An Economic Cost and Cost-Effectiveness Analysis of Three Levels of School-Based Mental Health Services

-- NIJ FY15 Comprehensive School Safety Initiative --
Advancing School Mental Health, November 7, 2019

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Funded by the National Institute of Justice
- Comprehensive School Safety Initiative 2015
- Developing Knowledge About **What Works** to Make Schools Safe

Conducted by RTI International

In partnership with Charlotte-Mecklenburg Schools (CMS)
Student Services Department
Charlotte Mecklenburg Schools (CMS) is an urban district of 175 schools and approximately 148,000 students.

CMS has had some form of a school-based mental health program for the past 25 years.

The current form of the school-based mental health program is present in 135 schools with additional schools on the wait list.

The program is a partnership between the county, the school system, and eight local mental health agencies.
Background: What is School Based Mental Health (SBMH)?

Clinicians
- School Psychologists
- School Social Workers
- School Counselors

Contract Providers
- Therapists
There is an extensive process to select mental health partner agencies for the program.

One main feature of the program is that mental health therapists from partner agencies are housed on school campuses and provided outpatient therapy during the instructional day.

Another feature is that school system employed psychologists, social workers and counselors have also been trained to provide evidence-based treatments within schools such as Dialectical Behavior Therapy, SPARCS groups, Bounce Back, and Seeking Safety.
Background: How Is SBMH Related to School Safety?

- School safety is a critical issue
  - Large proportion of discipline infractions and school safety problems are perpetrated by a minority of students who need selective and indicated interventions (Fabelo et al., 2011; Hoagwood et al., 2012)
  - Addressing their needs improves school climate for everyone (Ballard et al., 2014)

- School-Based Mental Health (SBMH)
  - Brings community mental health providers into schools; identifies and targets youth who exhibit or are at risk for mental health problems
  - Has been shown to reduce enhance school climate, enhance school safety, reduce suspensions, increase academic performance, and increase school attendance (Ballard et al., 2014; Bruns et al., 2004; Powers, et al. 2014)

- Limited research
  - A growing literature that demonstrates the efficacy of SBMH
  - Limited studies on the economic costs and cost-effectiveness of SBMH
  - We are aware of no studies that compare differing levels of SBMH
Background: Economic Evaluation

- Outcome vs Economic Evaluation
  - Outcome: determine if treatment is effective at improving outcome
  - Economic: determine if treatment is cost-effective for a particular outcome

- Why Economic Evaluation?
  - Schools and districts have limited resources
  - Helps policy makers and administrators make decisions on how allocate scarce resources
Study aim: Conduct cost-effectiveness analysis that compares three levels of SBMH:
- TAU – Treatment As Usual
- EX – Expanded Treatment
- ET – Enhanced Therapies

Research questions addressed in this presentation:
- Start up costs
- Ongoing costs
- Preliminary discussion of cost-effectiveness analysis (CEA)

All presented findings are preliminary
Study Design

25 Middle/K-8 schools

Random Assignment

N=9 Treatment As Usual (TAU)

N=8 Increased Mental Health Staffing (EX)

N=8 Enhanced Therapies and Increased Mental Health Staffing (ET)
### Study Design

<table>
<thead>
<tr>
<th></th>
<th>TAU</th>
<th>EX</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychologists, counselors, and social workers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Community mental health provider</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Increase to half-time school psychologist</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Student services facilitator</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Dialectical Behavior Therapy (DBT)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

- **SPARCS**: A 16-session manually guided group treatment to improve functioning of adolescents exposed to trauma.

- **DBT**: A modified cognitive behavioral treatment (CBT) emphasizing individual psychotherapy and group skills training classes.
Economic Evaluation Overview

- **General Approach**
  - Identifies resource use and intensity of use (quantity)
  - Identifies costs attributed with resources (price)
  - Price and quantity are used to determine the cost of programs

- **Economic costs**
  - Includes value of resources that may not be explicitly paid but that have an opportunity cost (e.g., donated materials, volunteer staff, office space)

- **Perspective**
  - Charlotte-Mecklenburg School District
Methods: Data

- **Start-up and ongoing costs**
  - **Start-up**: Resources and associated costs used to begin a project
    - SPARCS & DBT training (trainer cost, staff time, materials, space)
    - Initial hiring activities
    - Planning meetings
    - Initial purchase of materials
  - **Ongoing**: Variable depending on the number of students served and/or the length of time implemented
    - Labor hours for school staff and associated wage rates
    - Billed amounts from community-based providers
    - In-kind or volunteer services
    - Materials and space costs

- **Data collection**
  - Resource use collected via interviews and questionnaires
  - Price data collected via interviews and public data sources (e.g., BLS)
Study Design

- Study timeline
  - Year 1: 2016-2017
  - Year 2: 2017-2018
  - Year 3: 2018-2019

- Outcome data collection (staff and student surveys)
  - Fall 2016
  - Spring 2017
  - Spring 2018
  - Spring 2019

- Cost data collection
  - Start-up: Spring/summer 2016
  - Year 1: Fall 2017
  - Year 2: Fall 2018
  - Year 3: Fall 2019
### Mean SBMH Start-Up Costs Per School, By School Type (2018$)

