Problem



NC asthma ED visits 2006-2011 (Vidant Medical)

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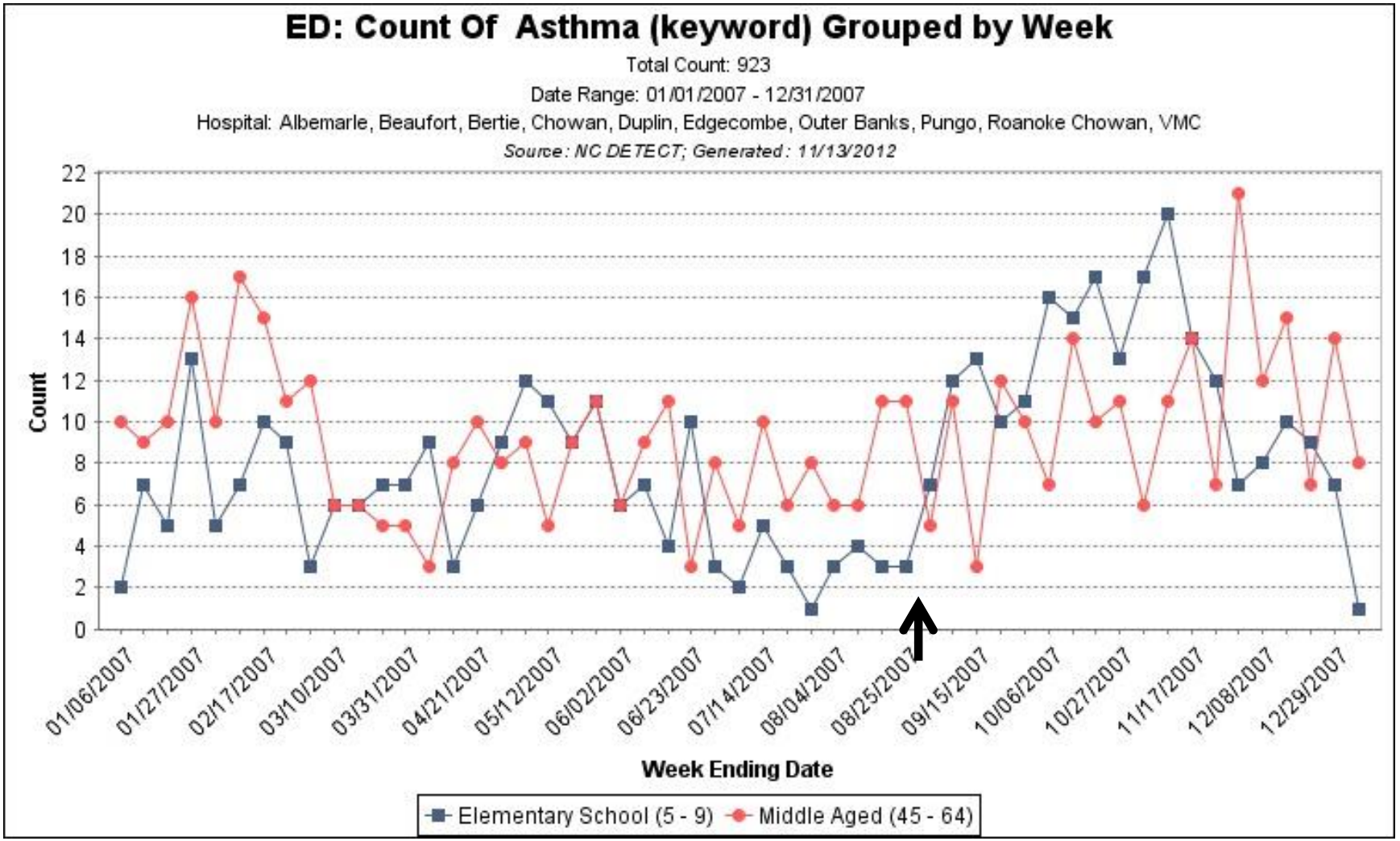

Selected ENC asthma ED visits 2006-2011 (Vidant Medical)

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Pitt County Elementary Schools
% Children with Asthma

