

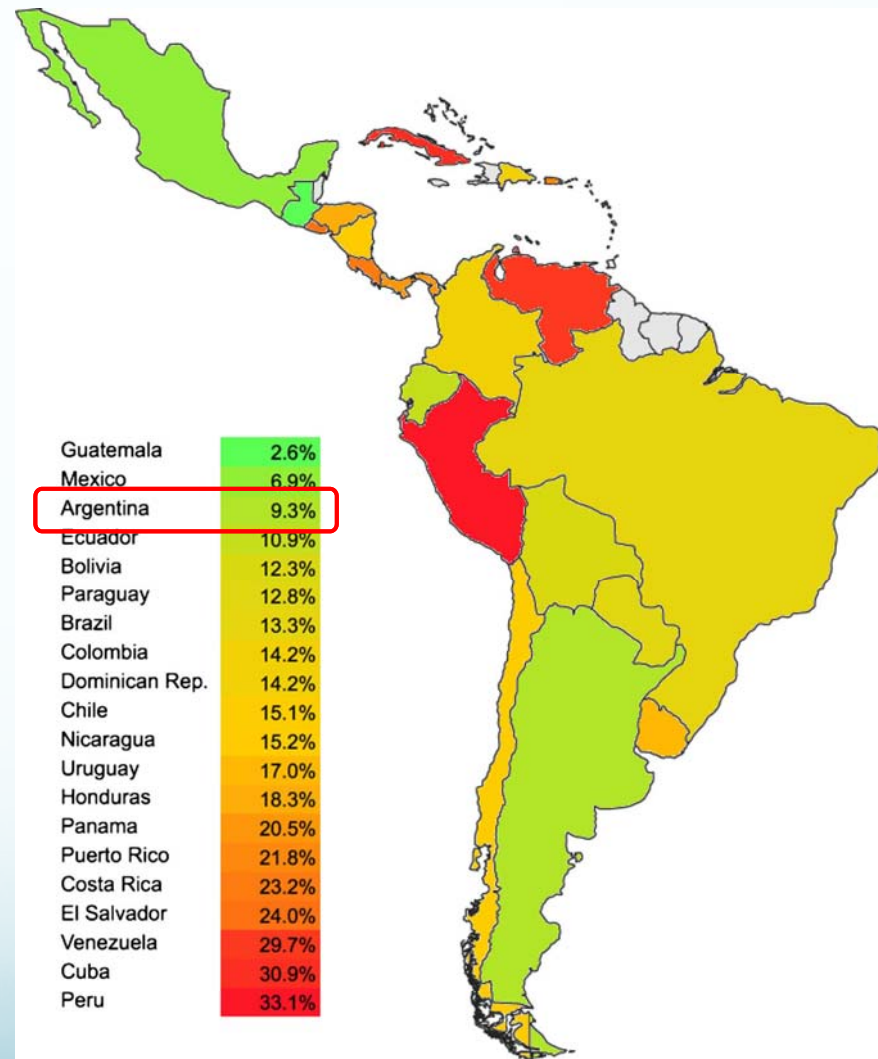
# El Manejo del Asma en la Escuela

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# Childhood Asthma in Latin America

- Prevalence 2.6%-33.1% in 13-14 year olds (ISAAC Phase III)
- Higher in urban populations
- Hygiene Hypothesis does not seem to hold
- Mortality generally decreasing across Latin America



# Childhood Asthma in Argentina

Country/Center	6-7-yr ISAAC II (%)	13-14-yr ISAAC I (%)	6-7-yr ISAAC III (%)	13-14-yr ISAAC III (%)
Argentina				
Buenos Aires <sup>2</sup>	15.4	9.9	-	-
Córdoba <sup>2,11</sup>	-	11.2	-	13.6
Neuquén <sup>2,11</sup>	-	-	14.9	10.2
Rosario City <sup>2,11</sup>	17.3	11.8	17.9	13.4
Salta <sup>11</sup>	-	-	-	12.5

- Wide variation across ages, across cities
- Increasing prevalence trend
- Mortality 14.7/100,000 deaths

Chong Neto HJ, et al. Asthma and rhinitis in South America: how different they are from other parts of the world. *Allergy, Asthma & Immunology Research*. 2012;4(2):62-67.



