Improvements in asthma knowledge and self-efficacy among daycare staff, parents and health professionals following an interactive workshop

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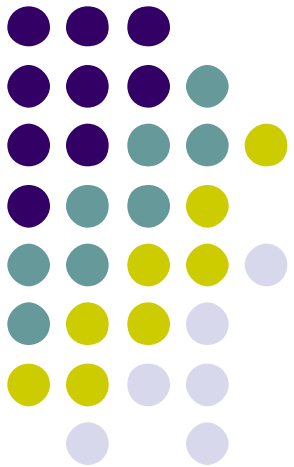

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National asthma prevalence, 2001-2003

TABLE 2. Estimated average annual prevalence percents for self-reported current asthma, by age, sex, race, ethnicity, region and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs) <18	≥18	0–4	5–14	15–34	15–19	20–24	25–34		
Sex											
Male	6.2	9.6	4.9	6.8	11.1	6.3	8.9	6.4	4.7	4.[illegible]	[illegible]
Female	8.1	7.4	8.4	5.0	7.8	8.9	10.0	9.4	8.0	8.7	6.8
Race*											
White	6.9	7.7	6.7	4.4	8.8	7.5	9.2	8.0	6.3	6.6	5.8
Male	5.8	8.6	4.8	5.2	10.1	6.1	8.5	6.6	4.5	4.5	4.6
Female	8.0	6.8	8.4	[illegible]	7.5	8.9	9.8	9.4	8.1	8.7	6.7
Black	9.2	12.5	7.6	12.4	12.8	9.0	11.2	9.7	7.2	7.4	6.1
Male	8.2	14.0	5.2	[illegible]	15.4	7.3	10.5	6.9	5.2	4.6	3.8
Female	10.0	11.0	9.5	12.0	10.2	10.4	12.0	11.8	8.8	9.7	7.6
Other races NTA	6.8	8.9	5.7	7.1	9.5	6.6	9.4	5.5	5.8	5.4	6.7
Male	6.9	11.2	4.7	9.1	12.1	6.2	10.0	—	5.1	4.1	6.4†
Female	6.7	6.5	6.7	5.0	6.9	7.0	8.7	6.2	6.6	6.7	7.0
Ethnicity§											
Hispanic or Latino	5.4	7.0	4.6	5.2	7.7	4.9	7.3	4.2	4.0	4.8	5.2
Male	4.8	7.6	3.2	5.7	8.4	3.9	7.2	3.0	2.8	3.1	4.5
Female	6.1	6.3	6.0	[illegible]	6.9	5.9	7.4	5.4	5.4	6.5	5.7
Puerto Rican	14.5	18.7	12.4	10.7	21.5	14.4	21.0	13.2	11.6	12.1	13.0
Male	12.4	18.7	8.8	[illegible]	23.1	10.1	16.1	11.5†	5.7	9.3	—
Female	16.6	18.7	15.7	11.2†	19.8	18.9	26.6	14.9	17.2	14.6	15.8
Mexican	3.9	4.8	3.3	3.8	5.4	3.3	4.6	2.9	2.9	3.5	3.9
Male	3.4	5.4	2.2	4.3	5.8	2.8	4.5	2.7	2.0†	2.2	3.0†
Female	4.4	4.2	4.5	3.3	4.9	3.9	4.8	3.2	3.9	4.8	4.7
Not Hispanic or Latino	7.4	8.9	7.0	6.1	9.9	8.1	9.9	8.7	6.8	6.8	5.9
Male	6.4	10.1	5.1	7.0	11.7	6.7	9.3	7.2	5.1	4.6	4.6
Female	8.4	7.6	8.7	5.0	8.0	9.4	10.5	10.2	8.5	8.9	6.9
Region											
Northeast	8.1	10.2	7.4	7.1	11.3	8.4	10.8	9.3	6.6	7.6	6.0
Midwest	7.5	8.7	7.1	6.7	9.5	8.3	9.8	9.0	7.0	6.7	6.3
South	6.7	8.3	6.2	6.0	9.4	7.0	8.9	7.0	6.0	6.1	5.4
West	6.8	7.3	6.6	3.9	8.3	7.1	9.0	7.1	6.1	6.6	6.2
Ratio of family income to poverty threshold¶											
0–.99	10.3	11.1	9.8	10.2	11.1	9.5	11.6	9.5	7.8	11.2	8.8
1.00–2.49	7.9	8.5	7.6	[illegible]	9.1	7.9	9.0	8.2	7.1	7.9	7.1
2.50–4.49	6.8	7.7	6.5	3.9	9.2	7.4	8.9	8.0	6.4	6.3	5.2
≥4.50	[illegible]	8.0	6.0	3.8	9.5	6.9	9.1	7.4	5.9	6.1	4.3
Total	7.2	8.5	6.7	5.9	9.5	7.6	9.5	8.0	6.4	6.6	5.9

