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Center for
Health Care Strategies, Inc.

ROI Evidence Base:
Studies on Asthma

November 2007

This set of studies is part of the *ROI Evidence Base*, which was developed by the Center for Health Care Strategies and Mathematica Policy Research, Inc. to help policymakers identify intervention strategies with the potential to both improve quality and reduce health care costs. For the full *ROI Evidence Base*, visit **www.chcs.org**.

Made possible through funding from the Robert Wood Johnson Foundation.

Asthma Studies Reporting Decreases in Cost/Utilization - Summary Table

Clinical Focus	Author/Year	Target Population	Intervention Strategies	Evaluation Timeframe	Cost/Utilization Outcomes	Quality of Evidence
Asthma	Castro, 2003	Adults	Use of asthma nurse specialist in hospital to provide guideline-based recommendations to physicians, and self-management education, psychosocial support, and follow-up care to patients.	12 months	67% decrease in asthma-related hospital costs	A
Asthma	Harish, 2001	Children and families	Use of specialty clinic to provide intensive medical and environmental control, education, close monitoring and 24-hour availability	24 months	69% reduction in Year 1 ER visits; 60% reduction in Year 2 ER visits	A
Asthma	Kattan, 2006	Children and families	Use of patient feedback letters to providers combined with guideline-based recommendations for changes in therapy	12 months	24% reduction in ER visits	A
Asthma	Krieger, 2005	Children and families	Use of community health workers to provide home visits, generate action plans, deliver resources to reduce exposures, and advocate for improved housing conditions. Free skin-prick allergy testing at multiple clinic sites and special asthma fairs.	12 months	15% reduction in combined asthma-related urgent health services use (ED, hospital, or unscheduled clinic visit)	A
Asthma	Krishna, 2003	Children and families	Use of internet-enabled interactive multimedia asthma education program by participants in exam room and waiting rooms during clinic visits.	12 months	68% reduction in ER visits	A
Asthma	Teach, 2006	Children and families	Use of specialized, ER-based clinic following an ER visit for asthma. Clinic provided assessment and education in asthma self-management and environmental triggers, and linkages and referrals to ongoing care.	6 months	46% reduction in ER visits for asthma	A
Asthma	Walders, 2006	Children and families	Use of interdisciplinary care team including pediatric pulmonologist, asthma nurse and social worker to provide medical care, asthma education and problem-solving therapy.	12 months	32% reduction in combined outcome of ER visits and/or hospital admissions	A

Detail for Selected Study – Castro, 2003

Characteristic	Description
Author and Year of Publication	Castro 2003
Clinical Focus	Asthma
Target Population	Adults aged 18-65 years admitted to Barnes-Jewish Hospital with a primary diagnosis of asthma
Intervention Strategies	(1) suggestions by nurses to the primary physician regarding potential simplification or consolidation of current regimen in accordance with the National Asthma Education and Prevention Program II; (2) completion of a daily "Asthma Care" flow sheet while in the hospital; (3) provision of asthma education appropriate to the patient's education, motivation, and cultural beliefs; (4) provision of psychosocial support and screening patients for professional counseling; (5) establishment of an individualized asthma self-management plan; (6) consultation with social service professionals to facilitate discharge planning; and (7) the provision of outpatient follow-up through telephone contact, home visits, and follow-up appointments with the primary physician, as necessary.
Additional Targeting Criteria	Physician diagnosed asthma for at least 12 months, FEV1/FVC<80% and one or more hospitalizations in previous 12 months
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	Not stated
Geographic Location	St. Louis, MO, Barnes-Jewish Hospital
Type of Community	Urban
Health Care Setting	Academic medical center, primary care physician offices
Health Insurance	50% Medicaid, 13% Medicare, 24% private, 14% uninsured/self-pay
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	50 in intervention group, 46 in control group
Evaluation Timeframe	1 year
Cost/Utilization Outcomes	67% reduction in asthma-related hospital costs (T=1,458, C=4,413, p=0.01) 56% reduction in number of readmissions at one year (T=31, C=71, p=0.04) 66% reduction in hospital days at one year (T=82, C=244, p=0.04) Non significant difference in ER visits
Full Citation	Castro, Mario. Zimmermann, Nina A. Crocker, Sue. Bradley, Joseph. Leven, Charles. Schechtman, Kenneth B. "Asthma intervention program prevents readmissions in high healthcare users." *American Journal of Respiratory & Critical Care Medicine*. 168(9):1095-9, 2003 Nov 1.