# Educational Impact of Asthma

- 3x more missed school days
- 1.7x risk of learning disability
- Decreased school readiness
- Decreased performance independent of severity or exacerbations

Crump C, et al. Chronic health conditions and school performance among children and youth. *Annals Epidemiol* 2013;23:179-84.

Liberty K, et al. Beginning school with asthma independently predicts low achievement in a prospective cohort of children. *Chest* 2010;2010:1249-355.

Moonie SA, et al. Asthma status and severity affects missed school days. *J Sch Health* 2006;76:18-24.

Basch C. Asthma and the achievement gap among urban minority youth. *J Sch Health* 2011;81:606-13.

# Why school-based care?

- Brings together children in one location
- Schools are advocates for child welfare
- Children spend substantial time at school
  - US: 30-35 hours per week
  - Argentina:
    - Educación primaria/secundaria 20-30 hours per week
    - Doble escolaridad  $\approx$ 35 hours per week
- Children focused on education, learning

# School-based care strategies

- Environmental rehabilitation
- Access to Rescue Care
- Self-Management Skills
- Teach/Train School Faculty and Staff
- Controller Medication Administration
- Mobile Clinics

# Access to Rescue Care

- Administration of  $\beta$ -agonist for symptoms
  - Requires medication at school
  - Trained staff
  - Written action plan
- Returns students to class, reducing missed instruction
- Reduces emergency service calls
- Decreases parental missed work



# School Stock Inhaler Program

- Obtained donation of albuterol, disposable double valved holding chambers for each school in a suburban, low socioeconomic status system.
- Protocol developed through collaboration of District Director of Health & Wellness, District Medical Director and pulmonology consultant.



Gerald LB, et al. Implementation of a stock albuterol program for students with asthma. *Annals Am Thorac Soc* (in press).



# School Stock Inhaler Program - Results

- Stock inhaler used 222 times in 2013-14
- Less reliance on emergency medical services
  - 36 calls in 2012-13; 29 calls in 2013-14
  - 18 transports (50%) in 2012-13; 11 (38%) in 2013-14
- Improved morale in school nurses
  - Nurses not worrying as much about getting inhalers for every child
  - Lessened stress and appeared to relieve their work load tremendously

