

Use Of Community Health Workers to Improve Asthma Management: Successes and Challenges

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11th Annual ACCP Community Asthma and COPD Coalitions Symposium

November 5th 2009



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Sinai Urban Health Institute

- Vision: To serve as a leading urban health research institute for eliminating health disparities and working towards health equity
- Mission: To develop and implement effective approaches that improve the health of urban communities through data-driven research, evaluation, and community engagement
- Sinai Asthma Work
 - Past nine years
 - 4 Interventions, each building on the successes and shortcomings of its predecessors



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Outline

- Asthma Background
- Community Health Workers (CHWs)
 - History
 - CHWs and Asthma
- Sinai Pediatric Asthma Programs
 - Previous Studies
 - Case Study: Controlling Pediatric Asthma Through Collaboration and Education: a statewide initiative
- Successes and Challenges
- Discussion: experiences and insight



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Asthma Background

- 10 million children (13.5% of children <18 yrs) in the U.S. have asthma (NHIS 2006)
 - Leads to more school absences and hospitalizations than any other disease
- Inner-city, minority children experience a disproportionate asthma burden
 - Prevalence approaches 1 in 4
 - Many have asthma that's poorly controlled
 - Hospitalization, Emergency Department (ED), mortality and morbidity rates higher



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Asthma Background (cont.)

- In 2007, U.S. Asthma expenditures estimated at \$14.7 billion (NHLBI, 2007)
 - includes costs for care provided in hospitals, emergency rooms, physician services and medications



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Asthma Background (cont.)

- A person's home can heavily impact asthma symptoms (i.e., asthma triggers)
- Many children and families are in need of individualized education on how best to control asthma
 - Physician visits do not provide sufficient time to provide proper asthma education
- Asthma is a serious lung disease, yet with proper long-term management it can be controlled and children can live normal lives!



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Asthma Education

- **Physician Visits**
 - Limited time
 - Varying degrees
 - Typically a one time educational session / not reinforced
 - No reimbursement for education in most states
- **Respiratory Therapist**
 - Often in the Emergency Department
 - One time education session
 - Can be reimbursed
 - Limited available time
- **Nurses**
 - Often not reimbursed
 - Varying degree / Not specialized

Cochrane Review: Educating children at risk of asthma-related ED visits

- **Objective:** To conduct a systematic review of the literature as to whether asthma education leads to improved health outcomes in children who have attended the ED for asthma
- **Main results:** A total of 38 studies involving 7843 children were included. Following educational intervention delivered to children and their caregiver(s), there was a significantly reduced risk of subsequent ED visits & hospital admissions compared with controls.



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Community Health Workers (CHWs)

- A Community Health Worker (CHW) is a frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served. This trusting relationship enables the CHW to serve as a liaison/link/intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery. A CHW also builds individual and community capacity by informal counseling, social support and advocacy
 - American Public Health Association



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CHW Titles & Utilization

- Titles
 - Community Health Educators, Patient Navigators, Promotores de Salud, Lay Health Educators, Lay Health Workers, others
- Utilization
 - Breast health, patient navigation, cancer screenings, smoking cessation, diabetes management, asthma management, maternal and child health programs, etc.



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CHW History

- CHW history has been rooted in early self-reliance strategies by communities the world over
- Early Documentation (1966-1972)
 - References in literature begin in the mid-1960s
 - Did not involve specific CHW interventions for disease prevention
- Special Projects (1973-1989)
 - CHW programs were funded by public and private grants mostly at Universities
 - Increase studies documenting CHWs' successes and challenges



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CHW History (cont.)

- State and Federal Initiatives (1990-1998)
 - Standardized training for CHWs received greater recognition
 - Many bills in support of CHW activities were introduced, none were passed
- Public Policy (1999-Current)
 - Certification programs were passed in several states
 - Legislation and reimbursement for CHW activities was passed in several states
- CHWs are still not common practice