Detail for Selected Study – Harish, 2001

Characteristic	Description
Author and Year of Publication	Harish 2001
Clinical Focus	Asthma
Target Population	Children ages 2-17 y.o. being treated for asthma in the inner-city pediatric emergency department of Bronx Lebanon Hospital
Intervention Strategies	Use of specialty clinic, staffed by pediatric allergist, 3 certified pediatric nurse practitioners and a social worker, to provide intensive medical and environmental control, education, close monitoring and 24-hour availability. Most patients also had home visit by nurse to review medication usage and inspect for environmental allergens.
Additional Targeting Criteria	None
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	100% (300/300 agreed to be randomized; 129 sustained participation through Year 1, 119 through Year 2)
Geographic Location	Bronx, NY
Type of Community	Urban
Health Care Setting	Specialty clinic
Health Insurance	Not stated
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	Year 1: 60 in treatment group, 69 in control group; Year 2: 53 in treatment group, 66 in control group
Evaluation Timeframe	24 months
Cost/Utilization Outcomes	69% reduction in Year 1 ER visits (monthly mean visits: T=0.101, C=0.326, p=0.01) 60% reduction in Year 2 ER visits (annual mean visits: T=0.396, C=1, p<0.03) No significant difference in hospitalizations
Full Citation	Harish, Z. Bregante, A C. Morgan, C. Fann, C S. Callaghan, C M. Witt, M A. Levinson, K A. Caspe, W B. "A comprehensive inner-city asthma program reduces hospital and emergency room utilization." *Annals of Allergy, Asthma, & Immunology*. 86(2):185-9, 2001 Feb.

Detail for Selected Study – Kattan, 2006

Characteristic	Description
Author and Year of Publication	Kattan 2006
Clinical Focus	Asthma
Target Population	Children ages 5-11 y.o. receiving care in hospital- and community-based clinics and private practices in 7 inner-city urban areas
Intervention Strategies	Care taker of each child received bimonthly phone call to collect clinical information; For 12 months, providers received bi-monthly computer-generated letters summarizing child's asthma symptoms, health service use, and medication use with a corresponding recommendation to step up or step down medications.
Additional Targeting Criteria	Residents of census tracts in which ≥20% of households had income <FPL (except Seattle which included all Medicaid eligible); ≥1 hospitalization or 2 unscheduled visits for asthma in prior 6 months and positive allergy skin test to ≥1 of 11 indoor allergens.
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	66% (937/1409 eligible were randomly assigned)
Geographic Location	Boston, MA; Bronx, NY; Chicago, IL; Dallas, TX; New York, NY; Seattle/Tacoma, WA; Tucson, AZ.
Type of Community	Urban
Health Care Setting	Hospital- and community-based clinics and private practices
Health Insurance	43% Medicaid, 33% Private, 21% Uninsured, 3% N/A
Quality of Evidence	Asthma
Study Design	Randomized controlled trial
Sample Size	466 in intervention group, 463 in control group
Evaluation Timeframe	12 months
Cost/Utilization Outcomes	24% reduction in ER visits (T=0.87, C=1.14, p=.013) No significant change in unscheduled clinic visits or hospitalizations
Full Citation	Kattan, Meyer. Crain, Ellen F. Steinbach, Suzanne. Visness, Cynthia M. Walter, Michelle. Stout, James W. Evans, Richard 3rd. Smartt, Ernestine. Gruchalla, Rebecca S. Morgan, Wayne J. O'Connor, George T. Mitchell, Herman E. "A randomized clinical trial of clinician feedback to improve quality of care for inner-city children with asthma." *Pediatrics*. 117(6):e1095-103, 2006 Jun.