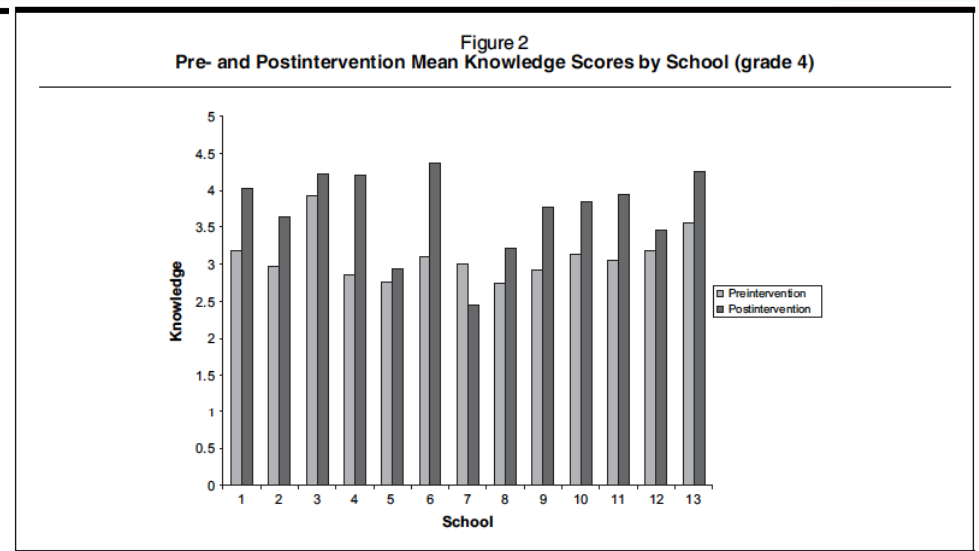
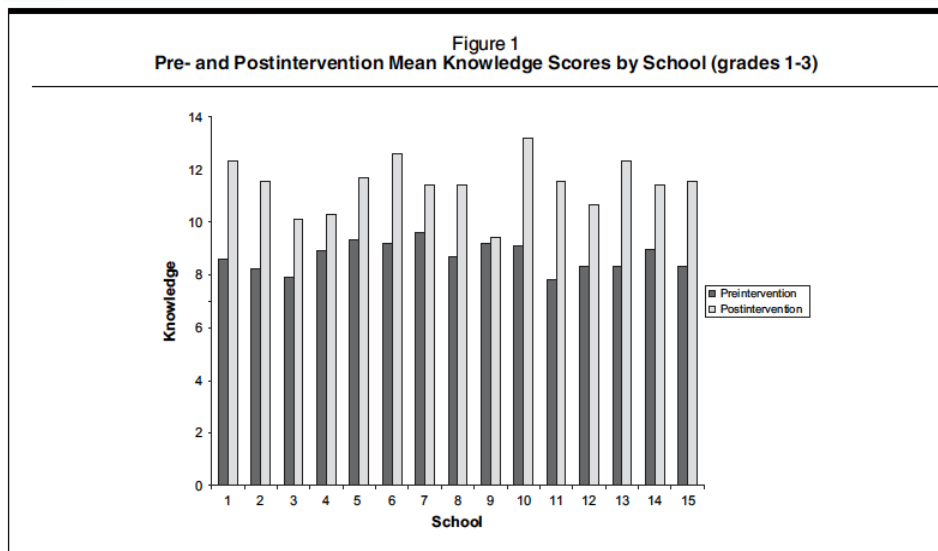
Gerald LB, et al. Implementation of a stock albuterol program for students with asthma. *Annals Am Thorac Soc* (in press).

# Teach self-management skills at school

- Schools may be the optimal place for asthma education
  - Disease-specific education in a group setting results in better attitude, greater self-confidence, and less anxiety.
    - Briery, et al. J Pediatr Psychol 1999; 24:183-190.
  - With content training, professional educators can deliver the material.
  - More time available than at an office visit
  - No additional burden to families

# Teach self-management skills at school

- Significantly improves asthma knowledge and self management skills



# Teach self-management skills at school

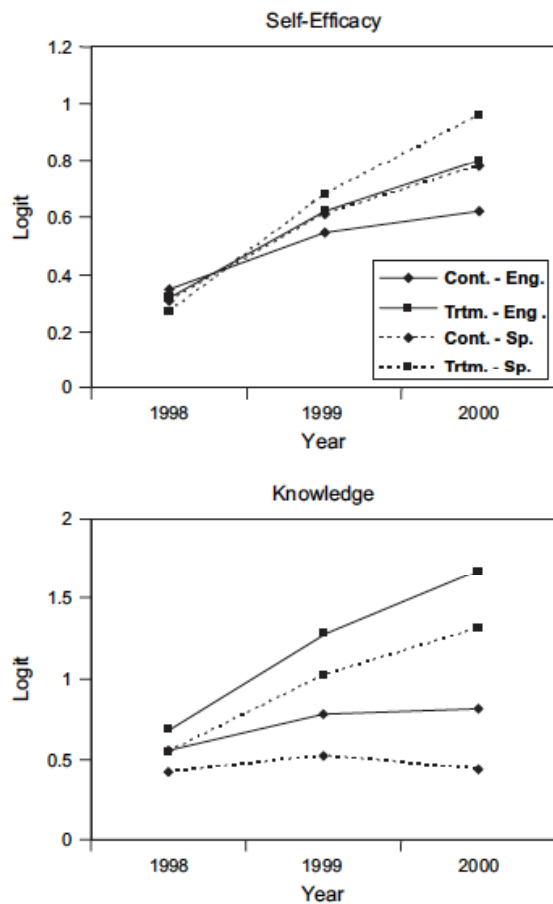
- No impact on health status or school performance

