The effectiveness of different methods of toilet training for bowel and bladder control

CRD summary
This review concluded that the Azrin and Foxx method and child-oriented approach resulted in quick, successful toilet training in the short term. Programmes adapted to physically handicapped children were also successful. However, there were insufficient data to evaluate adverse events. This was a well-conducted review and the results are likely to be reliable.

Authors' objectives
To evaluate the effectiveness and safety of toilet training methods, and factors that modify their effectiveness, for bowel and bladder control in general and, specifically, in patients with special needs.

Searching
MEDLINE, EMBASE, the Cochrane CENTRAL Register, CINAHL, PsycINFO, ERIC, AMED, EBM Reviews, HealthSTAR, Web of Science, Biological Abstracts, Sociological Abstracts, OCLC ProceedingsFirst, OCLC PapersFirst, Dissertation Abstracts, Index to Theses, NLM Gateway and the National Research Register's Project Database were searched for studies reported in English; the search terms were reported. In addition, annual conference proceedings of the American Academy of Pediatrics and the Canadian Pediatric Society were searched (2002 to 2005) and reference lists were checked.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials, non-randomised trials, prospective and retrospective cohort studies, case-control studies, cross-sectional studies and case series of at least 5 children were eligible for inclusion.

Specific interventions included in the review
Studies evaluating methods for toilet training were eligible for inclusion. The methods evaluated included operant conditioning, Azrin and Foxx or variations on the method, child-oriented toilet training, Spock's baby book, and a range of other methods such as components of reinforcement and increasing liquids.

Participants included in the review
Studies of children with or without co-morbidities, or neuromuscular, cognitive and/or behavioural disabilities, were eligible for inclusion. Studies of children with enuresis or encopresis were excluded from the review, unless measured as an outcome of toilet training. Children were recruited from special care facilities, clinical practice, the community or school. The age of the children ranged from 18 months to 18 years.

Outcomes assessed in the review
Studies reporting outcomes relating to bladder or bowel control, successes, failures/accidents or adverse events were eligible for inclusion. The primary outcome of most of the included studies was success or failure of toilet training, measured using a variety of methods. The other outcomes assessed were lower urinary tract infection, enuresis and stool toileting refusal.

How were decisions on the relevance of primary studies made?
Two reviewers independently screened studies for inclusion in the review; ambiguous studies were screened by a paediatrician or paediatric urologist. Any disagreements were resolved by discussion.

Assessment of study quality
Two reviewers independently assessed study quality using Downs and Black's checklist and the Jadad scale.

Data extraction
One reviewer extracted the data and a second reviewer checked the extraction.
Methods of synthesis
How were the studies combined?
The studies were combined in a narrative, grouped by study design and then the child’s disability.

How were differences between studies investigated?
Differences between the studies were discussed in the text.

Results of the review
Thirty-four studies (n=8616) were included in the review: 26 observational studies (n=8,056) and 8 trials (n=560).

The mean Downs and Black score for the observational studies was 17.2 (standard deviation 2.8). All trials scored 2 on the Jadad scale.

Effectiveness.
Healthy children: in trials, the Azrin and Foxx method performed better than an experienced trainer or a parent using a guidebook (1 trial), or the Spock method (1 trial), while negative-term avoidance plus child-oriented method reduced the time of stool toileting refusal and time to toilet training compared with the child-oriented method alone (1 trial). Three observational studies evaluating child-orientated approaches reported either that 13% of children developed stool withholding during training, 14% suffered enuresis at 3.5 years, or 0.02% continued with problems at 5 years. A further 2 observational studies evaluated the Azrin and Foxx method: one reported reductions in bladder and bowel accidents by 97% at 4 months, and the other successful training in 39 out of 49 children.

Mentally handicapped children: in trials, individual training performed better than group methods (1 trial), while relaxation (1 trial) and operant conditioning (4 trials) were better than standard methods and conventional or control methods, respectively. The Azrin and Foxx method (1 trial) and behaviour modification (1 trial) were both better than no training. The observational studies showed that mentally handicapped children had some degree of success, regardless of the toilet training method used.

Physically handicapped children: in 1 trial, the toilet habits of children with Hirschsprung disease and anal atresia responded well to multidisciplinary behaviour treatment; this was reinforced in 2 cohort studies. Three cohort studies reported improvements in bowel control in children with spina bifida with neurogenic bowel habituation, and the use of laxatives or enemas, and bladder control using intermittent catheterisation with or without ileal diversion.

Adverse events.
Adverse events were poorly reported. Where reported, adverse events included urinary tract infection, enuresis, stool toileting refusal and hiding to defecate.

Authors’ conclusions
Both the Azrin and Foxx method and the child-oriented approach resulted in quick, successful toilet training, but there was limited information about the sustainability of the training. Programmes adapted to physically handicapped children were also successful. There were insufficient data to evaluate adverse events.

CRD commentary
The review evaluated a clear research question with well-defined inclusion criteria. The authors undertook a comprehensive search, although only English language studies were included and language bias cannot, therefore, be ruled out. All aspects of the review process were conducted in duplicate, thereby reducing the potential for error and bias. The decision to combine the studies in a narrative seems appropriate given the clinical heterogeneity between the studies. There were limitations in relation to the evidence available, which the authors acknowledged. This was a well-conducted review and the results are likely to be reliable.

Implications of the review for practice and research
Practice: The authors stated that elimination problems should be treated early to encourage normal psychosocial
development.

Research: The authors recommended the development of standardised definitions of toilet training and what constitutes success and failure. Direct head-to-head trials of different methods are also recommended, with accurate descriptions of the recruited population and the documentation of adverse events, particularly in children with behavioural disorders. The authors also stated that factors affecting toilet training need to be identified.

**Funding**
Agency for Healthcare Research and Quality, contract number 290-02-0023.

**Bibliographic details**

**Original Paper URL**
http://www.ahrq.gov/clinic/tp/toilettrtp.htm#Report

**Indexing Status**
Subject indexing assigned by CRD

**MeSH**
Adolescent; Child; Child, Preschool; Conditioning, Operant; Encopresis /rehabilitation; Mental Retardation /rehabilitation; Methods; Toilet Training; Urinary Incontinence

**AccessionNumber**
12007008044

**Date bibliographic record published**
21/05/2007

**Date abstract record published**
30/09/2008

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.