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories "white" and "black" are comprised of persons who indicated only a single race group. "Other races NTA (not tabulated above)" includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

§ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from "Hispanic" to "Hispanic or Latino," but the definition of persons in that category remained the same. "Puerto Rican" and "Mexican" are a subset of "Hispanic or Latino"; Mexican includes responses of Mexican and Mexican American.

¶ Missing income responses were not imputed or included.

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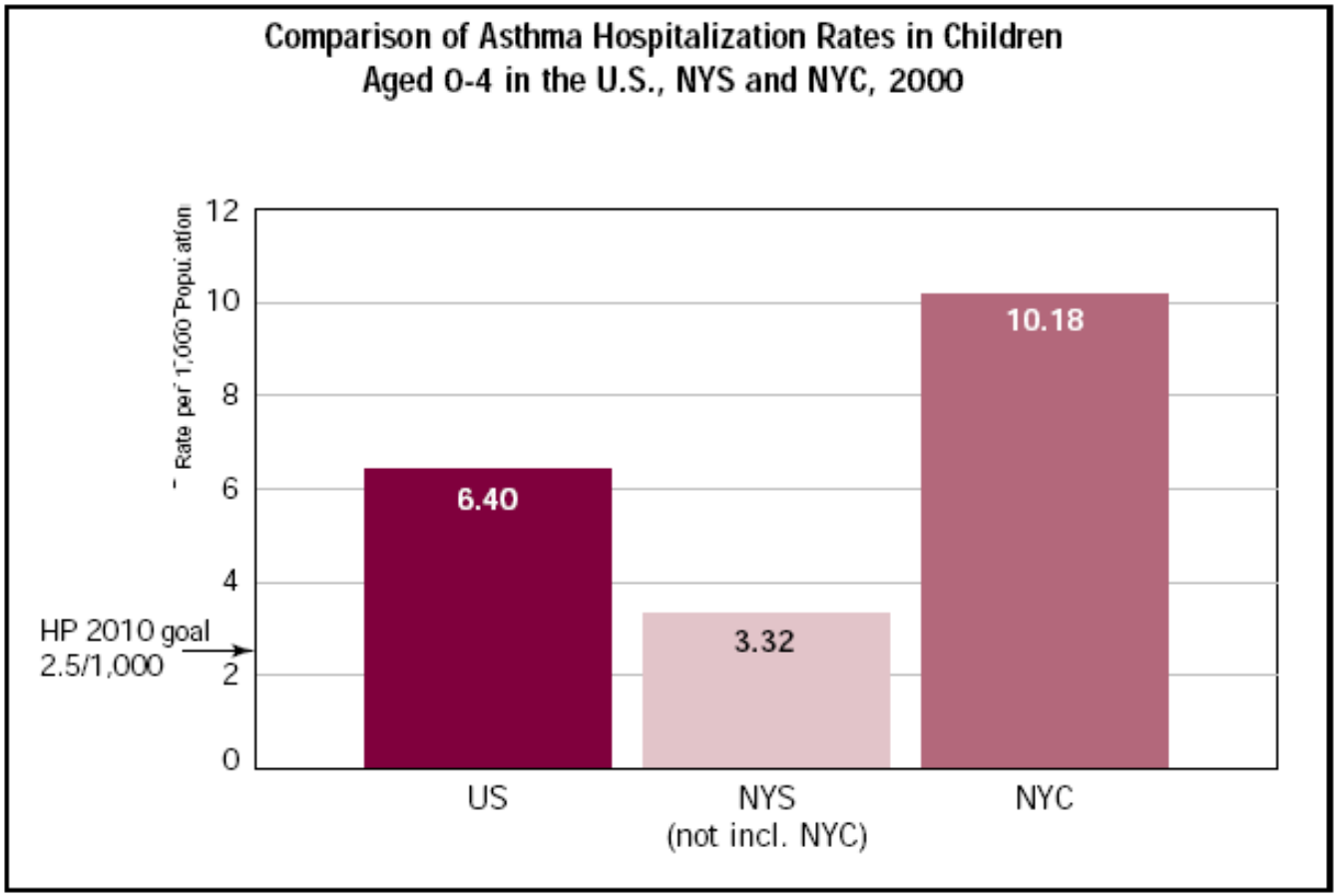
Asthma Hospitalizations, New York City preschoolers