	Intervention	Delayed Intervention
<b>Absences</b>		
Baseline	3.81 (SD = 3.6; n = 333)	3.29 (SD = 3.8; n = 275)
Postintervention	3.88 (SD = 3.5; n = 305)	3.21 (SD = 3.2; n = 269)
<b>Grades</b>		
Baseline	79.8 (SD = 9.8; n = 333)	79.7 (SD = 10.0; n = 275)
Postintervention	79.2 (SD = 9.4; n = 305)	80.3 (SD = 8.5; n = 269)

	Intervention Mdn (SD) n	Delayed Intervention Mdn (SD) n
<b>ER visits</b>		
Baseline	0.09 (0.30) 333	0.13 (0.37) 275
Postintervention	0.09 (0.28) 305	0.10 (0.31) 269
<b>Hospitalizations</b>		
Baseline	0.01 (0.09) 333	0.03 (0.17) 275
Postintervention	0.04 (0.19) 305	0.02 (0.14) 269

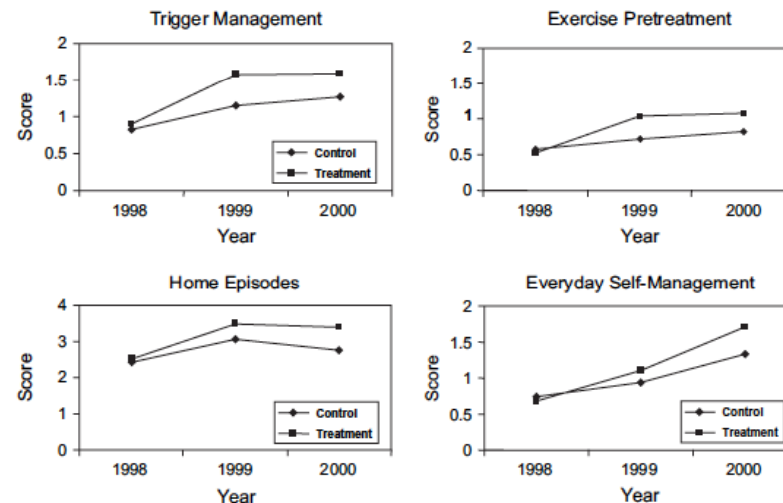
# Teach self-management skills at school

Figure 3  
Change in Self-Efficacy and Knowledge Over Time



- 835 students in 60 elementary schools
- 96% Hispanic or African American
- No impact on school performance, absences; enhanced program did

