

the approach and delivery of medical care to patients with chronic asthma treated in the ED. This resulted in behavioral changes of physicians, caregivers parents, and asthmatic children, and improved CM adherence, clinical status, and QOL. The ED offers a teachable moment.

Urban and Rural Differences in the Use of Written Asthma Action Plans

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Introduction: Written asthma action plans are central to guideline recommendations for asthma self management. These plans enable patients to adjust their own treatment regimens based on symptoms in order to reduce the incidence of hospitalizations and other morbidity associated with asthma exacerbations. We studied children with asthma in Manitoba and assessed the presence of written asthma action plans by evaluating children in both urban and rural settings. **Methods:** From among children participating in our Study of Asthma Genes and the Environment (SAGE), born in 1995 in Manitoba, 25 urban and 25 rural children with asthma were randomly selected. They were contacted for a telephone questionnaire to determine whether they had a written asthma action plan and to assess their asthma control. Asthma control parameters were those defined by the Canadian Asthma Consensus Report, 1999. **Results:** Of the 50 children, only 28% had a written asthma action plan (11/25 urban vs. 3/25 rural, $p = .01$; OR 5.8, 95% CI 1.4-24.4). Urban participants had better asthma control based on a positive response to $<2/6$ asthma control parameters than rural participants (614/25 vs. 6/25, $p = .02$; OR 4.0, 95% CI 1.2 - 13.5). **Conclusion:** Urban children are more likely to have a written asthma action plan and more likely to have better control of asthma. We believe that there needs to be more emphasis on asthma education especially in rural areas.

Seed Anaphylaxis: A Case Series

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Background: Flax (*Linum usitatissimum*) seeds, sunflower (*Helianthus*) seeds and other seeds are increasingly used in bread products, including energy and granola bars. Hypersensitivity to these seeds has been infrequently described but important to consider. We report three cases of anaphylaxis to various seeds following ingestion, namely, flax, sunflower and mustard seeds. **Methods and Results:** Three cases are presented, including clinical course and positive skin-prick testing to commercially available seed extracts. Flax seed exposure through ingestion of an energy bar leads to respiratory and gastrointestinal symptoms of mild anaphylaxis in a 49-year-old woman. Following ingestion of a protein bar containing 97% sunflower seeds, a 29-

year-old male developed urticaria and angioedema of the throat, which was treated with epinephrine. A 50-year-old woman had symptoms of anaphylaxis following ingestion of a hamburger with mustard. She had a previous history of similar symptoms with ingestion of mustard. All three cases suggest type I hypersensitivity reactions to either flax, sunflower or mustard seeds. **Conclusion:** Flax seeds, mustard seeds and sunflower seeds should be considered as potential allergens. The widespread use of these seeds in energy bars, protein bars and other health food products can make these allergens difficult to identify. Physicians should be aware of the possible presentations of food anaphylaxis and consider foods not traditionally thought to be allergenic.

Interleukin-12 Inhibits Eosinophil Degranulation and Migration but Does Not Promote Eosinophil Apoptosis

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Background: Animal and human studies demonstrated that interleukin (IL)-12, a Th1 cytokine, reduces blood and bronchial eosinophilia, and airway hyperreactivity. According to current concepts, these effects are mediated through the release of cytokines promoting eosinophil recruitment and activation. However, the presence of IL-12 receptors on eosinophils suggests that IL-12 also acts directly on eosinophils. **Hypothesis:** We postulated that IL-12 directly modulates eosinophil functions and has the capacity to regulate eosinophil degranulation, migration and survival, in vitro. **Methods:** Effect of IL-12 on purified human blood eosinophils were evaluated for peroxidase (EPO) release, eotaxin-induced migration through a model of basement membrane (Matrigel™), and survival (annexin V-propidium iodide staining and flow cytometry analysis). **Results:** IL-12 inhibited 50% of PAF and secretory IgA-induced EPO release ($n = 8$, $p < .001$). IL-12 also reduced eotaxin-induced migration through Matrigel by $54 \pm 6\%$ ($n = 6$, $p < .01$). These effects were not explained by an IL-12 induced impaired viability or apoptosis. Compared to the control medium, IL-12 did not significantly modify viable (44 ± 5 and $56 \pm 8\%$, control medium and IL-12 respectively, $n = 12$, $p = .189$), apoptotic cell (29 ± 5 and $25 \pm 6\%$, $p = .161$) and necrotic cell (26 ± 3 and $18 \pm 4\%$, $p = .710$) counts after an 18 h incubation. **Conclusion:** Our results demonstrate that IL-12 directly modulates