Source: Asthma Facts, 2nd ed., NYC Childhood Asthma Initiative (2003)

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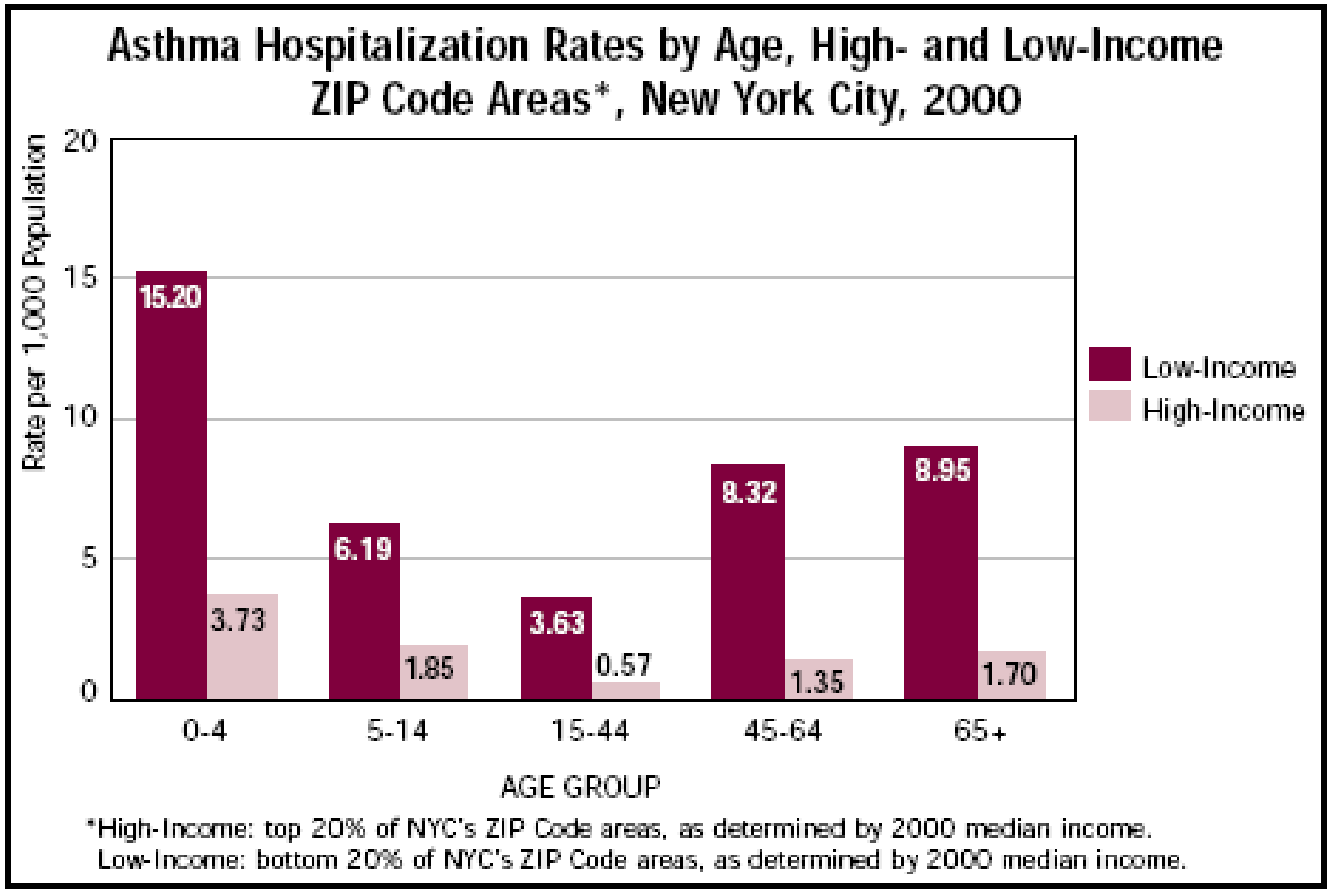