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CHW: Important reports

- Lewin S. et al. **Lay Health Workers in Primary and Community Health Care**. *Cochrane Library* 2009; Issue 3.
- **Community Health Workers National Workforce Study** (2007). US HHS HRSA <http://bhpr.hrsa.gov/healthworkforce/chw/>
- **Advancing Community Health Workers Practice and Utilization: The Focus on Financing** (2006). National Fund for Medical Education. UCSF Center for the Health Professions
- **Congressional Bills:**
 - Many bills in support of CHW activities have been introduced at the national and State levels from 1990's till now, but none have passed.
 - In 2009 two separate bills were presented to two different Congressional special committees



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CHWs and Asthma

- Studies have been published since the early '90s documenting the effectiveness of using CHWs to deliver asthma education to children and their caregivers
- No comprehensive review published to date
- Many programs that utilize CHWs do not contain a strong evaluation component and therefore lack good outcome measures and are not published



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CHWs and Asthma (cont.)

- A few studies documenting CHW effectiveness at reducing asthma morbidity and mortality
 - Butz AM, et al. **Use of Community Health Workers with inner-city children who have asthma.** *Clinical Pediatrics* 1994; 33: 135-141.
 - Stout JW, et al. **The Asthma Outreach Project: A promising approach to comprehensive asthma management.** *Journal of Asthma* 1998; 35: 119-127.
 - Morgan WJ, et al. **Results of a Home-Based Environmental Intervention among Urban Children with Asthma.** *New England Journal of Medicine* 2004; 351: 1068-80.
 - Krieger JW, et al. **The Seattle-King County Healthy Homes Project: A randomized, control trial of a community health workers intervenient to decrease exposure to indoor asthma triggers.** *American Journal of Public Health* 2005; 95: 652-659.
 - Martin MA, et al. **Reducing home triggers for asthma: the Latino community health worker approach.** *Journal of Asthma* 2006; 43:369-374.



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Sinai's Previous Pediatric Asthma Work

- Pediatric Asthma Intervention-I, 2000-2002
 - Compared three pediatric asthma interventions with increasing intensities of asthma education (w/ or w/o case management) for their impact on improving the health status of inner-city children with asthma and in achieving cost savings
 - Intervention took place in clinic setting and over the phone
 - Any intervention made a difference; more intense the intervention, larger the impact
 - **Publication: Karnick P, Margellos-Anast H, Seals G, et al. *Journal of Asthma* 2007; 44: 39-44.**



Sinai's Previous Pediatric Asthma Work (cont.)

- Pediatric Asthma Intervention-2, 11/04-8/06
 - African American children (2-16 yrs) with severe asthma living in Westside Chicago communities
 - Utilized Community Health Workers (CHW) from target communities
 - 3-4 home visits over a 6 month period
- Significant improvement in all outcomes assessed
 - 74% decrease in ED visits
 - 0.8 increase in caregiver quality of life score (clinically and statistically significant)

Controlling Pediatric Asthma Through Collaboration and Education (CPATCE)

Funded by the Illinois Department of Public Health

March 2006-December 2008



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CPATCE: Overview

- CPATCE is an initiative of the Illinois Department of Public Health (IDPH)
 - Goal: to improve asthma management among high risk children in IL and thereby reduce asthma-related healthcare expenditure, asthma morbidity and mortality



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CPATCE: Overview (Cont.)

- One component of the collaborative involves the expansion of the Sinai CHW model to six target areas throughout IL and the evaluation of its success
- Also, expanded initiative in Chicago to cover “Asthma Hotspots”
 - Including Spanish speaking participants



