

# EVIDENCE-BASED HEALTH CARE

## DIETARY EXCLUSIONS FOR ESTABLISHED ATOPIC ECZEMA

Taryn Young, MB ChB, FCPHM, MMed  
RYTD Consultancy, Pinelands, Cape Town, South Africa

### Aims

This feature on evidence-based health care (EBHC) aims to present useful practice-related information on topics relevant to readers of *Current Allergy & Clinical Immunology*. The treatment of topics is not comprehensive. The main aim is to illustrate selected aspects of the EBHC process viz. (i) identifying the best evidence and (ii) applying valid and relevant evidence in clinical practice. The box titled 'Some terms explained' enlarges on the technical terms mentioned in the text and marked with an asterisk (\*).

### Background

Atopic eczema affects up to 20% of children worldwide.<sup>1</sup> It is caused by a combination of genetic and environmental factors. Although there is currently no cure for atopic eczema, a wide range of treatments are used to control the symptoms. One such approach is a dietary one, whereby certain foods such as cows' milk are excluded on the basis that they are thought to cause eczema to worsen.<sup>2</sup>

### So what is the question?

What are the effects of dietary exclusions for the treatment of established atopic eczema?

### The type of evidence to look for, and where to look for it

The best evidence will come from randomised controlled trials (RCTs). If more than one trial has been conducted, the most reliable evidence, if available, is a systematic review of all relevant RCTs. The Cochrane Collaboration ([www.cochrane.org](http://www.cochrane.org)) conducts systematic reviews of the effects of healthcare interventions following rigorous methods and processes to reduce bias. Results from systematic reviews are published in *The Cochrane Library* (<http://www.thecochranelibrary.com/>) and the Cochrane Database of Systematic Reviews has an impact factor\* of 4.654.

### What was found?

You found a recent systematic review examining the effects of dietary exclusions for the treatment of established atopic eczema.<sup>2</sup>

### What did the authors do?

The authors conducted a comprehensive search and identified 12 RCTs of which 9 were included. Data extraction and assessment of the risk of bias of includ-

ed studies were done independently by two authors. For studies with a similar type of intervention, authors performed a meta-analysis, to calculate a weighted treatment effect across trials, using a random effects model. They expressed the results as risk ratio and 95% confidence intervals (CI) for dichotomous outcomes\* and mean differences and 95%CI for continuous outcomes\*. The results were also expressed as number needed to treat where appropriate, for a range of plausible control event rates. Heterogeneity\* was assessed using  $I^2$  (Box 1). Where it was not possible to perform a meta-analysis the data was summarised for each trial.

### Box 1. Identifying and measuring heterogeneity<sup>3</sup>

#### 1. Inspect the forest plot

If CIs for the results of individual studies (generally depicted graphically using horizontal lines) have poor overlap, this generally indicates the presence of statistical heterogeneity.

#### 2. Statistical test for heterogeneity

The chi-squared ( $\chi^2$ , or  $\text{chi}^2$ ) test is included in the forest plots in Cochrane reviews. It assesses whether observed differences in results are compatible with chance alone. A low *P* value (or a large chi-squared statistic relative to its degree of freedom) provides evidence of heterogeneity of intervention effects (variation in effect estimates beyond chance). Care must be taken in the interpretation of the chi-squared test, since it has low power in the (common) situation of a meta-analysis when studies have small sample size or are few in number. This means that while a statistically significant result may indicate a problem with heterogeneity, a non-significant result must not be taken as evidence of no heterogeneity. This is also why a *P* value of 0.10, rather than the conventional level of 0.05, is sometimes used to determine statistical significance.

#### 3. $I^2$ statistic

Some argue that, since clinical and methodological diversity always occur in a meta-analysis, statistical heterogeneity is inevitable. Therefore the test for heterogeneity is irrelevant to the choice of analysis; heterogeneity will always exist whether or not we happen to be able to detect it using a statistical test. Methods have been developed for quantifying inconsistency across studies that move the focus away from testing whether heterogeneity is present to assessing its impact on the meta-analysis. A useful statistic for quantifying inconsistency is the  $I^2$ . A rough guide to interpretation is as follows:

- 0% to 40%: might not be important;
- 30% to 60%: may represent moderate heterogeneity;
- 50% to 90%: may represent substantial heterogeneity;
- 75% to 100%: considerable heterogeneity.