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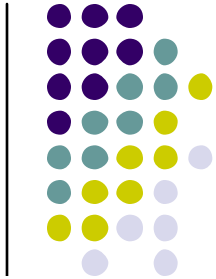
Guidelines for the Diagnosis and Treatment of Asthma: the National Heart Lung and Blood Institute (2002)



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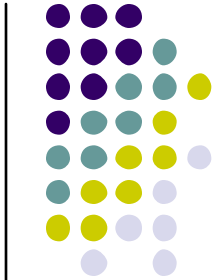
Subsidized preschool centers in New York City: ideal locations for asthma intervention



- Utilized primarily by low-income communities of color:
  - Disproportionate asthma morbidity
  - Under-prescription + underuse of ICS
- Attended by young children
  - Substantial asthma burden
  - Early intervention may affect airway remodeling
- Broader community setting
  - Provide educational, health, social services
  - Can target parents, teachers, administrators

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Workshop Study Design

- Workshops delivered at 6 venues between August and December of 2005:
  - 3 preschool centers in East Harlem
  - 2 preschool centers in the Lower East Side
  - 1 workshop sponsored by the Asthma Training Institute of the NYC DOHMH

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Workshop Study Design

- Topics covered:
  - The hygiene hypothesis, airway hyper-reactivity and airway inflammation
  - Functional classification of medications: controller, quick-relief and emergency medicines
  - Inappropriate use of short-term quick-relief medication
  - Using an Asthma Action Plan in partnership with a provider

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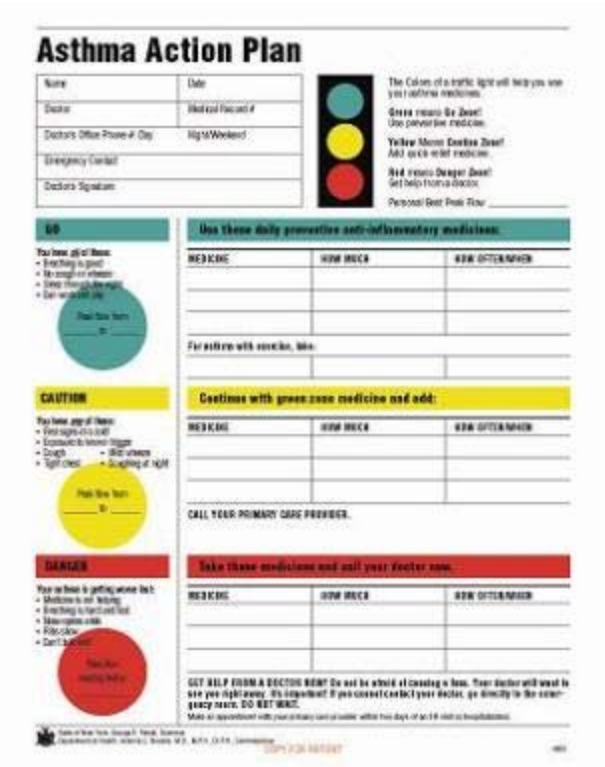