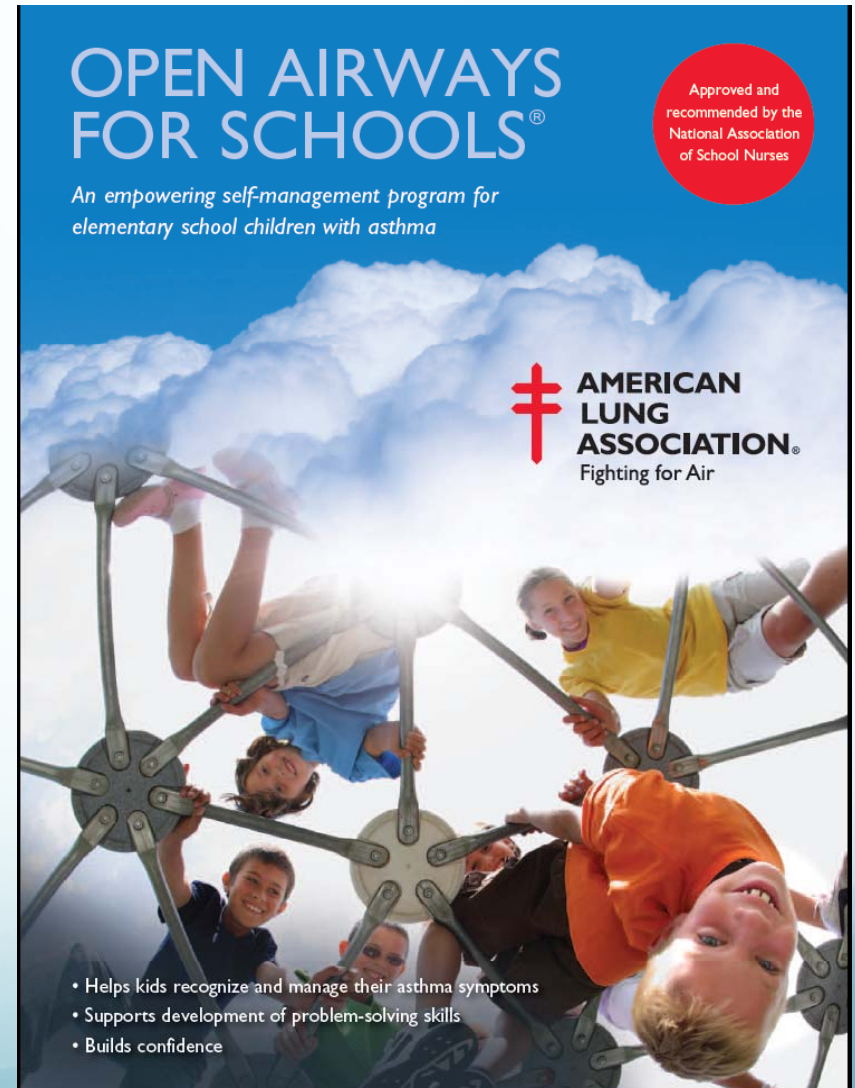
Figure 4  
Change in Asthma Management Outcomes Over Time



Bartholomew LK, et al. J Sch Health 2006; 76: 283-290.

# Open Airways for Schools

- For children 8-11 years
- Very well validated, available in Spanish
- Six 40-minute lessons
  - Basic asthma information
  - Identifying & controlling triggers
  - Recognizing and managing symptoms
  - Understanding medicines
  - Getting exercise, doing well in school





# Other Asthma Programs

- Programs from the Asthma & Allergy Foundation (<http://www.aafa.org/>)
- Validated and recognized by the CDC
- Cost \$50-\$295 USD

## **Fundamentos Sobre el Asma de Infantil (Asthma Basics for Children)**

These program materials will assist bilingual educators in teaching Spanish-speaking parents of children (newborn through age 6) to manage asthma. The Instructor Guide contains curriculum for over five hours of education and interactive activities. The handbook for parents reinforces the curriculum and provides practical activities for preschool-age children to learn about asthma. Program contains: English Instructor Guide and 5 Spanish handbooks for parents.



## **Wee Wheezers: Para Los Padres de Niños Pequeños**

Health professionals use this program to teach parents of children (under age 7) to recognize, prevent and manage asthma symptoms. Parents learn about resources for information and support and how to communicate with caretakers and physicians.

Parents attend 4 group sessions and children join in for the last 2 sessions. This program has been validated through formal research as an effective patient education program and recognized by CDC as a potentially effective educational intervention. Kit includes: instructor's manual; program implementation and training guide; slides (PDF and PowerPoint); instructor video; companion video and handouts for parents and children. [More >>](#)



## **Usted Puede Controlar el Asma (You Can Control Asthma)**

The *You Can Control Asthma* education program gives children ages 6 to 12 and their families more self-confidence and the necessary knowledge and skills needed to control asthma. An Implementation Guide provides successful strategies for educating families in clinical, community, school and home settings using the *You Can Control Asthma* booklets. A set of parallel booklets for children and their parents teach principles of asthma management through pictures, captions and activities. The book for kids (third grade reading level) helps them make choices and feel in control of their asthma. The book for families (fifth grade reading level) helps them to assist their child in managing their asthma. These books have been validated through formal research as an effective patient education resource and recognized by CDC as a potentially effective educational intervention.