<table>
<thead>
<tr>
<th>Activity</th>
<th>TAU (N=9)</th>
<th>EX (N=8)</th>
<th>ET (N=8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and related activities</td>
<td>NA</td>
<td>$0</td>
<td>$39,657</td>
</tr>
<tr>
<td>Hiring activities</td>
<td>NA</td>
<td>$1,654</td>
<td>$1,654</td>
</tr>
<tr>
<td>Meetings w/ school staff &amp; admin</td>
<td>NA</td>
<td>$390</td>
<td>$390</td>
</tr>
<tr>
<td>Materials</td>
<td>NA</td>
<td>$56</td>
<td>$2,495</td>
</tr>
<tr>
<td>Other (e.g., legal, IT)</td>
<td>NA</td>
<td>$54</td>
<td>$54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>NA</td>
<td>$2,154</td>
<td>$44,249</td>
</tr>
</tbody>
</table>
## Preliminary results: ongoing costs per school

### Mean SBMH Annual Cost Per School, by Year and Condition (2018$)

<table>
<thead>
<tr>
<th></th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAU</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N=9)</td>
<td>$303,240</td>
<td>$269,388</td>
<td>$348,449</td>
</tr>
<tr>
<td></td>
<td>($107,014)</td>
<td>($115,877)</td>
<td>($76,899)</td>
</tr>
<tr>
<td><strong>EX</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N=8)</td>
<td>$365,902</td>
<td>$389,025</td>
<td>$393,610</td>
</tr>
<tr>
<td></td>
<td>($44,037)</td>
<td>($83,970)</td>
<td>($87,564)</td>
</tr>
<tr>
<td><strong>ET</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N=8, 7 year 3)</td>
<td>$347,217</td>
<td>$360,066</td>
<td>$404,407</td>
</tr>
<tr>
<td></td>
<td>($83,122)</td>
<td>($77,297)</td>
<td>($59,159)</td>
</tr>
</tbody>
</table>

Standard deviation in parenthesis
Mean ongoing costs per-school

Cost per-school

Year

2016-17  2017-18  2018-19

2018$  

350000  400000  450000

TAU  EX  ET
Mean ongoing costs per-school and per-student
Boxplot of ongoing costs per student
Median ongoing costs per-school and per-student

Cost per school

Cost per student

[Graphs showing the trend of costs per school and per student from 2016-17 to 2018-19 for TAU, EX, and ET]
### Mean cost per-school by cost category, 2018-19

<table>
<thead>
<tr>
<th>Category</th>
<th>TAU</th>
<th>EX</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>$316,585</td>
<td>$361,573</td>
<td>$369,435</td>
</tr>
<tr>
<td>In-Kind</td>
<td>$7,663</td>
<td>$4,310</td>
<td>$7,834</td>
</tr>
<tr>
<td>Contracted</td>
<td>$3,961</td>
<td>$5,374</td>
<td>$4,917</td>
</tr>
<tr>
<td>District staff</td>
<td>$5,453</td>
<td>$6,083</td>
<td>$6,011</td>
</tr>
<tr>
<td>Space</td>
<td>$14,658</td>
<td>$16,126</td>
<td>$16,011</td>
</tr>
<tr>
<td>Other (Materials, Trainings)</td>
<td>$130</td>
<td>$144</td>
<td>$199</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$348,449</strong></td>
<td><strong>$393,610</strong></td>
<td><strong>$404,407</strong></td>
</tr>
</tbody>
</table>
Discussion: Core Findings

- **Start up:**
  - EX costs about $2,000 more per school than TAU
  - ET costs about $44,000 more per school than TAU
  - Costs driven by SPARCS & DBT training

- **Ongoing**
  - Costs are driven by labor
  - Community-based mental health providers have little effect on costs because they mostly bill to Medicaid, private insurance
  - At the school level, EX and ET cost more than TAU across all years
  - At the student level, results are less clear
Next Steps

- Explore cost per student served

- Outcome Evaluation
  - victimization and aggression

- Cost-effectiveness analysis
  - Will combine cost results with outcomes to determine which treatment arm is cost-effective relative to the alternatives
  - Assesses trade-off of extra spending on an intervention arm and improving outcomes
Next steps: Outcome Evaluation

Aggressive Behavior (Orpinas & Frankowski, 2001)

- I teased students to make them angry.
- I pushed or shoved other students.
- I got into a physical fight because I was angry.
- I slapped or kicked someone.
- I threatened to hurt or to hit someone.

Victimization (Orpinas, 1993)

- A student beat me up.
- A student pushed or shoved me.
- A student slapped or kicked me.
- A student threatened to hurt or to hit me.

Response options: 0 times, 1 time, 2 times, 3 times, 4 times, 5 times, 6+ times
Limitations:
- A single school district in North Carolina
- Small number of schools
- School-level data (small N)
More Information

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References


Evidence-Based Treatments Added in Enhanced Condition

Tier 3 Tertiary Prevention (Intensive)

Tier 2 Secondary Prevention (Targeted)

Tier 1 Primary Prevention (Universal)

Dialectical Behavior Therapy (DBT; Linehan, 2014)
- Suicide/self-injury
- Aggression and anger
- Emotion regulation problems

Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS)
- Trauma response
- Aggression, anger, disruptive behavior
Boxplot of ongoing costs per school