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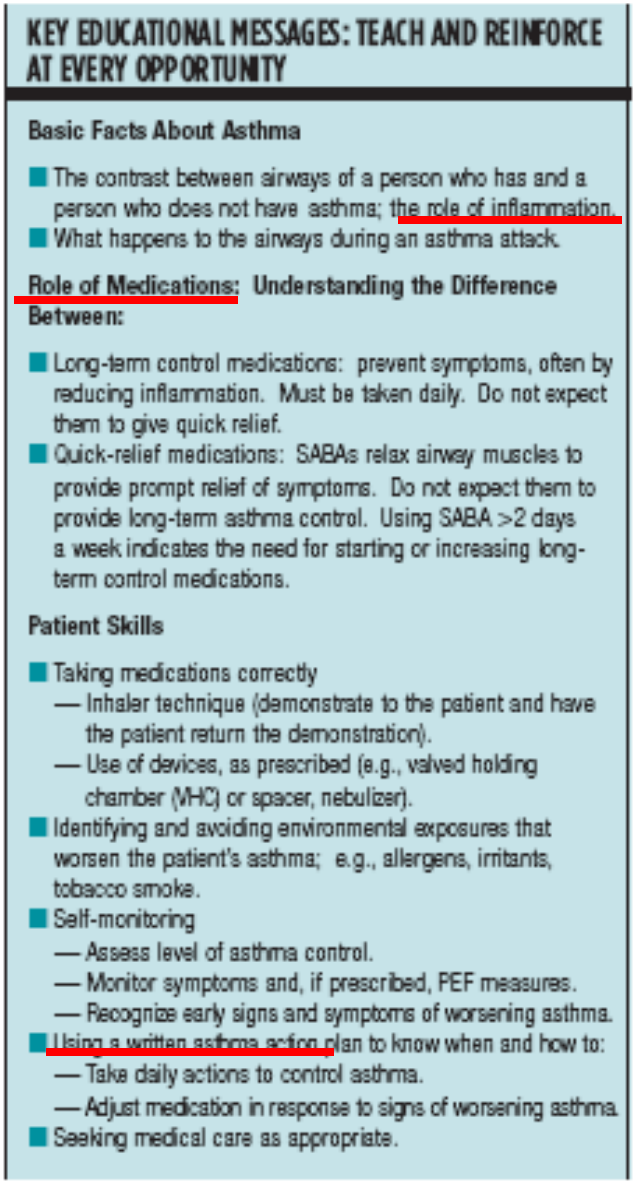

KEY EDUCATIONAL MESSAGES: TEACH AND REINFORCE AT EVERY OPPORTUNITY

Basic Facts About Asthma

- The contrast between airways of a person who has and a person who does not have asthma; the role of inflammation.
- What happens to the airways during an asthma attack.

Role of Medications: Understanding the Difference Between:

- Long-term control medications: prevent symptoms, often by reducing inflammation. Must be taken daily. Do not expect them to give quick relief.
- Quick-relief medications: SABAs relax airway muscles to provide prompt relief of symptoms. Do not expect them to provide long-term asthma control. Using SABA >2 days a week indicates the need for starting or increasing long-term control medications.

Patient Skills

- Taking medications correctly
  - — Inhaler technique (demonstrate to the patient and have the patient return the demonstration).
  - — Use of devices, as prescribed (e.g., valved holding chamber (VHC) or spacer, nebulizer).
- Identifying and avoiding environmental exposures that worsen the patient's asthma; e.g., allergens, irritants, tobacco smoke.
- Self-monitoring
  - — Assess level of asthma control.
  - — Monitor symptoms and, if prescribed, PEF measures.
  - — Recognize early signs and symptoms of worsening asthma.
- Using a written asthma action plan to know when and how to:
  - — Take daily actions to control asthma.
  - — Adjust medication in response to signs of worsening asthma.
- Seeking medical care as appropriate.

NHLBI
Key Educational Messages:

Source: National Heart, Lung and Blood Institute:
Guidelines for the Diagnosis and Treatment of Asthma, 2002

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Workshop Study Design

- Interactivity:
  - Teach back technique - participants applied concepts of airway reactivity in responding to popular misconceptions about asthma.
  - "Rule of 2's" - participants learned about classes of asthma medications by determining which criteria indicated need for ICS or overuse of quick-relief medication.
  - Participants created a personalized script to deliver to medical provider.

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Workshop Study Design

- Assessment: pre- and post-test
  - 7 questions assessing knowledge (scored on a 0-7 scale for both pre- and post-test)
  - 2 questions assessing self-efficacy (only scored for participants who indicated they were a caretaker of an asthmatic child)

