

**Dust mite control measures don't help asthma patients. *J Fam Pract.* 2008;57:789-792**

**Potential PURL Review Form: Meta-analysis – Systematic Review**

**SECTION 1: IDENTIFYING INFORMATION FOR NOMINATED POTENTIAL PURL**

**1.0 Citation** Gøtzsche PC, Johansen HK. House dust mite control measures for asthma: systematic review. *Allergy.* 2008;63(6):646-659.

**1.1 Hypertext link to PDF of full article** <http://www3.interscience.wiley.com/journal/119398171/abstract?CRETRY=1&SRETRY=0>

**1.2 First date published study available to readers** 5/29/08

**1.3 PubMed ID** 18445182

**1.4 Nominated By** Sarah-Anne Schumann

**1.5 Institutional Affiliation of Nominator** University of Chicago

**1.6 Date Nominated** 5/29/08

**1.7 Identified Through** *BMJ Online*

**1.8 PURLS Editor** Bernard Ewigman

**Reviewing Nominated Potential PURL**

**1.9 Nomination Decision Date** 6/02/08

**1.10 Potential PURL Review Form (PPRF) Type** Meta-analysis

**1.12 Assigned Potential PURL Reviewer** Lisa Vargish

**1.13 Reviewer Affiliation** University of Chicago

**1.14 Date Review Due** 6/19/08

**1.15 Abstract** The major allergen in house dust comes from mites. We performed a systematic review of the randomized trials that had assessed the effects of reducing exposure to house dust mite antigens in the homes of people with mite-sensitive asthma, and had compared active interventions with placebo or no treatment. Fifty-four trials (3,002 patients) were included. Thirty-six trials assessed physical methods (26 mattress covers), 10 chemical methods, and 8 a combination of chemical and physical methods. Despite the fact that many trials were of poor quality and would be expected to exaggerate the reported effect, we did not find an effect of the interventions. For the most frequently reported outcome, peak flow in the morning (1,565 patients), the standardized mean difference was 0.00 (95% confidence interval [CI] -0.10 to 0.10). There were no statistically significant differences in number of patients improved (relative risk 1.01; 95% CI, 0.80-1.27), asthma symptom scores (standardized mean difference -0.04; 95% CI, -0.15 to 0.07), or medication usage (standardized mean difference -0.06; 95% CI, -0.18 to 0.07). Chemical and physical methods aimed at reducing exposure to house dust mite allergens cannot be recommended.

## SECTION 2: CRITICAL APPRAISAL OF VALIDITY

- 2.1** What types of studies are included in this review? RCT Other: 54 randomized trials that assessed effects of reducing exposure to house dust mite antigens in people with mite-sensitive asthma; studies compared active interventions with placebo or no treatment
- 2.2** What is the key question addressed by this review? Do chemical and physical methods aimed at reducing exposure to house dust mite allergens make a clinically significant difference in patients' asthma? 36 trials of physical methods, 10 of chemical methods, 8 combined both methods; the most frequently reported outcome, peak flow in the morning, was reported for 1,565 patients total. Interventions resulted in no difference in morning peak flow, number of patients improved, asthma symptom scores, or medication usage. Summarize the main conclusions and any strengths or weaknesses. Very thorough systematic review, many trials poor quality
- 2.3** Study addresses an appropriate and clearly focused question - **select one**
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Well covered | <input type="checkbox"/> Not addressed  |
| <input type="checkbox"/> Adequately addressed    | <input type="checkbox"/> Not reported   |
| <input type="checkbox"/> Poorly addressed        | <input type="checkbox"/> Not applicable |
- Comments:
- 2.4** A description of the methodology used is included. Well covered
- 2.5** The literature search is sufficiently rigorous to identify all the relevant studies. Well covered
- 2.6** Study quality is assessed and taken into account. Well covered
- 2.7** There are enough similarities between selected studies to make combining them reasonable. Well covered
- 2.8** Are patient-oriented outcomes included? If yes, what are they? Yes: asthma symptom scores, number of patients improved, medication usage
- 2.9** Is funding a potential source of bias? If yes, what measures (if any) were taken to ensure scientific integrity? No. Cochrane review

<p><b>2.10</b> To which patients might the findings apply? Include patients in the meta-analysis and other patients to whom the findings may be generalized.</p>	<p>Asthma patients sensitive to dust mites</p>
<p><b>2.11</b> In what care settings might the findings apply, or not apply?</p>	<p>Primary care, allergy/pulmonary</p>
<p><b>2.12.</b> To which clinicians or policy makers might the findings be relevant?</p>	<p>Guideline developers, clinicians as in 2.11 above</p>