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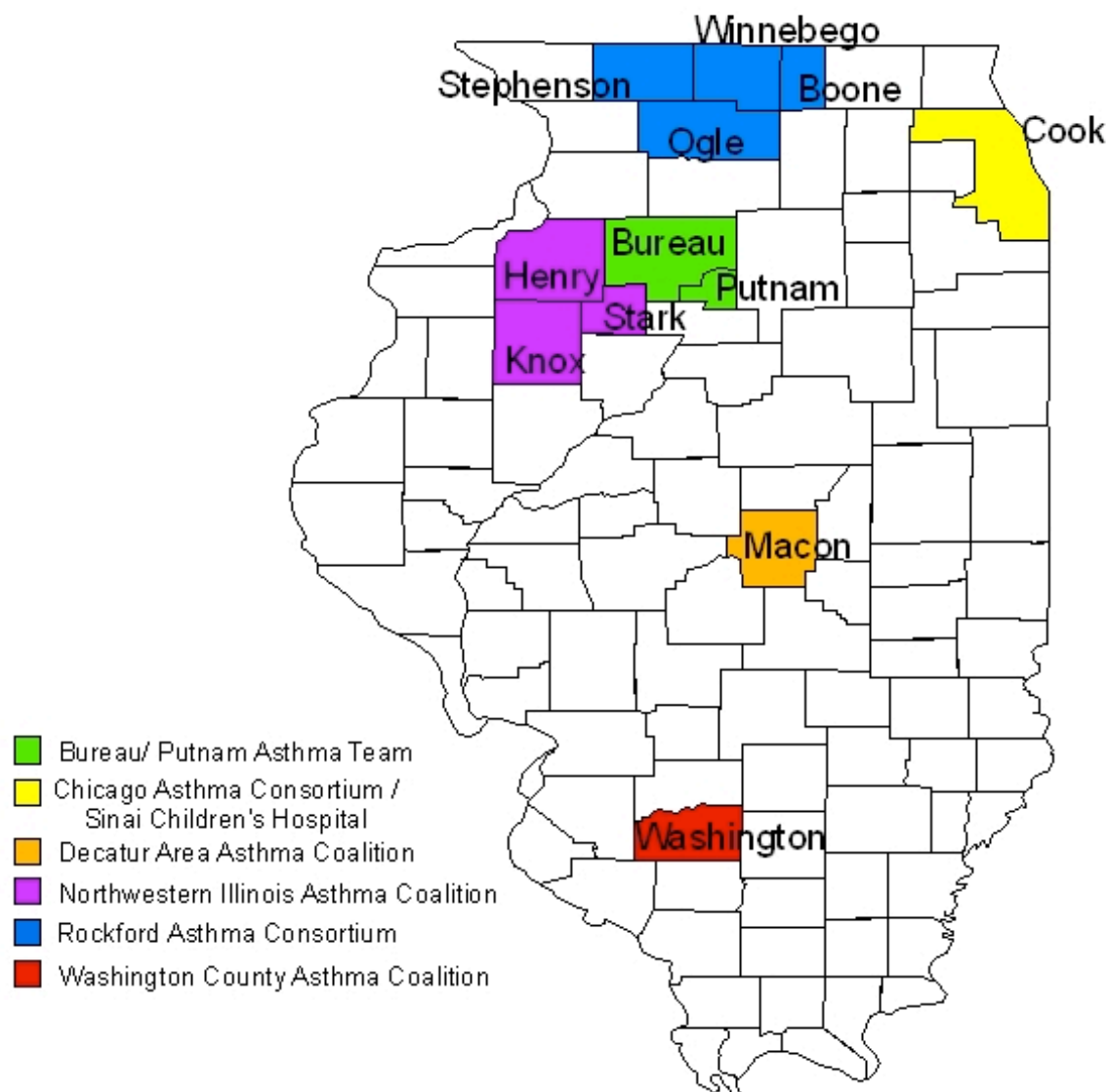
CPATCE: Target Areas

- Target areas chosen because experience a disproportionate asthma burden
 - i.e., asthma hospitalization rate in excess of state average (17.6 per 10,000)
- Each target site also has an established asthma coalition that IDPH has funded to hire and supervise LHEs



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CPATCE: Partner Consortia/ Target Areas





Sinai Asthma Education Training Institute

- Developed the Sinai Asthma Education Training Institute (SATI)
- Created a standardized training asthma curriculum
- Intervention process and evaluation procedures were standardized and a formal education guide was created
- Trained over 100 potential CHW and over 50 other healthcare staff in the state of IL



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CPATCE: Intervention

- Utilized Community Health Workers to deliver asthma education management
 - Community Health Workers (CHW)
 - Individuals from similar communities & backgrounds as participants
 - No prior health or asthma experience required
 - Received 40+ hours of asthma education
- Education was tailored to family's unique needs, and was provided in the family's home whenever possible
- CHWs met with families 3 times over 6 month period
- CHW serves as a liaison between the family and the medical system
- CHW also works to empower families to gain control of their lives and the health issues impeding them