Detail for Selected Study – Krieger, 2005

Characteristic	Description
Author and Year of Publication	Krieger 2005
Clinical Focus	Asthma
Target Population	Low-income household with a child aged 4-12 years with asthma
Intervention Strategies	Community health workers provided structured home environmental assessments and generated action plans; 4-8 additional revisits to encourage completion of action plan, provide education and social support, deliver resources to reduce exposures (e.g., allergy control pillow and mattress encasements, low-emission vacuums, commercial-quality door mats, referral to smoking cessation counseling, roach bait, rodent traps), offer assistance with roach and rodent eradication, and advocate for improved housing conditions. Free skin-prick allergy testing at multiple clinic sites and special asthma fairs. Participants were assined to either a high-intensity group receiving 7 visits and a full set of resources or a low-intensity group receiving a single visit and limited resources.
Additional Targeting Criteria	Child with a clinical diagnosis of asthma, asthma is persistent, household income<200% 1996 FPL or child enrolled in Medicaid, caregiver fluent in English, Spanish, or Vietnamese, child spends ≥ 50% of nights in house
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	61% (274/447) of those eligible agreed to be randomized
Geographic Location	Seattle (King County), WA
Type of Community	Urban
Health Care Setting	Home
Health Insurance	Not stated
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	110 in intervention group, 104 in control (low-intensity) group
Evaluation Timeframe	1 year
Cost/Utilization Outcomes	At one year, 49% reduction in combined asthma-related urgent health services use in preceding 2 months (ED, hospital, or unscheduled clinic visit; proportion with urgent health service use T=8.4%, C=16.4%, p=0.026)
Full Citation	Krieger, James W. Takaro, Tim K. Song, Lin. Weaver, Marcia. "The Seattle-King County Healthy Homes Project: a randomized, controlled trial of a community health worker intervention to decrease exposure to indoor asthma triggers." *American Journal of Public Health*. 95(4):652-9, 2005 Apr.

Detail for Selected Study – Krishna, 2003

Characteristic	Description
Author and Year of Publication	Krishna 2003
Clinical Focus	Asthma
Target Population	Children younger than 18 y.o. with asthma attending the Pediatric Pulmonary and Allergy Clinic of Univ of Missouri-Columbia Health Sciences Center
Intervention Strategies	Provision of the Interactive Multimedia Program for Asthma Control and Tracking (IMPACT) self-management education system during routine office visits. The computer was available in each exam room and in the waiting room. The software tracked participants' completion and mastery of 44 lessons.
Additional Targeting Criteria	None
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	not stated
Geographic Location	Columbia, MO
Type of Community	Unclear. Children referred from a 22 county area
Health Care Setting	Academic medical center
Health Insurance	not stated
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	107 in intervention group, 121 in control group
Evaluation Timeframe	12 months
Cost/Utilization Outcomes	68% reduction in mean number of emergency room visits at one year (T=0.62/yr versus C=1.93/yr, p<0.01)
Full Citation	Krishna, Santosh. Francisco, Benjamin D. Balas, E Andrew. Konig, Peter. Graff, Gavin R. Madsen, Richard W. "Internet-enabled interactive multimedia asthma education program: a randomized trial." Pediatrics, vol. 111, no. 3, March 2003, pp. 503-510