ELEMENTARY (K-5)	Severe Allergy	Asthma	Students	% of Asthma
AYDEN ELEMENTARY	9	84	683	12%
BELVOIR ELEMENTARY	7	46	576	8%
CREEKSIDE ELEMENTARY	24	74	588	13%
EASTERN ELEMENTARY	21	51	633	8%
ELMHURST ELEMENTARY	12	48	383	13%
FALKLAND ELEMENTARY	15	52	474	11%
H B SUGG ELEMENTARY	9	44	425	10%
LAKEFOREST ELEMENTARY	13	86	770	11%
NORTHWEST ELEMENTARY	5	65	348	19%
RIDGEWOOD ELEMENTARY	12	79	694	11%
SADIE SAULTER ELEM.	4	30	150	20%
SAM D BUNDY ELEM.	12	56	408	14%
SOUTH GREENVILLE ELEM.	18	73	483	15%
WAHL COATES ELEM.	9	57	464	12%
WH ROBINSON ELEM.	9	67	549	12%
WINTERGREEN INTERMED	18	60	714	8%
WINTERGREEN PRIMARY	15	44	657	7%

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Problem

- Asthma disproportionately impacts poor, young, minority children

Gap

- Poor Asthma Control
- Frequent Use of Emergency Department (ED)
- Missed School Days
- Home exposure to environmental asthma triggers

Target Population

- Low income, high risk children (5-17 years of age)

Proposed Solution

- Conduct an Environmental Intervention Pilot Project –
  Eastern Carolina Asthma Prevention Program (ECAPP)

Collaborative Team

Vidant Pediatric Asthma Program

Lisa Johnson, Respiratory Therapist
Theresa Blount, Registered Nurse
Jenny Sharpe, Social Worker

ECU, BSOM, Department of Public Health

Dr. Greg Kearney, Asst. Professor, Environmental Epidemiologist
Landon Allen, Kaniqua Outlaw, Kevin Lamm, Landon Allen, Matthew Prentice, Linda Wei – MD/MPH and MPH students

ECU + Vidant Peds + [*x*] = Eastern Carolina Asthma Prevention Program (ECAPP)

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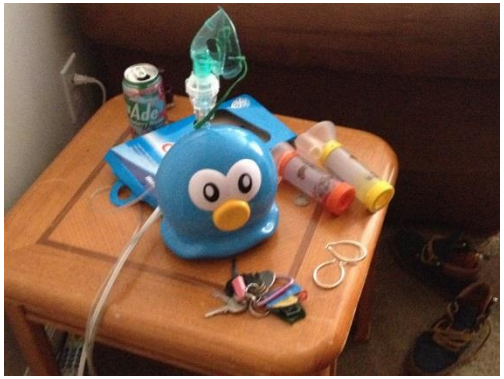
Evidence-based literature on asthma and home environment

<u>Home-based interventions</u> that use a multi-faceted approach to help residents decrease exposure to multiple asthma triggers are effective in reducing exposure to triggers, decreasing asthma symptoms and short-term health care use, and improving quality of life.



Krieger J, Jacobs DE, Ashley PJ, et al. Housing interventions and control of asthma-related indoor biologic agents: A review of the evidence. *J Public Health Manag Pract.* 2010;16(5 Suppl):S11-20.

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AIMS: ECAPP

Reduce asthma respiratory symptoms, ED visits and airway inflammation among, low income, high risk children (5-17 years of age) living in rural areas of eastern NC.

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Intervention vs Control Group (N=19)

Intervention Group (n=12)

- Intense asthma education
- Home visits (3)
- 2 week follow up calls and breathing tests (3)
- Environmental intervention products and environmental consult assessment (3x)

Control Group (n=7)

- Initial asthma education
- Home visits (3)
- 2 week follow up calls and breathing tests (3)

- **Did not receive** environmental products, consult assessment or extra asthma education*

*(Both groups followed for 6 months)

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QI Measures used to assess the effectiveness of our Home-Based Intervention

1. **Increase/Decrease of Asthma Severity**

2. **Increase/Decrease Respiratory Breathing Tests**

3. **Identifying Environmental "Triggers" in home**

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1. Asthma Severity (mild, moderate or severe)*

Questions included:

- *During the past 2 weeks, how many asthma symptoms (wheezing, cough, waking up at night)..,?*
- *During the past 2 weeks about how many days did [child] use rescue and/or controller medicine?*
- *During last 6 months did [child] have unscheduled ED or clinic visits?*

*National Heart, Lung, and Blood Institute, National Institutes of Health. National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the diagnosis and management of asthma. NIH Publication No. 07–4051. 2007. Available at www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm.