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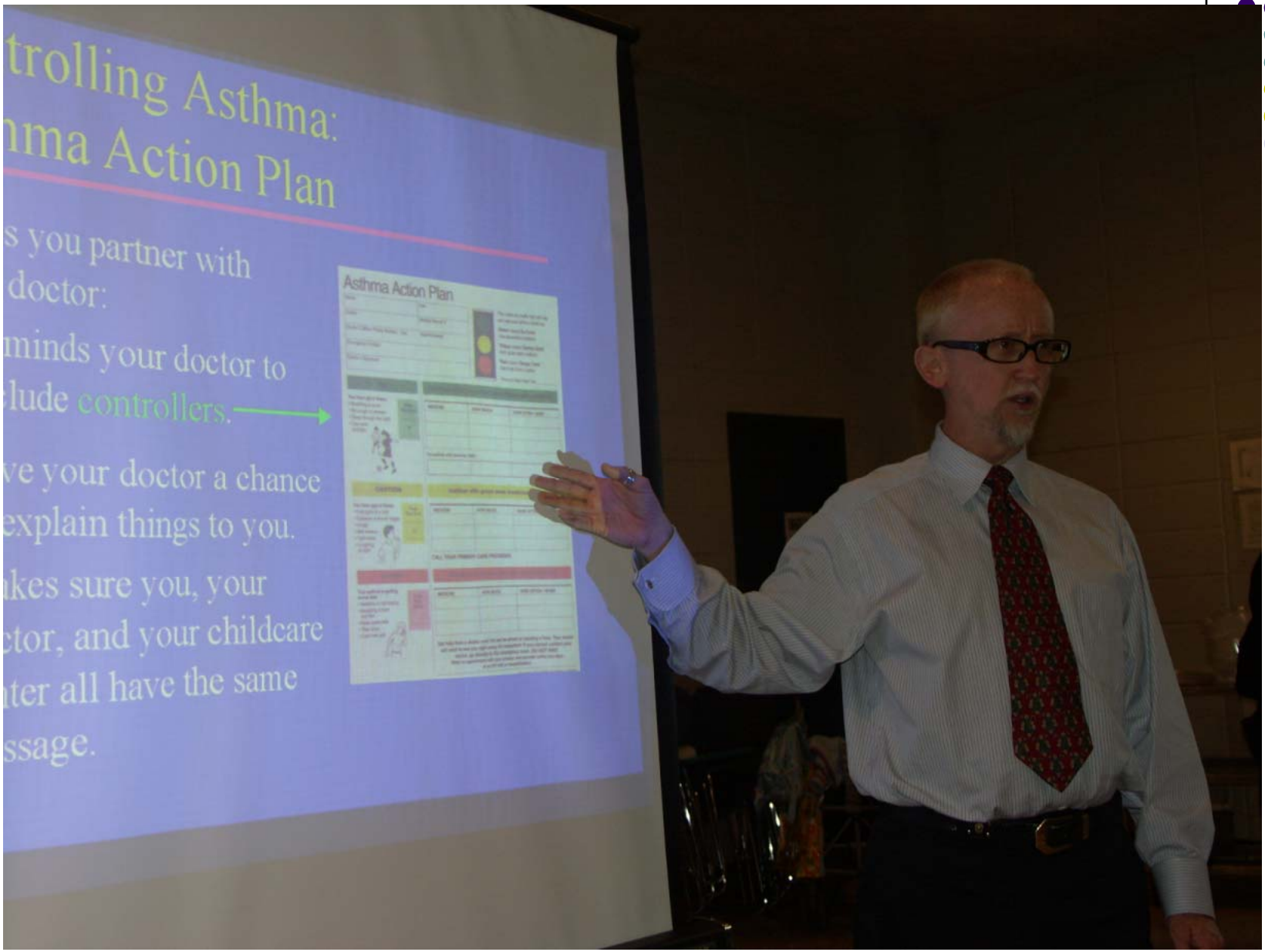

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Participants

	Total sample (n=106)	
	n	%
Gender		
Female	89	84.0
Male	9	8.5
Not reported	8	7.5
Race/ethnicity		
African-American	18	17.0
Hispanic	45	42.5
Asian	17	16.0
White	9	8.5
Mixed/other	5	4.7
Not reported	12	11.3
Participant type		
Family member	8	7.5
Preschool staff	68	64.2
Health professional	16	15.1
Not reported	14	13.2

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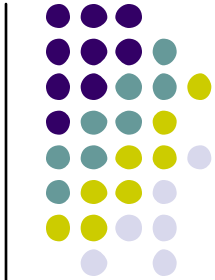
Result #1: Asthma knowledge significantly improved from pre- to post-test among workshop participants