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CPATCE: Eligibility

- Eligibility:
 - Children (2-16 yrs) w/ prior diagnosis of asthma
 - Symptoms for at least 1 year pre-enrollment
 - One of following eligibility criteria:
 - Hospitalized for asthma during the past 12 months
 - Visited ED for asthma twice during the past 12 months
 - Asthma symptoms indicative of at least moderate persistent asthma
 - Had not participated in another comprehensive asthma education program in past year



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CPATCE: Recruitment

- Participants recruited through:
 - Sinai's ED and inpatient units
 - Physician referrals
 - Participant self-referral (i.e. posters, flyers, health fairs)
 - Schools / Daycares
 - Community Organizations
 - Health Departments



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CPATCE: Recruitment #s

455 children were enrolled in the program

- Bureau/Putnam Asthma Team: 6 Participants Enrolled
- Chicago Asthma Consortium/ RHAMC: 98 Participants Enrolled
- Decatur Area Asthma Coalition: 84 Participants Enrolled
- Northwestern Illinois Asthma Coalition: 22 Participants Enrolled
- Rockford Asthma Consortium: 10 Participants Enrolled
- **SUHI/Sinai Children's Hospital: 234 Participants Enrolled**
- Washington County Asthma Coalition: 0 Participants Enrolled

CPATCE: Demographic Characteristics

- 234 participants enrolled at baseline
- Race/ Ethnicity:
 - 49% Non-Hispanic Black
 - 41% Hispanic
 - 10% Mixed race/ethnicity
- Gender: 59% male
- Insurance: 79% Medicaid
- Age: 7 years (mean)
- Primary caregiver: 92% Mother
- Primary care physician: 97%
- Cigarette smoke: 35% lived with a smoker



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CPATCE: Baseline Characteristics

- Asthma Symptom Frequency (2-weeks / Mean)
 - Daytime Symptoms: 3.7 days
 - Nighttime Symptoms: 3.6 days
 - Days needing rescue meds: 4.4
- Asthma-related health resource utilization (12 months prior to baseline visit/ Mean)
 - Emergency Department (ED): 2.5 times
 - Hospitalizations: 1.0 days
 - Urgent Clinic Visits: 2.5 days



CPATCE: Outcomes

Symptom Frequency in the Past 2 Weeks at Baseline vs. Average over Follow-up Year

	Sinai (N=141)**	
	Baseline	Follow-up year
Daytime Symptoms (mean)	4.0	1.5*
Nighttime Symptoms (mean)	3.2	1.5*
Days Needed Rescue Meds (mean)	3.9	1.1*
Symptom free days (mean)	8.6	11.5*

* Statistically significant difference from baseline ($p < 0.05$) per Wilcoxon signed rank sum test for non-parametric data

**Outliers have been excluded from analysis; N varies across variables



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CPATCE: Outcomes (cont.)

Asthma-Related Health Resource Utilization in the Year Prior to Baseline Visit vs. Follow-up Year

	Sinai (N=141)**	
	Baseline	Follow-up†
ED Visits (mean)	1.9	0.8*
Hospitalizations (mean)	0.7	0.4*
Hospital Days (mean)	2.3	0.8*
Clinic Visits – Urgent (mean)	2.5	1.0*
Clinic Visits – Regular (mean)	3.4	2.1*
Sum HRU€ (mean)	5.0	2.1*

†6-months of follow-up data was extrapolated out to estimate yearly total.

* Statistically significant difference from baseline ($p < 0.05$) per Wilcoxon signed rank sum test for non-parametric data

**Outliers have been excluded from analysis; N varies across

€ Sum of urgent health resource utilization variables (hospitalizations, ED visits and urgent clinic visits)



CPATCE: Outcomes (cont.)

- Statistically Significant Increases
 - Asthma Knowledge
 - Quality of Life (Clinical Increase Also) (Juniper, 1996)
 - Self-Efficacy (Bursch, 1999)
 - Medication Use
- Reduction in Asthma Triggers
 - Frequency in which children were exposed to second hand smoke (statistically significant)
 - Children living with a smoker (slight decrease)
 - Common household triggers



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CPATCE: Limitations

- Majority of data collected via self-report
 - Recall bias, Social Desirability bias, etc.
- Causality
 - No control group, no randomization
 - Is the improvement due to the Sinai CHW model?