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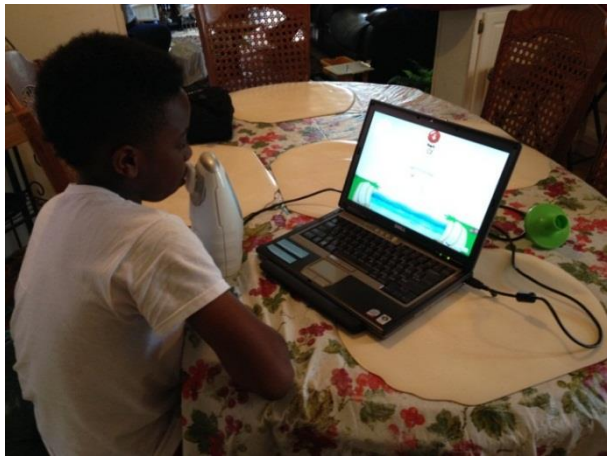
2. Respiratory Tests

- PFT – spirometry; above or below percent predicted
- Airway Inflammation – Fractional exhaled Nitric Oxide (eNO) ppb



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3. Environmental "Triggers" Assessment

- Temperature and Humidity
- Visual evidence of environment "triggers"
- -mice, cockroaches, household chemicals, fragrances, mold, moisture, pets, smoking, stuffed animals, dirty carpet
- Evaluation of HVA/C system

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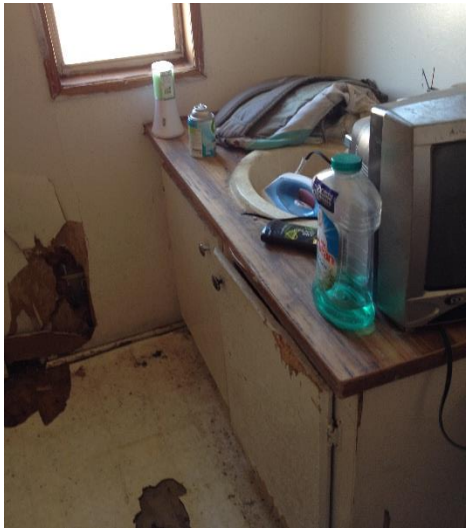

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Intervention Group:
Received "Environmental" Products to reduce Indoor Allergens

Products:

- Commercial grade Vacuum with HEPA filter
- Non-allergen mattress /pillow encasings (fit to child's bed)
- Toxic "free" cleaning products-
  Furniture, Floor and damp cloth mop
- Non-odor pesticides baits
- Non-toxic rodent baits*
- Food storage containers

*In some cases commercial services were used

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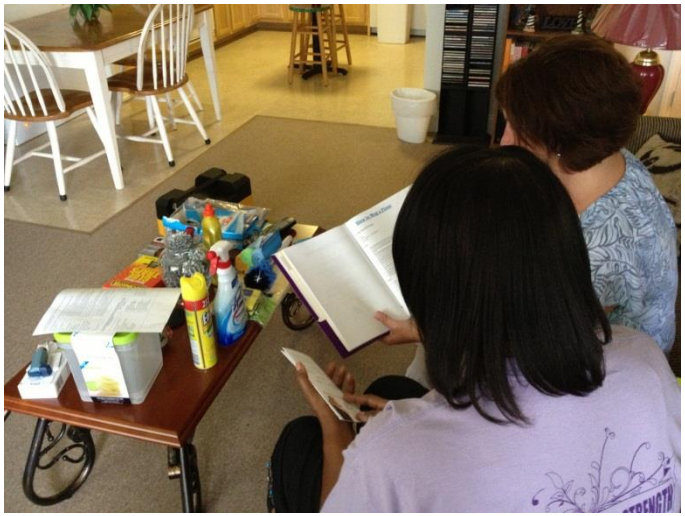
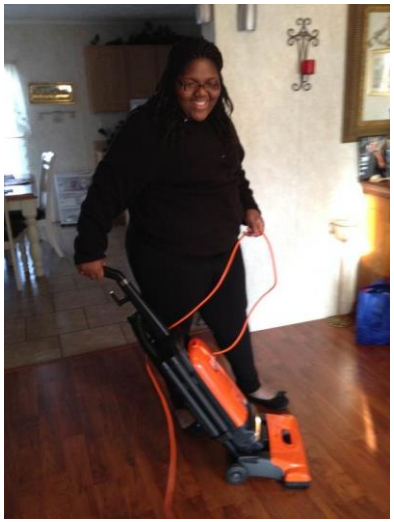
Intervention:

Personalized Instructions ,Education and Demonstrations on Using Products





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Intervention:

Instructions, Education and Demonstrations on Proper Use of Spacers/Inhalers and Medication

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Intervention Results:
Decrease in Airway Inflammation

