

Reducing Environmental Triggers of Asthma Home Intervention Project

Background

Asthma is a common chronic disease in the United States affecting more than 20 million Americans including an estimated 6.3 million children under the age of 18. Environmental exposures to allergens and irritants may cause or exacerbate asthma, and controlling these exposures is an important component in managing asthma.

The Minnesota Department of Health Asthma Program partnered with Pediatric Home Service to conduct a demonstration project, Reducing Environmental Triggers of Asthma (RETA), in homes of children with asthma. RETA addressed environmental factors in the home using inexpensive, uncomplicated interventions. The most common interventions were HEPA air cleaners, pillow and mattress dust encasements, and HEPA vacuum cleaners.

Sixty-four families received both family-specific education and appropriate materials to minimize or eliminate exposures to environmental allergens and irritant triggers of asthma. During the initial home visit, information was collected regarding the number of emergency department visits, hospitalizations, missed school days, and unscheduled clinic visits that occurred in the previous 3 months. Quality of life improvement was measured by responses to questions completed by the child's parent or guardian regarding how the child's life was affected by asthma during the past 4 weeks.

Key Findings from RETA

Baseline Information (Pre Intervention)

- At baseline more than three-fourths of the children referred to RETA were children with moderate persistent or severe asthma.

- Use of health care services, such as hospitalizations and emergency department visits for children with these severity levels of asthma was substantial. On average there was 1 hospital visit, 1 emergency department visit, 2 unscheduled office visits and 1 use of oral prednisone during the 3-months before the RETA intervention.
- Children with these severity levels of asthma miss a significant amount of school. During a 3 month period of time, the average number of days missed is the equivalent of 1 week. Several children missed a considerably greater amount of school—in 3 cases the equivalent of more than 4 weeks during a 3 month period.
- The most commonly identified asthma trigger was viral infections (98%) followed by weather (80%), exercise (69%), secondhand smoke (67%) and allergies (66%).
- The most common environmental concern was secondhand smoke. Nearly half of the children (48%) were regularly exposed to secondhand smoke.

Post Intervention Results

- The average cost of products provided to families of children with asthma was \$204 with a range of \$48 to \$470. Added to this is the average cost of the initial home assessment of \$132 and a product delivery visit in the amount of \$132, for an average initial project visit cost of \$468.



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RETA Home Intervention Project – page 2

- Several outcomes demonstrated statistically significant changes over time. At the 12-month follow-up visit there were on average reported declines in unscheduled office visits (approximately 2 office visits) and use of oral prednisone (approximately 1 therapy regimen). Hospital visits also declined by approximately 1 visit, although this difference was not statistically significant.
- The number of school days missed significantly declined from 7 days to less than 1 day on average 12 months later.
- There were improvements in daytime symptom and functional limitation scores. The post intervention scores were dramatically closer to values generally viewed as moderate to no symptom impact on quality of life.
- PHS developed colorful “tip cards” for low literacy families. The tip cards include information on asthma medications, steps to take when asthma symptoms occur and triggers of asthma.
- PHS purchased plastic boxes with covers to store the children’s asthma medications and materials.

Cost Savings of RETA

Observations and actions by Pediatric Home Service (PHS) staff

- The product interventions were still in homes after 12 months.
- The products were still being used.
- The products “moved” if the family relocated to a different residence.
- The focus was on the child’s bedroom to provide at least one location where asthma triggers are minimized.
- Home visits helped the families “work the system” by empowering people to tell their landlord about problems.
- Several children were on the wrong asthma medication.
- Asthma Action Plans are a powerful tool but often were not prominently displayed in the home.
- PHS developed a refrigerator magnet for staff to write child-specific information on asthma management.
- The average cost of the initial visit and product interventions was \$468.
- Unscheduled office visits (urgent care) costs per asthma visit in Minnesota is \$84* (average).
- Hospitalization costs per pediatric asthma visit in the Twin Cities metropolitan area is \$2,260** (average).
- At the 12-month follow-up visit there were on average reported declines in hospital visits (approximately 1 visit), and unscheduled office visits (approximately 2 office visits).
- Assuming the costs of health service utilization are \$2,428 (1 hospital visit and 2 unscheduled office visits) and the average cost of an intervention was \$468, the costs saved by implementing the RETA interventions are estimated to be approximately \$1,960 per child.

* Urgent care claims data from the Minnesota Council of Health Plans for the year 2006.

**Using hospital discharge data from the Minnesota Hospital Association for the year 2004, the MDH Asthma Program calculated the average cost of pediatric asthma visits in the Twin Cities metropolitan area.

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