# Train school faculty/staff in management skills

## A Preliminary Investigation of Asthma Mortality in Schools

Andrea K. Greiling, Leslie P. Boss, Lani S. Wheeler

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**ABSTRACT:** Although asthma deaths in children are rare, most asthma deaths should be preventable. No information has been identified in the professional literature addressing the occurrence of asthma deaths in schools. This investigation identified asthma deaths that occurred in US schools between 1990 and 2003 and the circumstances surrounding those deaths. Data were obtained through newspaper articles in the LexisNexis database and death certificates. Between 1990 and 2003, 38 asthma school deaths were reported. Eighteen (47%) identified deaths occurred among black children and 12 (31%) among white. Twenty-seven (72%) of the deaths occurred among teens. Of the fatal asthma attacks, 16 (42%) occurred while the children were participating in a physically active event. Twelve (31%) children died while waiting for medical assistance. Due to the nature of these data, inferences may be subject to source bias. For the identified asthma deaths, key findings include the following: (1) most deaths occurred in teens and high school students; (2) frequently, the precipitating event was related in time to exercise; and (3) a delayed response or hesitancy of school staff to provide medical assistance may have contributed to some of the deaths. Although few school-related asthma deaths are reported each year, the true number is unknown. Key factors in managing the disease and preventing asthma deaths and exacerbations in schools include identification of students with diagnosed asthma, communication with parents and health care providers, removal of triggers in the immediate school environment, and maximizing access to needed medications. (J Sch Health. 2005;75(8):286-290)

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*“For the identified asthma deaths, key findings include the following:  
(1) most deaths occurred in teens and high schools students;  
(2) frequently, the precipitating event was related in time to exercise;  
(3) a delayed response or hesitancy of school staff to provide medical assistance may have contributed to some of the deaths.”*

# Controller therapy in schools

- Offers several potential benefits
  - Assures daily therapy on 5 of 7 days weekly
  - If administered by a school nurse allows daily professional assessment, communication with physician
  - Documentation of adherence
- Challenges
  - Need for medication at school
  - Lack of school nurses – health aid instead?
  - Once daily therapy
  - Administration outside school not controlled