Detail for Selected Study – Teach, 2006

Characteristic	Description
Author and Year of Publication	Teach 2006
Clinical Focus	Asthma
Target Population	Children ages 12 months-17 years old
Intervention Strategies	Single follow-up visit to specialized asthma clinic located in the ER, 2-15 days after discharge from ER. Education on asthma self-monitoring and self-management, evaluation of potential home environmental triggers and recommendations for control. Report of clinic visit, digital photo of child, and copy of medical action plan mailed to PCP, insurance asthma case manager, and school nurse. Scheduling of a follow-up appt. with PCP in 4 weeks or, for children with severe, persistent asthma, referral to an asthma specialist.
Additional Targeting Criteria	ER visit with a primary diagnosis of asthma, prior physician-diagnosed asthma, one or more acute visits (ER or other) for asthma in previous 6 months or one or more hospitalizations for asthma in past 12 months
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	94% (490/521) of eligibles agreed to be randomized
Geographic Location	Washington, DC
Type of Community	Urban
Health Care Setting	Children's National Medical Center
Health Insurance	68% public insurance, 28% private, 4% uninsured
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	219 in intervention group, 218 in control group
Evaluation Timeframe	6 months
Cost/Utilization Outcomes	46% reduction in ER visits for asthma (T=0.64 mean visits/6 mos., C=1.19, $p<0.05$) 40% reduction in total acute visits for asthma other than to ER(T=0.68 mean visits/6 mos., C=1.13, $p<0.05$) Non-significant effects on acute visits to non-ER sites, hospital admissions, and scheduled visits with PCP
Full Citation	Teach, Stephen J. Crain, Ellen F. Quint, Deborah M. Hylan, Michelle L. Joseph, Jill G. "Improved asthma outcomes in a high-morbidity pediatric population: results of an emergency department-based randomized clinical trial." *Archives of Pediatrics & Adolescent Medicine.* 160(5):535-41, 2006 May.

Detail for Selected Study – Walders, 2006

Characteristic	Description
Author and Year of Publication	Walders 2006
Clinical Focus	Asthma
Target Population	Children ages 4-12 y.o. receiving care at University Hospitals of Cleveland
Intervention Strategies	All participants received written asthma management plans, peak flow meters, and spacer devices. The intervention group also received asthma education, an asthma risk profile assessment, brief problem-solving therapy, and access to a 24-hour nurse advice line. Intervention provided by an interdisciplinary team including an pediatric pulmonologist, asthma nurse and social worker.
Additional Targeting Criteria	Physician-diagnosis of asthma for at least 3 months, two or more ER visits for asthma in past year and/or one or more asthma hospitalizations in past year, and lack of an asthma treatment plan
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	Not stated
Geographic Location	Cleveland, OH
Type of Community	Urban
Health Care Setting	Academic medical center
Health Insurance	Not stated
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	89 in intervention group, 86 in control group
Evaluation Timeframe	12 months
Cost/Utilization Outcomes	32% reduction in combined outcome of ER visits and/or hospital admissions (Proportion with one or more ER visits and/or hospitalizations for asthma at 12 months T=28%, C=41%, p=0.05)
Full Citation	Walders, Natalie. Kercsmar, Carolyn. Schluchter, Mark. Redline, Susan. Kirchner, H Lester. Drotar, Dennis. "An interdisciplinary intervention for undertreated pediatric asthma." *Chest*. 129(2):292-9, 2006 Feb.

Asthma Studies Reporting No Changes or Increases in Cost/Utilization - Summary Table

Clinical Focus	Author/Year	Target Population	Intervention Strategies	Evaluation Timeframe	Cost/Utilization Outcomes	Quality of Evidence
Asthma	Butz, 2006	Children and families	Use of home-based asthma education and supervision delivered by community health nurses with pediatric asthma training and pediatric nurse asthma specialists.	12 months	No significant differences in ED visits or hospitalizations between groups	A
Asthma	Finkelstein, 2006	Children and families	Use of physician peer leader interventions or peer leaders in combination with the introduction of asthma education nurses to facilitate care improvement.	24 months	No statistically significant difference in ED visits or hospitalizations	A
Asthma	Gorelick, 2006	Children and families	Use of emergency department (ED)-based intensive primary care linkage and initiation of asthma case management.	16 months	No statistically significant differences among 3 treatment groups in number of ED visits	A
Asthma	Smith, 2004	Children and families	Use of telephone-coaching and monetary incentives targeting caregivers to enforce importance of seeking follow-up care from PCP post-ED visit.	6 months	No statistically significant difference in number of ED visits or hospitalizations	A
Asthma	Tierney, 2005	Adults	Provision of evidence-based care suggestions concerning drugs and monitoring to physicians (general internists and internal medicine residents) and outpatient pharmacists when writing orders or filling prescriptions on computer workstations.	36 months	No statistically significant difference in number of ED visits or hospitalizations	A

