Adaptive Pharmacological and Behavioral Treatments for Children with ADHD: Sequencing, Combining, and Escalating Doses

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INTRODUCTION

ADHD is the most common mental health disorder of childhood, affecting 2% to 9% of the population, one of the most common problems in special education, and arguably the most common source of disruptive behavior in regular classroom settings. Nearly 5% of school-aged children in the U.S. are medicated daily for treatment of ADHD—primarily in school settings. The two evidence-based treatments for ADHD are pharmacotherapy with a CNS stimulant and behavioral modification in the form of parent training, classroom intervention, and child treatment for peer problems (Fabiano et al., under review; Pelham et al., 1998; Pelham & Fabiano, 2008). Short-term studies have shown that combining these treatments often improves functioning relative to either alone. In a recent project (R01 MH09246), we have shown that both behavior modification and medication have significant acute effects on children’s behavior, and that response to each treatment varies as a function of the presence and dosage of the other treatment. We have found (1) that behavioral treatments can reduce the need for and dosage of medication in analogue classroom and regular classroom settings (e.g., Cates et al., 2004) and (2) that doses of medication reduce relatively more intensively and therefore more expensive behavioral treatments. Because medication—especially at high doses—has associated acute and long-term safety issues, discovering ways to minimize medication use and dose for classroom or home settings is an essential criterion for medication, is critical.

In the present study the two treatments are always implemented concurrently—decisions about what was needed, or decisions about what was needed, or decisions about the safety and cost-effectiveness tradeoffs associated with such answers: This IES-funded study is a controlled (random assignment) examination over 3 cohorts of treatment sequencing. It includes elements of an adaptive treatments design with multiple randomizations (Collins et al., 2004; Biemer et al., 2006). We present preliminary results for cohort 1. Specific aims: (1) How does a treatment strategy that includes either initial treatment with medication or initial behavior modification influence the rate of response to treatment and need for additional treatment? (2) When additional treatment is needed, what is the relative benefits of augmenting the dosage of the initial treatment versus adding the other treatment modality? (3) Is dosage in medication use reduced as a function of treatment strategy? (4) Is intensity of behavior modification reduced as a function of treatment strategy? (5) Do these strategies differently impact parent satisfaction with treatment and future use of treatments? (6) In what way do individual differences (e.g., severity of impairment, comorbid child psychopathology, prior medication history, parent and teacher treatment acceptability, parental characteristics, SES) influence the answers to questions addressed above? (7) What is the relative cost-effectiveness of these treatment strategies?

Poster and additional information available at http://ccf.buffalo.edu

Preliminary Results from Cohort 1 and 2

Participants: 102 children between the ages of 5 and 12 enrolled. Six families discontinued participation before (N=1) or during the study (N=5). Treatment outcomes: Of 51 participants assigned to receive medication first, 12% refused medication. Of 50 participants assigned to receive behavioral treatment first, no one refused behavioral treatment. 2 children attended 0 or fewer of 8 assigned parent training sessions; 100% of children had the school intervention implemented.78% of children in the Behavioral Treatment First group were randomized at the first 8-week assessment point. 77% of children in the Medication First group were randomized at the first 8-week assessment point. By the end of the school year, 96% of the Behavioral Treatment First group and 88% of the Medication First Group met criteria for randomization.

Medication Outcomes: Of 24 children randomized to receive medication after the initial course of BMOD, 25% refused medication. Of 25 children randomized to receive BMOD after the initial course of medication, 7% of families attended 2 or fewer of 8 assigned group parent training sessions. Impaired setting(s) that precipitated rerandomization by group:

<table>
<thead>
<tr>
<th>Baseline/endpoint measures</th>
<th>Medication First</th>
<th>Behavior Modification First</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired setting(s) that precipitated rerandomization</td>
<td>No</td>
<td>N=3</td>
</tr>
<tr>
<td>impaired setting(s) that precipitated rerandomization</td>
<td>N=4</td>
<td>N=6</td>
</tr>
</tbody>
</table>

Timelines:

• Medication First: N=23
• Behavior Modification First: N=19

May-June End-point assessment

A. Medication outcomes

B. Behavior Modification outcomes

C. Treatment use and acceptability

References


Discussion

• This study is one of the first to investigate the sequencing of evidence-based treatments for ADHD in school settings.
• This study also investigates dose of treatment (both modalities) in an innovative adaptive treatment design.

• Cohort 1 & 2 results indicated that the majority of children with ADHD required intervention (beyond a dose of behavioral treatment) (group PT 8 sessions; a school-based DBC) or a dose of medication (15 mg/kg MPH at school); other-end of-year outcomes are currently being gathered.

• Ending medication doses were comparable to doses in community practice and much lower than those prescribed in the above calculations but their doses are equivalent to the doses reported above.) Three behavioral treatment-behavioral treatment families took medication to behavioral treatment families took home medication.

• Whereas 10 families refused medication when they were assigned to it, 6 families took medication when they were assigned to medication (these families are not included in the above calculations but their doses are equivalent to the doses reported above.) Three behavioral treatment-behavioral treatment families took medication to behavioral treatment families took home medication.

• Future analyses with the complete study sample will investigate how sequencing and dose moderates treatment effectiveness and adherence. Effects of setting, individual differences, previous medication treatment, and fidelity of classroom-behavioral treatments will be evaluated.