Investigators from Brown University and the University of California, Berkeley sought to determine the financial return on investment (ROI) of the Parents of Asthmatics Quit Smoking (PAQS) program. PAQS is a program for caregivers who are smokers and have a child with asthma. As part of the program, nurses provide asthma education and smoking cessation counseling in 3 home visits. Investigators calculated the ROI by analyzing claims data 12 months pre-enrollment and post-completion of the intervention in a subsample of PAQS participants who were on a Medicaid managed care plan. Total billable costs (TBC) were determined by summing the costs of short-acting β-agonists, controller medications, emergency department (ED) visits, hospitalizations, and outpatient visits for asthma. The cost of delivering the PAQS intervention was calculated by summing direct expenditures, start-up costs, and elements of overhead. The primary outcome was ROI, calculated as ([TBC pre-PAQS – TBC post-PAQS] – Intervention Costs) / Intervention Costs, for the total sample and for 3 subgroups (children <6 years old, children 6-18 years old, and children with moderate to severe persistent asthma).

The analysis included 224 PAQS participant children. The cost of the PAQS intervention in this sample was $34,481. Postintervention, there was a significant increase in mean annual fills for β-agonist and controller medications and a corresponding increase in medication costs per participant. However, there was also a significant decrease in health care utilization including emergency room visits, hospitalizations, and outpatient visits postintervention. The ROI for the total sample was –21.8%. However, for children <6 years old it was 106.9%, and for children with moderate to severe persistent asthma, it was 6.9%. The ROI was –150.3% for children 6 to 18 years old.

The authors conclude that while the overall ROI of PAQS was negative, PAQS yielded a highly positive ROI for children <6 years old.

Commentary by
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Adverse effects of tobacco smoke exposure on children's health have been well documented. There has been a steady increase in the number of studies showing an association of environmental tobacco smoke (ETS) exposure and asthma. As a result, the Expert Panel Report-3 (EPR-3) 2007 Asthma Guidelines, citing this supporting evidence, published a longer statement regarding education on smoking cessation compared to EPR-2 (1997, revised in 2002). EPR-3 recommends assessing ETS exposure in the household and referring parents and caretakers who smoke to smoking cessation programs.

A study prior to PAQS showed that reduced ETS exposure to asthmatic children in an urban setting was associated with a decrease in asthma-related exacerbations. Consequently, there has been substantial effort to develop effective asthma education and smoking cessation programs. A home-based educational program model is costly compared to the standard education given at patient encounters, yet these programs offer the benefit of reaching out to caregivers who may have limited access for follow-up. A recent Cochrane review, however, concluded that home-based educational programs are not more effective than standard educational programs given at medical visits. Furthermore, another Cochrane review concluded that there is inconclusive evidence that smoking cessation programs for caregivers are effective.

This study lends support to a combined smoking cessation and asthma program in a home-based setting, especially for children under 6 years old. Younger patients utilize more health care, so stand to benefit more. It is also possible parents of young children are more motivated. A recent study found caregivers of younger children seemed to be more receptive to an asthma education program and more likely to complete the intervention. Perhaps early intervention with parents of young children should be our focus: it is cost-beneficial and can help curtail the detrimental effects of ETS exposure on asthma severity long-term.

Editors' Note
The ROI analysis in this study is an elegant way to assess a program such as PAQS; we need more studies like this. However, the positive results (limited as they are) seem more related to asthma management education than counseling on smoking cessation.

References

Key words: asthma education, smoking cessation, return on investment

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