Detail for Selected Study - Butz, 2006

Characteristic	Description
Author and Year of Publication	Butz 2006
Clinical Focus	Asthma
Target Population	Children ages 2-9 y.o. receiving primary care, pulmonary/allergy, and ED services from the University of Maryland Medical System and The Johns Hopkins Hospital, Baltimore.
Intervention Strategies	Parents or caregiver of children received 6 home education visits of 1-hour sessions delivered by one of three community health nurses with pediatric asthma training who were supervised monthly by a pediatric nurse asthma specialist (A.M.B.).
Additional Targeting Criteria	Daytime asthma symptom frequency ≥2 times a week within past 30 days; Nighttime asthma symptom frequency ≥2 times a month for the past 30 days; Use of nebulizer within past 30 days; resident of Baltimore; ≥1 ED visits or hospitalization for asthma within past 12 months.
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	87.0% (221/254 eligible were randomly assigned)
Geographic Location	Baltimore, MD
Type of Community	Urban
Health Care Setting	Pediatric practices within the University of Maryland Medical System and The Johns Hopkins Hospital, Baltimore.
Health Insurance	79.6% Medicaid
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	95 in intervention group, 86 in control group
Evaluation Timeframe	12 months
Cost/Utilization Outcomes	No statistically significant difference in the number of hospitalizations (T = 4; C = 11; RR = 3.03, 95% CI [1.00 - 9.18]); No statistically significant difference in the number of ED visits in the past 6 months (T = 27; C = 40; RR = 1.60, CI [1.08 - 2.37]); No significant differences in home nebulizer practice, asthma morbidity, ED visits, or hospitalizations between groups (*P* range, 0.11 - 0.79).
Full Citation	Butz , A M. M G. Tsoukleris, M. Donithan, V D. Hsu, I. Zuckerman, K E. Mudd, R E. Thompson, C. Rand, and M E. Bollinger. "Effectiveness of nebulizer use-targeted asthma education on underserved children with asthma." *Archives of Pediatrics & Adolescent Medicine,* vol. 160, no. 6, 2006, pp. 622-8.

Detail for Selected Study - Finkelstein, 2006

Characteristic	Description
Author and Year of Publication	Finkelstein 2006
Clinical Focus	Asthma
Target Population	Children 5-17 y.o. with asthma in 40 primary care practices, affiliated with managed health care plans enrolled in the Pediatric Asthma Care Patient Outcomes Research Team (PORT) randomized trial.
Intervention Strategies	Use of physician peer leader interventions (PLE) or peer leaders in combination with the introduction of asthma education nurses (PCI) to facilitate care improvement and to assess the practice levels of physicians within practice groups affiliated with three health care systems.
Additional Targeting Criteria	Continuous health plan enrollment and assignment to a study practice for the 12 month period; claims-based evidence of at least one ER, hospital, or ambulatory encounter for asthma.
Opt-in/opt-out, if available	Opt-out
Enrollment rate, if available	72% (5169/7283 eligible were randomly assigned)
Geographic Location	Washington State, Chicago, IL, and eastern Massachusetts
Type of Community	Urban
Health Care Setting	Washington State - clinics of single-insurer-group model; Chicago - staff model managed care organizations or network divisions of a mixed model health plan; eastern Massachusetts - independent group practices affiliated with health plans.
Health Insurance	Not stated
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	Randomization at practice level
Evaluation Timeframe	24 months
Cost/Utilization Outcomes	No statistically significant differences between intervention and control groups in the proportion of patients dispensed a single controller or dispensed these medicines chronically (PLE = 0.09[CI, 0.01, 0.17]; PCI = 0.04[CI, -0.02, 0.10]; C = 0.04[CI, -0.04, 0.12]); Statistically significant increase in ambulatory care (8-10% increase beyond control group) in first year; No statistically significant differences in ambulatory care in second year (PLE = 0.06[-0.02,0.14]; PCI = 0.08[-0.01,0.18]); No statistically significant difference in ED visits or hospitalizations (PLE = 0[-0.06,0.06]; PCI = 0.03[-0.003, 0.06]).
Full Citation	Finkelstein, J A. P. Lozano, A L. Fuhlbrigge, V J. Carey, T S. Inui, S B. Soumerai, S D. Sullivan, E H. Wagner, S T. Weiss, K B. Weiss, and Pediatric Asthma Care Patient Outcomes Research Team. "Practice-level effects of interventions to improve asthma care in primary care settings: the Pediatric Asthma Care Patient Outcomes Research Team." *Health Serv Res*, vol. 40, no. 6 Pt 1, 2005, pp. 1737-57.