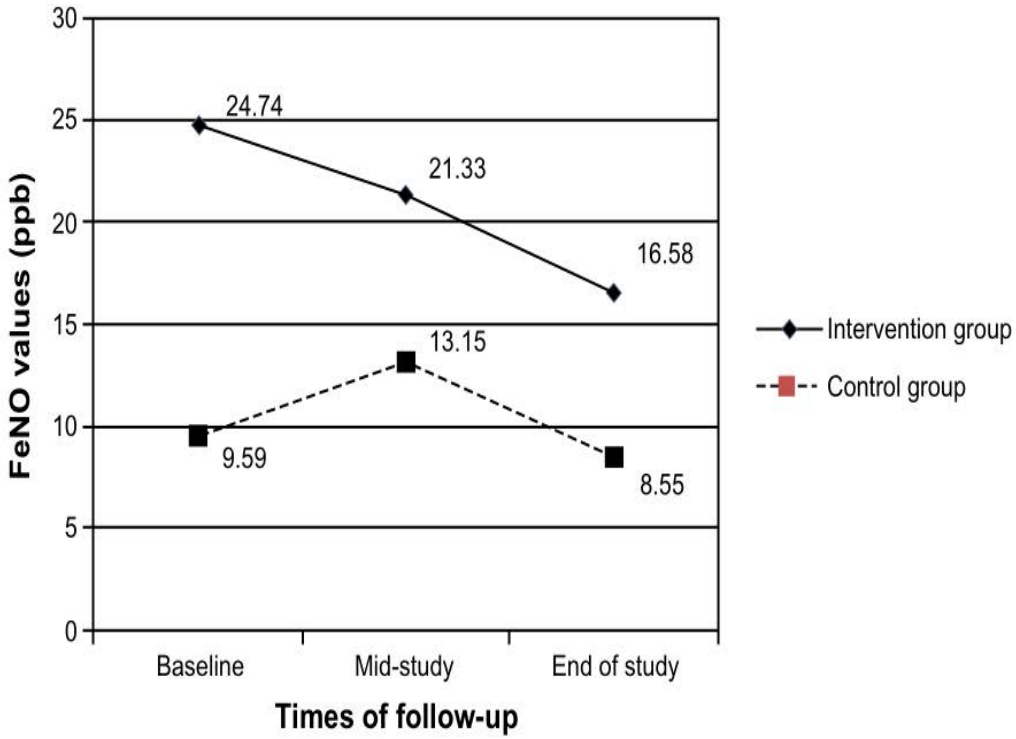

Figure 1. Geometric mean of FeNO among intervention and control groups over 6 months study period

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Intervention Results:
Decrease in Asthma-related of ED visits

- Overall, 33% increase in the number of asthma-related ED visits were identified in the control group and a 75% decrease in asthma-related ED visits among the intervention study group.

