**Evidence Table 7. Patient/Provider Education: Methods for Improving Clinician Behaviors—Implementing Guidelines**

Abbreviations used in table:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ED</td>
<td>emergency department</td>
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<tr>
<td>GP</td>
<td>general practitioner</td>
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<tr>
<td>OR</td>
<td>odds ratio</td>
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<td>PBL</td>
<td>problem-based learning</td>
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<tr>
<td>RR</td>
<td>relative risk</td>
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<tr>
<td>95% CI</td>
<td>95% confidence interval</td>
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* indicates primary outcome
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<tr>
<th>Citation (Sponsor)</th>
<th>Study Design</th>
<th>Purpose/Objective</th>
<th>Study N (Number Evaluable)</th>
<th>Population Characteristics</th>
<th>Asthma Severity at Baseline (if Reported)</th>
<th>Treatment</th>
<th>Assessment/Off-Treatment Followup</th>
<th>Lung Function</th>
<th>Resource Use</th>
<th>Morbidity</th>
<th>Knowledge/Quality of Life/ Self-Care Behavior</th>
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<tr>
<td>Evans et al.</td>
<td>Quasi-experimental design (2 panels of 11 clinics each created to maximize balance of ethnicity, total clinic population, and caseload of asthma patients randomly assigned to treatment or control; analysis at the clinic level)</td>
<td>To assess whether training based on National Asthma Education and Prevention Program guidelines and delivered to professional and support staff in clinics would increase the number of children diagnosed with asthma and receiving continuing care and would improve quality of care by increasing staff use of new pharmacologic and educational treatment methods</td>
<td>22 (22)</td>
<td>Staff</td>
<td>Intervention group (E): 22 clinics had collective staff of 37 pediatricians, 42 public health nurses, 42 public health assistants, 13 laboratory technicians, and 16 clerical workers</td>
<td>Intervention was based on planned organizational change theory and learner-centered teaching to help staff link the goals of continuing care for asthma to the preventive care mission, to help staff resolve organization problems that blocked acceptance of the new approach to asthma care, and to guide teamwork and a sense of owning the program. (n=11 clinics)</td>
<td>Control group (C): No intervention (n=11 clinics)</td>
<td>A series of five 3-hour sessions over a 5-month period for all clinical staff was followed by two additional 3-hour sessions at the end of the first followup year to reinforce communication skills. 1-year and 2-year followup data from computer database of patient visits and treatment; data from followup interviews with children’s caregivers</td>
<td>Resource Use</td>
<td>Morbidity</td>
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2

Results at 2 years
A greater rate of new asthma patients in E group than C group (40/1000 vs. 16/1000, \( p < 0.01 \))
 percent of returning patients was greater for E group than C group (16% to 42% for E vs. 14% to 12% for C).
Total visits for asthma increased for E group (from 1.41 to 2.42) vs. no change for C group (1.30 to 1.24) at year 2 (\( p < 0.001 \)).
In E group vs. C group, a higher proportion of patients were given inhaled therapy (25% vs. 2%, \( p < 0.001 \)), spacer devices (26% vs. 1%, \( p < 0.001 \)), and beta-agonist (74% vs. 52%, \( p < 0.05 \)).
Caregivers from E group vs. C group reported receiving higher levels of patient education from physicians (71% vs. 56%, \( p < 0.01 \)) and nurses (61% vs. 44%, \( p < 0.05 \)).
Cluster randomized controlled trial (physicians randomly assigned; analysis adjusted for clustering effect)

To evaluate the long-term impact of an interactive seminar for physicians based on principles of self-regulation on clinician behavior, children’s use of healthcare services for asthma, and parents’ views of physician performance

74 pediatricians; 637 patients enrolled (67 pediatricians; 369 patients)

Physician Sample
- Age: 30–39 yr, 22%; 40–49 yr, 37%; 50–59 yr, 27%; >60 yr, 14%
- Gender: 60% male, 40% female
- Practice: 57% solo, 37% group, 6% multispecialty

Patient Sample
- Age: <2 yr, 7%; 2–7 yr, 59%; 8–12 yr, 34%
- Gender: 70% male, 30% female
- Ethnicity: 15% Latino/Hispanic, 15% African American, 70% White

Parent Sample
- Age: 30–39 yr of age; 75% married; 90% high school education or above; 20% of families <$20,000 income, 76% ≥$15,000 income; 17% receiving government assistance for healthcare

Asthma diagnosis made by physician
No other chronic disorders with pulmonary complications
At least one emergency medical visit for asthma in previous year

Intervention group (E)
- Interactive seminar based on the theory of self-regulation that included (1) optimal clinical practice based on the National Asthma Education and Prevention Program guidelines and (2) patient teaching and communication.

Control group (C)
- No interactive seminar

At 2 yr postintervention, children in E group vs. C group had fewer hospitalizations (p=0.03), and those with higher levels of ED use at baseline had fewer subsequent ED visits (p=0.03).

No difference occurred between E and C groups in amount of time spent with patients (25.9 vs. 29.0 minutes) or proportion for whom physician prescribed anti-inflammatory medicine (87.5% vs. 77.3%).