### SECTION 3: REVIEW OF SECONDARY LITERATURE

<p><b>3.1</b> DynaMed excerpts</p>	<p>Includes this study already, as well as earlier studies showing that dust mite reduction measures may not be effective</p>
<p><b>3.2</b> DynaMed citation/access date</p>	<p>Environmental control of asthma; accessed 6/18/08</p>
<p><b>3.3</b> UpToDate excerpts</p>	<p>Recommends multiple dust mite allergen reduction and avoidance measures, including mattress covers, other physical barriers, and humidity control</p>
<p><b>3.4</b> UpToDate citation/access date</p>	<p>Platts-Mills, TA, "Indoor allergen avoidance in the treatment of asthma and allergic rhinitis." updated 5/29/08, accessed 6/18/08</p>
<p><b>3.5</b> PEPID PCP excerpts</p>	<p>What environmental modifications improve pediatric asthma?  <b>Evidence-Based Answer (Pub 7/2002)</b>  Reducing environmental tobacco smoke exposure has been shown to decrease healthcare utilization among poor asthmatic children.</p> <ul style="list-style-type: none"> <li>• Dust mite reduction by chemical measures is potentially harmful (Grade of recommendations: B, based on single RCT).</li> <li>• There is insufficient evidence for or against dust mite reduction by physical means, use of synthetic or feather bedding, removal of cats, use of air filters, or reducing indoor humidity (Grade of recommendations: D, inconsistent studies).</li> </ul> <p><b>Evidence Summary</b></p> <p>1. While several studies have shown the benefit of placing asthmatic and allergic children in highly sanitized hospital and sanitarium environments,(1) benefit has been extremely difficult to prove with measures utilized in the child's home.</p> <ul style="list-style-type: none"> <li>• Only reducing tobacco smoke exposure has been shown to be beneficial.</li> </ul>

- In a randomized trial of predominantly poor minority subjects, fewer acute asthma medical visits were needed by children whose household members underwent behavioral education aimed at decreasing smoke exposure.(2) (Table)
2. Other methods of modifying the environment have not proven beneficial.
- Although a group of researchers found that home visits by care providers may decrease acute medical visits, specific allergy avoidance steps did not make a difference.(3)
  - Two of these authors also report that the use of chemicals for house dust mite control and the use of synthetic pillows in lieu of feather pillows may actually exacerbate asthma.(4)
  - A Cochrane review was inconclusive on the risks or benefits of feather bedding.(5)
  - Benefit from removing cats is difficult to prove due to the ubiquitous nature of cat antigen and the difficulty in removing it from the home.
  - Using air filters and reducing indoor humidity have likewise failed to show meaningful improvement in peak flow, medication use, or symptom scores.
3. The effectiveness of physical methods to reduce house dust mites continues to be debated.
- The Cochrane review of 15 trials noted a small, statistically significant improvement in asthma symptom scores, but the results were not clinically important enough to recommend such measures.(6)
  - The potential harm of chemical measures was reiterated in this review.

#### **Recommendations from Others**

The National Heart, Lung, and Blood Institute continues to recommend physical barriers to reduce house dust mite antigen on the basis of 4 small trials in which the major benefit was decreased bronchial hyperresponsiveness. (7)

- Larger trials, now under way, may help resolve the issue

**3.6** PEPID citation/access data

Accessed June 19, 2008

**3.7** PEPID content updating

1. Do you recommend that PEPID get updated on this topic?  
Yes, important evidence or recommendations are missing

2. Is there an EBM Inquiry (HelpDesk Answers and Clinical Inquiries) as indicated by the EB icon (EB) that should be updated on the basis of the review?

Yes, important evidence or recommendations are missing

If yes, which Evidence-Based Inquiry (HelpDesk Answer or Clinical Inquiry), Title(s):

See above for PEPID; this study should be added

<p><b>3.8</b> Other excerpts (USPSTF; other guidelines; etc.)</p>	<p>National Asthma Education and Prevention Program (NAEPP) guidelines recommend specific dust mite control measures, including pillow and mattress covers, washing bedding in hot water, reducing indoor humidity, and carpet removal.</p>
<p><b>3.9</b> Citations for other excerpts</p>	<p>National Asthma Education and Prevention Program (NAEPP) Control of environmental factors and comorbid conditions that affect asthma: Expert panel report 3: guidelines for the diagnosis and management of asthma. Bethesda (MD): National Heart, Lung, and Blood Institute; 2007 Aug. pp. 326-362. [103 references]  <a href="http://www.guideline.gov/summary/summary.aspx?doc_id=11673&amp;nbr=006022">http://www.guideline.gov/summary/summary.aspx?doc_id=11673&amp;nbr=006022</a>. Accessed 6/18/2008</p>