Pre-test and post-test scores by item – total sample (n=106)					
	Pre-test		Post-Test		
	n	%	n	%	P-value
1. Inhaled corticosteroids reduce airway hyper-reactivity	50	47.2	93	87.7	0.06
2. Asthma medicines may be needed when a child is asymptomatic	47	44.3	72	67.9	< 0.01
3. Albuterol does not control airway inflammation	22	20.8	56	56	0.04
4. Inhaled corticosteroids may not relieve asthma symptoms	69	65.1	95	95	0.04
5. Inhaled corticosteroids need to be given every day	50	47.2	90	90	< 0.01
6. Prednisone is not used to help control asthma symptoms	20	18.9	31	31	< 0.01
7. I know what an Asthma Action Plan is	50	47.2	95	95	< 0.01
Overall mean Q1-Q7 (standard deviation)	2.91 (1.92)		5.02 (1.47)		< 0.01

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Result #2: Asthma knowledge significantly improved from pre- to post-test among self-identifying caretakers of an asthmatic child

Pre-test and post-test scores by item – caretakers (n=53)					
	Pre-test		Post-Test		
	n	%	n	%	P-value
1. Inhaled corticosteroids reduce airway hyper-reactivity	29	54.7	47	88.7	0.26
2. Asthma medicines may be needed when a child is asymptomatic	23	43.4	36	67.9	0.01
3. Albuterol does not control airway inflammation	12	22.6	18	34.0	0.08
4. Inhaled corticosteroids may not relieve asthma symptoms	34	64.2	48	90.6	0.24
5. Inhaled corticosteroids need to be given every day	26	49.1	44	83.0	< 0.01
6. Prednisone is not used to help control asthma symptoms	12	22.6	16	30.2	< 0.01
7. I know what an Asthma Action Plan is	26	49.1	48	90.6	0.02
8. I am sure I can keep my child's asthma under good control	36	67.9	49	92.5	0.06
9. I think my child needs an Asthma Action Plan	26	49.1	39	73.6	0.07
Overall mean Q1-Q7 (standard deviation)	3.06 (1.78)		5.04 (1.51)		< 0.01

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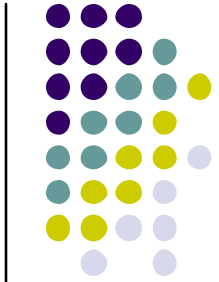
Result #3: Asthma knowledge significantly improved from pre- to post-test among all workshop participant sub-groups



- No statistical differences found among different ethnic groups
- Greater improvement in asthma knowledge among Health professionals
- Lesser improvement in asthma knowledge among participants at “Lower East Side site 3”

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Result #3: Asthma knowledge significantly improved from pre- to post-test among all workshop participant sub-groups

Mean pre-test and post-test scores by ethnicity, venue and participant type (n=106)			
	Pre-test Mean (SD)	Post-test Mean (SD)	p-value
Ethnicity			0.54
African-American	2.83 (1.69)	5.23 (1.64)	0.25
Hispanic	2.62 (1.99)	4.96 (1.51)	0.59
Asian	2.35 (1.80)	4.29 (1.57)	0.008
White	4.33 (1.41)	5.33 (1.00)	0.62
Mixed/other	2.79 (1.90)	4.93 (1.52)	0.73
Workshop venue			< 0.01
Harlem 1	1.75 (1.50)	5.00 (1.83)	0.47
Harlem 2	1.91 (1.44)	4.73 (1.79)	0.76
Lower East Side 1	3.20 (1.99)	5.50 (1.50)	0.21
Lower East Side 2	3.13 (1.55)	4.93 (0.94)	0.36
Lower East Side 3	1.64 (1.68)	3.96 (1.31)	< 0.01
ATI Workshop	5.06 (0.93)	6.50 (0.73)	0.01
Participant Type			0.03
Family member	2.75 (1.16)	5.5 (1.07)	0.18
Preschool staff	2.57 (1.85)	4.71 (1.32)	0.01
Health profesional	5.06 (0.93)	6.50 (0.73)	< 0.01
Not reported	2.25 (2.06)	4.25 (2.22)	0.38

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Workshop successes

- A significantly higher number of participants recognized the role of ICS in preventing asthma symptoms as well as the need to administer these medicines on a daily basis, even when symptoms are not present.

- The number of participants expressing familiarity with the Asthma Action Plan nearly doubled.

- The smaller sub-set of self-identified caretakers of asthmatic children mirrored above improvements in knowledge.

- Improvements across categories of ethnicity, participant type and workshop venue demonstrate that the workshop is an intervention accessible to a variety of different audiences.

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Limitations

- Small sample size (106 total participants, 53 self-identified caretakers of asthmatic children)

- Lack of follow-up - unable to assess retention of knowledge over time.

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