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Review: short acting methylphenidate has short term efficacy in children and adolescents with attention deficit disorder

Daniel F. Connor
University of Massachusetts Medical School

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**Review: short acting methylphenidate has short term efficacy in children and adolescents with attention deficit disorder**


**QUESTION:** What is the efficacy and safety of short acting methylphenidate for attention deficit disorder (ADD) in children and adolescents?

### Sources of funding:
Therapeutics Initiative, University of British Columbia; the British Columbia Ministry for Children and Families; and the Cochrane Collaboration.

For correspondence: Dr H M Schachter, Children’s Hospital of Eastern Ontario Research Institute, Ottawa, Ontario, Canada. hschacht@uottawa.ca

### Methylphenidate v placebo in children and adolescents with attention deficit disorder*

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Standardised mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperactivity index (teacher reported)</td>
<td>0.78 (0.64 to 0.91)</td>
</tr>
<tr>
<td>Hyperactivity index (parent reported)</td>
<td>0.54 (0.40 to 0.67)</td>
</tr>
<tr>
<td>Parent/self reported adverse events</td>
<td></td>
</tr>
<tr>
<td>Methylphenidate</td>
<td>Placebo</td>
</tr>
<tr>
<td>Decreased appetite</td>
<td>45%</td>
</tr>
<tr>
<td>Insomnia</td>
<td>48%</td>
</tr>
<tr>
<td>Headache</td>
<td>18%</td>
</tr>
<tr>
<td>Stomatolache</td>
<td>24%</td>
</tr>
</tbody>
</table>

*Abbreviations defined in glossary; NNH and CI calculated from absolute risk difference data in article.

### Data sources
Studies in any language published between 1981 and 1999 were identified by searching Medline, EMBASE/Excerpta Medica, PsycINFO, ERIC, CINAHL, HEALTHStar, Biological Abstracts, Current Contents, Dissertation Abstracts, Cochrane Library Trials Register, and Current Controlled Trials; reviewing bibliographies of included studies and pertinent reviews; and reviewing the files of content experts.

### Study selection
Randomised placebo controlled trials were included if they assessed the effects of short acting methylphenidate in children ≤18 years of age with a primary diagnosis of ADD (based on a systematic and reproducible method). Exclusion criteria were n of 1 studies, participants with conditions that required specialised school and/or home environments (eg, mental retardation or autism), or participants receiving stimulants other than methylphenidate.

### Data extraction
Data were extracted on characteristics of the trial, population, and intervention; behavioural efficacy (eg, primary outcomes of teacher and parent versions of the hyperactivity index [HI]); and adverse events. Quality of individual studies was assessed using the 3 item Jadad scale (randomisation, blinding, and follow up) and an index of concealment of treatment allocation.

### Main results
62 trials (n=2897) met the selection criteria. Mean sample size was 47. Median age of participants was 8.7 years (52 trials) and median percentage of boys was 88% (59 trials). 45 trials included participants with a homogeneous primary diagnosis of attention deficit hyperactivity disorder or ADD with hyperactivity (ADHD). Mean length of intervention was 3.3 weeks.

Children who received methylphenidate had reduced scores on both teacher and parent reported HI compared with those who received placebo (table). Similar results (albeit of variable and smaller magnitudes) were found for teacher reported clinical response, global indices, core features, and key externalising features; attention and emotional lability did not differ between groups. Variable and weaker results were found for parent reported clinical response, global indices, core features, and key externalising features; inattention, hyperactivity/impulsivity, and oppositional defiant behaviour did not differ between groups. Children who received methylphenidate had higher parent/self ratings of decreased appetite, insomnia, headache, and stomache (table).

### Conclusions
Short acting methylphenidate reduces some core and related clinical manifestations of attention deficit disorder in children and adolescents in the short term, but is associated with increased adverse events. No long term studies were found.