ONLINE EXCLUSIVE

Does reducing smoking in the home protect children from the effects of second-hand smoke?

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Evidence-based answer

Yes, taking this step helps asthmatic children, and may even help nonasthmatic children. In families of asthmatic children, education to reduce exposure to second-hand smoke leads to fewer medical visits (strength of recommendation [SOR]: **B**, a single randomized, controlled trial).

The effects of educating families of nonasthmatic children about second-hand smoke are not known, but parents who smoke outside expose their children to much less nicotine than parents who smoke in the house (SOR: **B**, cohort studies and cross-sectional surveys).

Evidence summary

Parent education reduces clinic visits for asthmatic children

A 2001 trial randomized 81 families with a smoking parent and an asthmatic child between 3 and 12 years of age to 3 sessions of behavioral and educational counseling or usual care at an outpatient asthma clinic.[1] Parental education included information on second-hand smoke, basic asthma education, and feedback about urine cotinine levels (a marker of nicotine absorption). Behavioral counseling focused on reducing second-hand smoke exposure by caregivers.

The education group had a significantly reduced risk of 2 or more asthma-related clinic visits in the following 12 months compared with usual care (odds ratio=0.32; *P*=.03; number needed to treat=5). No significant decrease was noted in mean urine cotinine levels between groups (adjusted mean difference=–0.38 ng/mg favoring education; *P*=.26).

A similar trial that measured changes in urine cotinine randomized 91 families with a smoking parent and an asthmatic child into 3 groups:[2]

- A control group received usual care (regular office visits at an asthma clinic and medication management)
- A monitoring group used a parental smoking diary and a children's asthma symptom diary
- A counseling group received 5 counseling sessions and also kept diaries. An environmental monitor in the home was used to assess exposure to second-hand smoke.

In the counseling group, 21.4% of patients (6 of 28) maintained 0% exposure throughout the 30-month trial period compared with 3.6% and 3.8% in the monitoring and control groups, respectively (*P*<.05 for comparison of counseling group to monitoring and control).

Banning indoor smoking sharply cuts nicotine exposure

No data are available on education about

FAST TRACK

Educating families of asthmatic children to reduce second-hand smoke exposure means fewer medical visits for the children.

FAST TRACK

The American Academy of Pediatrics and VA recommend that physicians specifically urge parents to stop smoking.

second-hand smoke in families with nonasthmatic children. However, strong evidence suggests that smoking outside the house reduces exposure generally.

A 2003 cross-sectional survey of 164 households in the United Kingdom with at least 1 smoking parent and 1 bottle-fed infant looked for a correlation between strategies to reduce second-hand smoke and urine cotinine-to-creatinine ratios in the infants.[3] Parents were classified into 3 groups according to whether they maintained a strict ban on smoking in the home, a less strict ban (smoking at home but not near the infant), or no ban.

The mean infant urinary cotinine-to-creatinine ratio was 2.43 in the no-ban group and 2.61 in the less-strict ban group (difference not significant). The combined mean for these 2 groups—2.58—was significantly higher than the mean of 1.26 in the strictest group ($P<.001$).

A later study recruited a convenience sample of 49 interested families with a smoking mother and a nonbreastfeeding infant between 2 and 12 months of age.[4] Families were classified by smoking history into one of 3 groups: nonsmoking households, smoking households where efforts were made to limit smoke exposure, and smoking households where no efforts were made to limit exposure. Urine samples were obtained 3 times over 1 week. Urine cotinine levels in infants averaged 0.33 ng/mL in nonsmoking households, 2.47 ng/mL in smoking households with limited exposure, and 15.47 ng/mL in smoking households with unlimited exposure ($P<.001$ for all comparisons).

A case-control study that recruited families with asthmatic and nonasthmatic children assessed the effectiveness of parental behaviors to reduce second-hand smoke in 182 households with 1 smoking parent and a child between 6 and 12 years of age.[5] Researchers measured room air nicotine and salivary cotinine concentrations.

The nicotine levels on children's belts and in their bedrooms and the family room were approximately 3 log units lower in houses with strict smoking bans compared with households with any degree of indoor smoking ($P<.0001$). Similarly, salivary cotinine levels were approximately 4 log units lower in children of households with indoor smoking bans ($P<.0001$).

Recommendations

The United States Preventive Services Task Force (USPSTF) strongly recommends that physicians help all smoking adults to quit.[6] The American Academy of Family Physicians endorses the USPSTF position and further advises that smoking parents be counseled about the health effects of environmental tobacco smoke on their children.[7]

The American Academy of Pediatrics[8] and the Veterans Administration[9] recommend urging parents to stop smoking to prevent serious health implications for their children; they further encourage pediatric clinicians to offer parents advice on quitting in order to limit children's exposure to second-hand smoke. ■

References

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