Detail for Selected Study - Gorelick, 2006

Characteristic	Description
Author and Year of Publication	Gorelick 2006
Clinical Focus	Asthma
Target Population	Children ages 2-17 y.o. treated in a pediatric ED for acute asthma.
Intervention Strategies	Intervention groups received asthma education, discharge planning, primary care linkage, a copy of the ED chart, and either a letter with recommendations for an asthma care plan (Group 1) or enrollment in a case management program (6 home visits and several telephone calls from case manager) (Group 2).
Additional Targeting Criteria	Wheezing or respiratory distress that was treated with ≥1 inhaled bronchodilator treatment; physician diagnosis of asthma; prior history of wheezing treated with β_2 agonists; residence in Milwaukee County, Wisconsin; primary caregiver is English-speaking.
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	57% agreed to participate
Geographic Location	Milwaukee, WI
Type of Community	Urban
Health Care Setting	Children's Hospital of Wisconsin
Health Insurance	60.4% Medicaid (166/275 completed follow-up on Medicaid)
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	95 in intervention group 1, 81 in intervention group 2, 99 in control group
Evaluation Timeframe	16 months
Cost/Utilization Outcomes	No statistically significant differences among 3 treatment groups in number of ED visits (Group 1: 17.9; Group 2: 35.8; C: 19.2; P = 0.94).
Full Citation	Gorelick, M H. J R. Meurer, C M. Walsh-Kelly, D C. Brousseau, L. Grabowski, J. Cohn, E M. Kuhn, and K J. Kelly. "Emergency department allies: a controlled trial of two emergency department-based follow-up interventions to improve asthma outcomes in children." *Pediatrics*, vol. 117, no. 4 Pt 2, 2006, pp. S127-34.