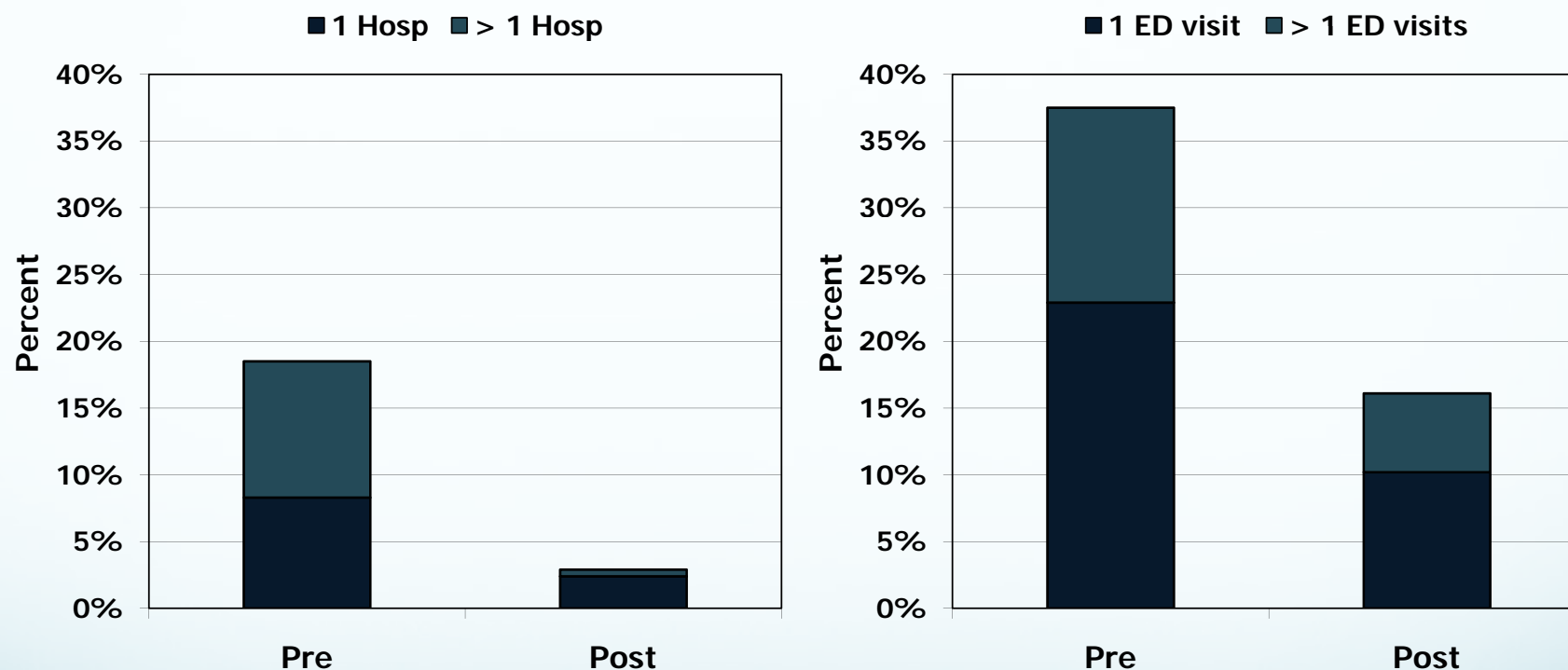
# SAMS

- “Supervised Asthma Medications in Schools”
  - 441 asthmatic children 6-12 years of age in 20 schools
  - Evaluated by physician and assigned NIH guideline-based therapy
  - Dual intervention
    - Daily administration of controller therapy by school nurse
    - Asthma education (“Open Airways in Schools”)
  - Year 1: 10 intervention schools; 10 usual care
  - Year 2: intervention in all 20 schools
    - Daily administration of controller therapy by school nurse
    - Asthma education (“Open Airways in Schools”)

# Mobile Clinics – “Breathmobile”

- Mobile asthma clinic with school-based ascertainment and NAEPP-based evaluation and treatment
- Focus on delivering comprehensive asthma care
- Pre/Post analyses demonstrate dramatic reduction in healthcare utilization

# Children's Hospital of Orange County Breathmobile Outcomes



- Data from 205 children in the CHOC program for at least one year
- Proportion of children missing school due to respiratory illness was also reduced over 50%

(Liao, O et al. J Sch Health. 2006;76(6):313-319)

# Phoenix Children's Hospital Breathmobile Program



- Started in 2000
- Mobile asthma clinic that screens, provides asthma treatment and education for low income children in 19 inner-city schools
- Staffed with pediatric nurse practitioner, registered nurse, respiratory therapist
- See 70 children per week

Harris JA, et al. Am J Respir Crit Care Med 2010; 181:A3257.

# Phoenix Children's Hospital Breathmobile Program



- Results
  - 40% reduction in missed schools days
  - 70% reduction in emergency department visits
  - 73% reduction in hospitalizations
- Considerations
  - Expensive – sponsors?
  - Requires careful communication

Harris JA, et al. Am J Respir Crit Care Med 2010; 181:A3257.



# Resumen

- Schools offer unique opportunities for improving asthma care



- Access to rescue
- Self-Management Skills
- Teach/Train School Faculty and Staff
- Controller Medication Administration
- Mobile Clinics

*He who knows and knows that he knows is conceited; avoid him.*

*He who knows not and knows not that he knows not is a fool; instruct him.*

*He who knows and knows not that he knows is asleep; awaken him.*

*But he who knows not and knows that he knows not is a wise man; follow him.*

— Arab proverb