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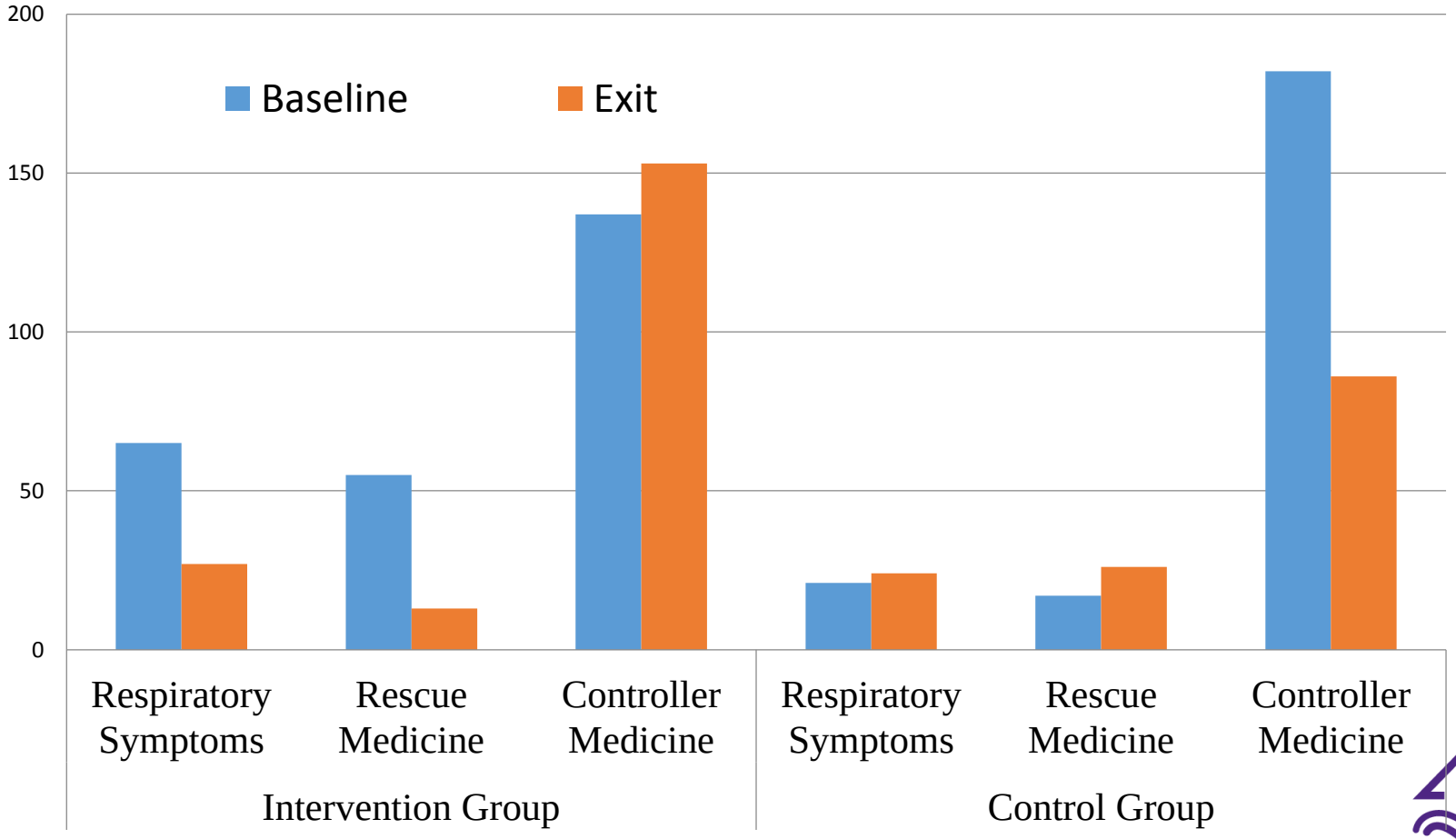
Intervention Results: Decrease in Symptoms, Rescue & Increase in Controller Meds



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QI Impact

- Significantly reduced self-reported asthma respiratory symptoms
- Reduced Number of ED visits, levels of airway inflammation
- Improved respiratory health outcomes for children
- Improved communications with child's physician

- **Reduced cost savings** –
- Our cost $550-$600 per family for 3 scheduled home visits (included all products);
- Avg ED visit costs = $691 and In-patient stay = $7,987*
- Contributes to less financial and emotional burden on child and family

*Hoppin P, Jacobs M, Sillman L. Asthma Regional Council (ARC). Investing in Best Practices for Asthma: A Business Case. Available from: http://hria.org/resources/reports/asthma/best-practices-for-asthma-2010.html.

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Challenges

- Scheduling of home visits
- Smoking in the home
- Rental Housing and Landlords issues – Majority are renters
- Sustainability
- Access to resources - pest control, carpet cleaning and mold removal
- Working with physicians that needed to be educated about FeNo testing and new technology
- Screening families for enrollment
- Length of baseline interview

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Next Steps

- Case study for demonstrating cost reimbursement by Medicaid
- Expansion of ECAPP throughout ENC
- Create Eastern Carolina Asthma Consortium

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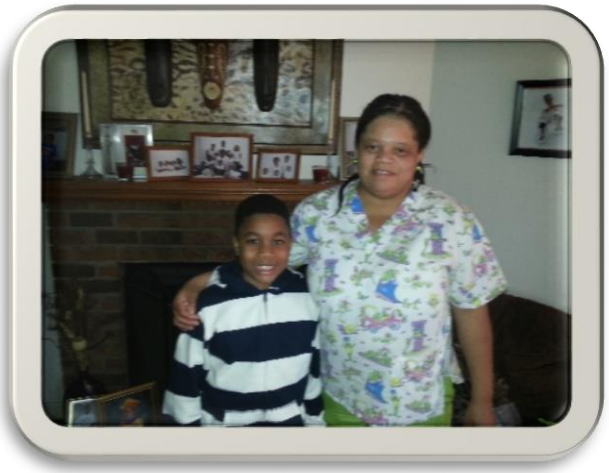

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Environmental Health Insights

Eastern Carolina Asthma Prevention Program (ECAPP): An Environmental Intervention Study Among Rural and Underserved Children with Asthma in Eastern North Carolina

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Vidant Peds Asthma

ECU, MD/MPH and MPH students

NC DHHS

Asthma Alliance of NC

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