Detail for Selected Study - Smith, 2004

Characteristic	Description
Author and Year of Publication	Smith 2004
Clinical Focus	Asthma
Target Population	Children 2-12 y.o. who were treated for asthma in the ED and had Medicaid or no insurance.
Intervention Strategies	A coach who has a Masters in social work provided telephone coaching to child's caregiver on day two and day five after the index visit. Coaching regarded importance of seeking follow-up care with child's PCP and strategies for overcoming barriers to follow-up care. Caregiver was also notified of a monetary incentive prior to group randomization; incentive was distributed based on parental report of a follow-up visit. All children were also instructed to follow-up with PCP within the following 72 hours after the index visit.
Additional Targeting Criteria	Child was considered to have asthma if the parent stated a physician had made the diagnosis.
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	97% (527/543 eligible were enrolled)
Geographic Location	St. Louis, MO
Type of Community	Urban
Health Care Setting	St. Louis Children's Hospital
Health Insurance	93.4% Medicaid (492/527 enrolled were on Medicaid)
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	148 in intervention group completed 6 month call, 154 in control group completed 6 month call
Evaluation Timeframe	6 months
Cost/Utilization Outcomes	35.7% of intervention group attended asthma-planning visit with PCP as opposed to 18.9% of control group within 15-days of index ED visit (*P*<.0001); No statistically significant difference in the number of asthma-emergent visits (T = 4.1%; C = 5.3%); No statistically significant difference in the number of ED visits within 15 days of index ED visits (T = 3.0%; C = 2.7%); No statistically significant difference in the number of hospital admissions within 15 days of index ED visits (T = 0.8%; C = 0.4%).
Full Citation	Smith, S R. D M. Jaffe, E B. Fisher Jr, K M. Trinkaus, G. Highstein, and R C. Strunk.. "Improving follow-up for children with asthma after an acute Emergency Department visit." *J Pediatr*, vol. 145, no. 6, 2004, pp. 772-7.

Detail for Selected Study - Tierney, 2005

Characteristic	Description
Author and Year of Publication	Tierney 2005
Clinical Focus	Asthma
Target Population	Primary care patients 18+ y.o. with asthma or chronic obstructive pulmonary disease.
Intervention Strategies	Evidence-based care suggestions concerning drugs and monitoring were delivered to physicians (general internists and internal medicine residents) and outpatient pharmacists when writing orders or filling prescriptions using computer workstations. 2 x 2 factorial randomization resulted in 4 groups of patients: physician intervention (P), pharmacist intervention (PH), both interventions (B), and controls (C).
Additional Targeting Criteria	Patient visited the study practices in the past year, and had either 1) the diagnosis of asthma or COPD recorded during any inpatient, emergency, or outpatient visit; 2) emphysema recorded as a reading on any prior chest radiography or CT scan; or 3) two or more prescriptions for inhaled β-agonists, corticosteroids, ipratropium, or cromolyn, or oral β-agonists or theophylline.
Opt-in/opt-out, if available	Opt-in
Enrollment rate, if available	82% (706/865) of eligibles agreed to be randomized
Geographic Location	Indianapolis, IN
Type of Community	Inner-City
Health Care Setting	Indiana University Medical Group-Primary Care
Health Insurance	Not stated
Quality of Evidence	A
Study Design	Randomized controlled trial
Sample Size	194 in P group. 161 in PH group. 182 in B group. 162 in C group were included in utiliazation analyses.
Evaluation Timeframe	36 months
Cost/Utilization Outcomes	No statistically significant differences in number of all-cause emergency department visits (P = 1.4 ± 1.7; PH = 1.5 ± 2.3; B = 1.4 ± 2.1; C = 1.4 ± 1.9); No statistically significant difference in number of reactive airways disease emergency department visits (P = 0.3 ± 0.7; PH = 0.4 ± 0.8; B = 0.4 ± 0.8; C = 0.3 ± 0.8); No statistically significant difference in number of all-cause hospitalizations (P = 0.5 ± 1.6; PH = 0.5 ± 1.1; B = 0.4 ± 1.1; C = 0.4 ± 0.8); No statistical significance in number of reactive airways disease hospitalizations (P = 0.1 ± 0.5; PH = 0.1 ± 0.5; B = 0.1 ± 0.5; C = 0.1 ± 0.3); No statistically significant difference in total health care charges (P = $8,006 ± 18,720; PH = $5,333 ± 9,400; B = $5,652 ± 10,579; C = $5,800 ± 8,536).
Full Citation	Tierney, W M. J M. Overhage, M D. Murray, L E. Harris, X H. Zhou, G J. Eckert, F E. Smith, N. Nienaber, C J. McDonald, and F D. Wolinsky. "Can computer-generated evidence-based care suggestions enhance evidence-based management of asthma and chronic obstructive pulmonary disease? A randomized, controlled trial." *Health Serv Res*, vol. 40, no. 2, 2005, pp. 477-97.