Correspondence: Dr T Young, RYTD Consultancy, PO Box 38580, Pinelands 7430, South Africa. Email [tyoung@rytdconsult.co.za](mailto:tyoung@rytdconsult.co.za)

## Results and conclusion

The studies fell into three main categories – egg and cow's milk exclusion diets; few foods diet and elemental diet. Only two studies were considered sufficiently similar to pool. There may be some benefit in using an egg-free diet in infants with suspected egg allergy who have positive specific IgE to eggs. Little evidence supports the use of various exclusion diets in unselected people with atopic eczema, but that may be because they were not allergic to those substances in the first place. Lack of any benefit may also be because the studies were too small and poorly reported. Future studies should be appropriately powered focusing on participants with a proven food allergy. In addition a dis-

inction should be made between young children whose food allergies improve with time and older children/adults.

## REFERENCES

1. Rancé F, Boguniewicz M, Lau S. New visions for atopic eczema: an iPAC summary and future trends. *Pediatr Allergy Immunol* 2008; 19, Suppl 19: 17-25.
2. Bath-Hextall FJ, Delamere FM, Williams HC. Dietary exclusions for established atopic eczema. *Cochrane Database of Systematic Reviews* 2008, Issue 1. Art. No.: CD005203. DOI: 10.1002/14651858.CD005203.pub2.
3. Higgins JPT, Green S, eds. *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.0.0 [updated February 2008]. The Cochrane Collaboration, 2008. Available from [www.cochrane-handbook.org](http://www.cochrane-handbook.org).

### \*Some terms explained

Journal impact factor (IF): The IF is a tool for ranking, evaluating, and comparing journals. It is calculated based on a 2-year period and is a measure of the frequency with which the 'average article' – usually articles, reviews, proceedings or notes; not editorials and letters to the Editor – in a journal has been cited in a particular year. The IF is calculated by dividing the number of IF year citations by the source items published in that journal during the previous 2 years.

Calculation:

$$IF = \frac{\text{(the number of IF year citations)}}{\text{(the source items published in that journal during the previous 2 years)}}$$

Dichotomous (binary) data: Data that can take one of two possible values, such as dead/alive, smoker/non-smoker, present/not present.

Continuous data: Data with a potentially infinite number of possible values within a given range.

Height, weight and blood pressure are examples of continuous variables.

Heterogeneity: Inevitably, studies brought together in a systematic review will differ. Any kind of variability among studies in a systematic review may be termed heterogeneity. Variability in the participants, interventions and outcomes studied may be described as clinical diversity (sometimes called clinical heterogeneity), and variability in study design and risk of bias may be described as methodological diversity (sometimes called methodological heterogeneity). Variability in the intervention effects being evaluated in the different studies is known as statistical heterogeneity, and is a consequence of clinical or methodological diversity, or both, among the studies. Statistical heterogeneity manifests itself in the observed intervention effects being more different from each other than one would expect as a result of random error (chance) alone.<sup>3</sup>

## 2-DAY WORKSHOP: THE ESSENTIALS FOR CRITICAL READING AND INTERPRETATION OF MEDICAL LITERATURE

Are you trying to keep up with new developments in your field but are put off by *p* values, confused about relative risks and 95% confidence intervals, and completely thrown by cohort and case-control studies? Do you end up reading the conclusions of the abstract of a research article?

RYTD Consultancy will be offering 2-day workshops in 2009 on "The essentials for critical reading and interpretation of medical literature". The course provides a valuable opportunity to learn key concepts to enable critical reading of medical literature.

The full course is accredited for 11 CPD points with the HPCSA.

Who can attend? The course is open to doctors, nurses, occupational therapists, physiotherapists, speech therapists, pharmacists and dentists working in all levels of health care.

Course content: Essential epidemiology and biostatistics, basic research methodology and the approach to use when reading a paper.

For more information contact Dr Taryn Young, RYTD Consultancy.

RYTD Consultancy  
P O Box 38580  
Pinelands 7430  
South Africa  
Fax: +27 86 531 8671  
Cell: + 27 82 8959 656  
Email: [info@rytdconsult.co.za](mailto:info@rytdconsult.co.za)

*Enhancing your capacity to make the right health care decisions*