Towards evidence-based medicine for paediatricians

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In order to give the best care to patients and families, paediatricians need to integrate the highest quality scientific evidence with clinical expertise and the opinions of the family.¹ *Archimedes* seeks to assist practising clinicians by providing “evidence-based” answers to common questions which are not at the forefront of research but are at the core of practice. In doing this, we are adapting a format which has been successfully developed by Kevin Macaway-Jones and the group at the *Emergency Medicine Journal*—“BestBets”.

A word of warning. The topic summaries are not systematic reviews, though they are as exhaustive as a practising clinician can produce. They make no attempt to statistically aggregate the data, nor search the grey, unpublished literature. What *Archimedes* offers are practical, best evidence-based answers to practical, clinical questions.

The format of *Archimedes* may be familiar. A description of the clinical setting is followed by a structured clinical question. (These aid in focusing the mind, assisting searching² and gaining answers.³) A brief report of the search used follows—this has been performed in a hierarchical way, to search for the best quality evidence to answer the question.⁴ A table provides a summary of the evidence and key points of the critical appraisal. For further information on critical appraisal and the measures of effect (such as number needed to treat, NNT) books by Sackett⁵ and Moyer⁶ may help. To pull the information together, a commentary is provided. But to make it all much more accessible, a box provides the clinical bottom lines.

Electronic-only topics that have been published on the BestBets site (www.bestbets.org) and may be of interest to paediatricians include:

- What is the value of parent-initiated oral corticosteroids for acute asthma?
- Can you quantify the usefulness of ultrasound scan in the evaluation of limping children presenting to the emergency department?
- Is early use of insulin therapy in DKA associated with development of cerebral oedema?

Readers wishing to submit their own questions—with best evidence answers—are encouraged to review those already proposed at www.bestbets.org. If your question still hasn't been answered, feel free to submit your summary according to the Instructions for Authors at www.archdischild.com. Three topics are covered in this issue of the journal:

- Is wet combing really an effective treatment for head lice infestation?
- Leukocytosis as a predictor for progression to haemolytic uraemic syndrome in *Escherichia coli* O157:H7 infection
- Is a single daily dose of gentamicin effective in the treatment of UTI?

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Dr Susan Picton, firm believer in case reports, encouraged the genesis of this article.

The value of case reports

Case reports are well known to be the lowest and most useless form of evidence. Various commentators on evidence-based medicine have been known to snort derisively when they are mentioned as “potential papers”, and they are dying out of most major journals.

However, what is “well known” is not necessarily true. Consider, for example, the diagnostic value of a raised CRP.¹ There are some, limited, instances where case reports and well observed series can obviate the need for randomised trials. Paediatricians can turn to the value of empirical antibiotics in febrile neutropaenia, inhaled salbutamol in acute asthma or the classical appearance of a child with Down syndrome. These instances have something in common – they are all examples of “all or none” (or “almost all and nearly none”) effects. Before a treatment, everyone dies. After a treatment, some don't. It can be statistically calculated when an interesting observation becomes profound enough to be truth (Glasziou *et al*² and e-responses). This technique compares the rate of something happening before an intervention, and the rate afterwards. If the success rate is about ten times (or more) greater with than without the intervention, then it's probably a real effect.

However, there are far more times when a single case doesn't prove anything than occasions when it does, but don't let anyone tell you the case report is useless.

- 1 Maheshwari N. How useful is C-reactive protein in detecting occult bacterial infection in young children with fever without apparent focus? *Arch Dis Child* 2006;**91**(6):533–5.
- 2 Glasziou P, Chalmers I, Rawlins M, *et al*. When are randomised trials unnecessary? Picking signal from noise. *BMJ* 2007;**334**:349–351.

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- 2 Richardson WS, Wilson MC, Nishikawa J, *et al*. The well-built clinical question: a key to evidence-based decisions. *ACP J Club* 1995;**123**:A12–13.
- 3 Bergus GR, Randall CS, Sinift SD, *et al*. Does the structure of clinical questions affect the outcome of curbside consultations with specialty colleagues? *Arch Fam Med* 2000;**9**:541–7.
- 4 <http://www.cebm.net> (accessed 15 May 2007).
- 5 Sackett DL, Starus S, Richardson WS, *et al*. *Evidence-based medicine. How to practice and teach EBM*. San Diego: Harcourt-Brace, 2000.
- 6 Moyer VA, Elliott EJ, Davis RL, *et al*, eds. *Evidence based pediatrics and child health*, Issue 1. London: BMJ Books, 2000.

Additional information on each of the topics is available on the ADC website (www.archdischild.com/supplemental)