## SECTION 4: CONCLUSIONS

<p><b>4.1 Validity:</b> How well does the study minimize sources of internal bias and maximize internal validity? Give one number on a scale of 1 to 7 (1=extremely well; 4=neutral; 7=extremely poorly)</p>	<p>1</p>
<p><b>4.2</b> If 4.1 was coded as 4, 5, 6, or 7, please describe the potential bias and how it could affect the study results. Specifically, what is the likely direction in which potential sources of internal bias might affect the results?</p>	<p>Not much bias here</p>
<p><b>4.3 Relevance:</b> Are the results of this study generalizable to and relevant to the health care needs of patients cared for by “full scope” family physicians? Give one number on a scale of 1 to 7 (1=extremely well; 4=neutral; 7=extremely poorly)</p>	<p>1</p>
<p><b>4.4</b> If 4.3 was coded as 4, 5, 6, or 7, please provide an explanation.</p>	<p>Yes, absolutely!! Stop making recommendation</p>
<p><b>4.5. Practice-changing potential:</b> If the findings of the study are both valid and relevant, does the practice that would be based on these findings represent a change from current practice? Give one number on a scale of 1 to 7 (1=definitely a change from current practice; 4=uncertain; 7=definitely not a change from current practice)</p>	<p>2</p>
<p><b>4.6</b> If 4.5 was coded as 1, 2, 3, or 4, please describe the potential new practice recommendation. Please be specific about what should be done, the target patient population, and the expected benefit.</p>	<p>Do not recommend either physical or chemical methods for getting rid of dust mites</p>
<p><b>4.7 Applicability to a Family Medical Care Setting:</b> Is the change in practice recommendation something that could be done in a medical care</p>	<p>1</p>

setting by a family physician (office, hospital, nursing home, etc), such as a prescribing a medication, vitamin or herbal remedy; performing or ordering a diagnostic test; performing or referring for a procedure; advising, educating or counseling a patient; or creating a system for implementing an intervention? Give one number on a scale of 1 to 7 (1=definitely could be done in a medical care setting; 4=uncertain; 7=definitely could not be done in a medical care setting)

**4.8** If you coded 4.7 as a 4, 5, 6 or 7, please explain.

**4.9 Immediacy of Implementation:** Are there major barriers to immediate implementation? Would the cost or the potential for reimbursement prohibit implementation in most family medicine practices? Are there regulatory issues that prohibit implementation? Is the service, device, drug or other essentials available on the market? Give one number on a scale of 1 to 7 (1=definitely could be immediately applied; 4=uncertain; 7=definitely could not be immediately applied) 1

**4.10** If you coded 4.9 as 4, 5, 6, or 7, please explain why.

**4.11 Clinical meaningful outcomes or patient oriented outcomes:** Are the outcomes measured in the study clinically meaningful or patient oriented? Give one number on a scale of 1 to 7 (1=definitely clinically meaningful or patient oriented; 4=uncertain; 7=definitely not clinically meaningful or patient oriented) 1

**4.12** If you coded 4.11 as a 4, 5, 6, or 7, please explain why.

**4.13** In your opinion, is this a Pending PURL? Give one number on a scale of 1 to 7 (1=definitely a Pending PURL; 4=uncertain; 7=definitely not a Pending PURL) 1

Criteria for a Pending PURL:

- Valid: Strong internal scientific validity; the findings appears to be true.
- Relevant: Relevant to the practice of family medicine
- Practice changing: There is a specific identifiable new practice recommendation that is applicable to what family physicians do in medical care settings and seems different than current practice.
- Applicability in medical setting
- Immediacy of implementation

## SECTION 5: EDITORIAL DECISIONS

5.1 FPIN PURLs editorial decision Pending PURL Review—Schedule for Review

5.3 FPIN PURLS Editor making decision Bernard Ewigman

5.4 Date of decision 6/19/08

5.5 Brief summary of decision This Cochrane review of 54 RCTs of chemical and physical efforts to control dust mites as a part of an asthma management program failed to show any positive impact on asthma outcomes despite the fact that the individual trials were biased to find an impact. The NHLBI sponsored National Asthma Education & Prevention Program guidelines recommend dust mite control measures (August 2007) and UpToDate also recommends measures for dust mite control. A 2002 Clinical Inquiry found evidence suggesting no value, possibly even harm from dust mite control. What is not clear is what recommendations family doctors actually follow. Do they encourage or discourage asthma patients regarding dust mite control measures? We need some survey data to decide on this one, and Dr. Vargish will follow up with an allergist or pulmonologist to get their opinion.

## SECTION 6: Survey Questions for SERMO, PURLs Instant Polls and Other Surveys

1. Current Practice Question for Surveys To what extent do you encourage or discourage dust mite control measures for your patients with asthma?  
\_\_\_ I encourage most asthma patients to do dust mite control measures  
\_\_\_ I encourage some selected asthma patients to do dust mite control measures  
\_\_\_ I neither encourage nor discourage asthma patients to do dust mite control measures  
\_\_\_ I discourage patients from doing dust mite control measures