Parents in E vs. C group were more likely to report their physician paid close attention to the family (p=0.03), commended parents for taking right management actions (p=0.02), created exchange of information (p=0.03), inquired about patients’ specific fears and concerns regarding new medicines (p=0.02), explained short-term therapeutic plan (p=0.03), and made it easy for the family to follow medication instructions (p <0.01).
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<td>Lagerlof et al.</td>
<td>Randomized controlled trial (block randomization of 199 general practitioners (GPs) in 32 blocks of 4–8 GPs; multilevel modeling to adjust for block effect)</td>
<td>To examine the effect on the quality of prescribing by a combined intervention of providing individual feedback and deriving quality criteria using guidelines recommendations in peer review groups</td>
<td>199 general practitioners (GPs)</td>
<td>Age Mean = 44.1 yr Gender 77.4% male, 22.6% female Other Mean number of GPs working together, 2–4 Board certified as specialists, 66.8%</td>
<td>Intervention group (E)</td>
<td>Two evening meetings about 1 week apart; duration, on average, 2 hours and 45 minutes. Questionnaires regarding patient monitoring, prescribing, and education were mailed to GPs 6 months after the intervention.</td>
<td>GPs in the E group increased the proportion of acceptably treated asthma patients by 5.9% relative to GPs in the C group (p&lt;0.018) and by 21% relative to the pretreatment value in the E group. Among GPs in the E group, 73% indicated they would change, 23% said they probably would change, and 4% said they would not change their treatment of asthma as a result of the intervention.</td>
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<tr>
<td>Baker et al.</td>
<td>Cluster controlled trial with complete block design (practices randomly assigned; analysis adjusted for clustering effect)</td>
<td>To determine (1) whether recommendations, in the form of systematically developed prioritized audit criteria, are more effective in stimulating improvements in the performance of primary health care teams than recommendations in the format of standard guidelines, and (2) whether the addition of feedback to criteria increases effectiveness. (Guidelines were developed by the North of England Guidelines Development Project.)</td>
<td>81 practices; 1,482 patients before intervention; 2nd sample of 1,567 patients after intervention Note: Only results related to asthma patients are included here.</td>
<td>Practice Sample Mean number of fulltime general practitioners = 2.6; mean number of parttime general practitioners = 0.5; teaching practices, 22.2%; asthma clinics, 82.7% Patient Sample Age Mean = 46.2 yr at 1st data collection; Mean = 47.8 yr at 2nd data collection Gender 44% male, 56% female at 1st data collection; 46% male, 54% female at 2nd data collection</td>
<td>Patients diagnosed with asthma Evidence-based guidelines alone (G) Guidelines containing 51 recommendations were graded A to C according to recommendation strength. (n=27 practices; n=483 patients preintervention and n=517 patients postintervention) Guidelines in review criteria format alone (CF) Ten review criteria were based on guidelines that included specific clinical guidance. (n=27 practices; n=151 patients preintervention and n=524 postintervention) Review criteria supplemented with feedback (CF+F) Review criteria with feedback on performance were based on results of 1st data collection. (n=27 practices; n=489 patients preintervention and n=528 patients postintervention)</td>
<td>First data collection was before administration of interventions; postintention data collection was after approximately 12 months. Level of adherence to 19 recommendations before and after interventions was similar for all interventions except for the following: proportion of patients for whom daily doses of beta-agonist had been increased rose from 25.4% to 27.8% in C group and from 13.5% to 15.7% in CF+F group, with no change in CF group (13.5% to 15.7%); the proportion treated with the cheapest inhaled steroid rose from 35.0% to 46.2% in CF+F group and from 43.0% to 58.9% in CF+F group, with a no change in G group (44.5% to 44.6%).</td>
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Cluster randomized controlled trial

To examine the effects of a physician-education program on a high-risk group (i.e., low-income patients) to see whether they benefited equally

74 pediatricians; 472 (36) (data reported here are from 36 children from low-income families)

(Total sample; characteristics not reported separately for low-income children)

Persistent asthma, 98%
Moderate/severe disease, 88%

Treatment

Intervention group (E)
An interactive seminar was based on the theory of self-regulation that included (1) optimal clinical practice based on the National Asthma Education and Prevention Program guidelines and (2) teaching of and communication with patients.

Control group (C)
No interactive seminar

Asthma Severity at Baseline (if Reported)

72% male, 28% female

Asthma Severity (Based on the National Asthma Education and Prevention Program and the theory of self-regulation)

Cases were delivered in two sessions of 2–3 hours each over a period of 3 weeks.

A random sample of patients was evaluated at 12 and 24 months after the initial visit that occurred within 22 months after the intervention.

Intervention group (E) vs. Control group (C)

Asthma severity and control improved in the intervention group compared to the control group.


Randomized controlled trial

To investigate the utility and efficacy of the problem-based learning (PBL) approach versus a more traditional lecture in the area of asthma management on knowledge gain, retention over time, attitude rates, and affective responses, while controlling for common confounders

52 (52)

Family physicians in community practice with no academic affiliation

Problem-based learning (PBL)
Case scenario presented by a physician who facilitated a small group discussion completed in a seminar fashion

Sessions lasted approximately 85 minutes.

Traditional didactic sessions (C)
Traditional medical grand round, with the presentation of a case scenario followed by a didactic lecture delivered in lecture theater format

Performance, attitude, and skill scores improved across time at 2nd administration and were maintained at the 3rd testing, with no differences between groups.

Confidence and knowledge scores for both groups increased at the 2nd administration and decreased at the 3rd administration, with no differences between groups.