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CPATCE: Key Observations

- CHWs are immensely effective in establishing relationships of trust with the families they serve
 - Consequently, in the best position to address the barriers families face in properly managing asthma
- Issues that impede on a family's ability to manage asthma are complex and often require varying areas of expertise
- CHW approach is associated with significant cost-savings
 - PAI-1: \$13.29 per dollar spent (Group 3)
 - PAI-2: \$5.58 per dollar spent



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CPATCE: Lessons Learned

- The intervention was a complete success at 3 of the 7 sites
 - Difficulties with the more rural sites
- CHW model has been implemented in a wide range of areas in the US and around the world
 - However, if the CHW model is new to a community it may take more time for people to accept CHW as 'medical professionals'
- Establishing relationships with the community is key to the success of a program.
 - Sufficient time should be spent on community outreach activities
 - CHW performing community outreach activities is helpful in establishing relationships
- Buy-in from community leaders is imperative to the success of a program



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CPATCE: Conclusions

- Individualized, one-on-one, asthma education provided by a trained, culturally competent, CHW in the home environment may prove an effective means of educating children with poorly controlled asthma and their families to better manage asthma



Next Steps: Healthy Home, Healthy Child

- CDC Translational Research Grant
- Employs the Seattle-King County Healthy Homes model as a foundation, incorporating it within the framework of Sinai's established CHW home visit asthma program
- Utilizes a collaborative approach drawing on the strengths of several partners and incorporating full and meaningful participation by the community
- Individualized education via Home Visits with substantially greater attention devoted to the identification and reduction/elimination of asthma triggers



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CHW: Successes

- **Improve Health**
 - Decrease asthma morbidity and mortality
 - Increase access to the healthcare system
- **Increase Quality of Life**
 - Empower families to take control of their own health
 - Assist families in obtaining assistance in other areas of their lives
- **Cost Effective**
 - Decrease health care costs
- **Peer Education**
 - breaks down barriers between healthcare system and patient
- **Community Outreach**
 - Employing community members
 - Community members working to help other community members



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CHW: Challenges

- Funding
 - Reimbursement: Medicaid, Private Insurances
 - Short term funding: grants, private foundations
 - Hospitals or FQHC
- Training
 - Health topic specific training
 - Computer skills / Office skills
- Supervision
- Acceptance of CHW as 'medical professionals'



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Acknowledgements

- **Sinai Team:** Jeanette Avila, DeShuna Dickens, Sheena Freeman, Ana Rosa Garcia, Melissa Gutierrez, Rhonda Lay, Helen Margellos-Anast, Pat Perkins, Gloria Seals, Dennis Vickers, Steve Whitman
- **Funders:** Michael Reese Health Trust, Crown Foundation, Illinois Department of Public Health, Centers for Disease Control and Prevention
- **Partners:** Bureau/Putnam Asthma Team, Chicago Asthma Consortium, Decatur Area Asthma Coalition, Health & Disability Advocates, Metropolitan Tenants Organization, Northwestern Illinois Asthma Coalition, Respiratory Health Association of Metropolitan Chicago, Rockford Asthma Consortium, Sinai Children's Hospital, Sinai Community Institute, Washington County Asthma Coalition
- **Participants and their families**



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Asthma in a child's life:

From *Ordinary Resurrections* by Jonathan Kozol:

“I think that asthma’s worse for children, though, because play is a part of childhood and children cannot play with real abandon when they feel so bad. Even mild asthma weighs their spirits down and makes it hard to smile easily, or to read a book with eagerness or to jump into a conversation with entire spontaneity.”



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Discussion

- What has been your experience working with CHWs? Any successes and/or challenges?
- Proper asthma management is difficult for many asthma patients. CHWs have been shown to be effective in reducing this asthma burden. Do you think CHWs could serve as a bridge between the medical community and individuals with asthma in your community? Why or why not?

Discussion (cont.)

- How can Community Health Workers be incorporated in medical practice, the clinic setting, health departments, asthma coalitions, etc.? What are some of the barriers you foresee to utilizing CHWs in these settings?
- How might we as a group concerned with lung health appeal to funding sources, Medicaid, insurance, health departments to fund programs that utilize CHWs?