Asthma Management in Inner City African American Adolescent: A Randomized Controlled Trial of Multisystemic Therapy (MST)

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To determine if MST improves illness management and health outcomes among urban African American adolescents with persistent asthma compared to an active control condition.

BACKGROUND

- Inner city African American youth have poorer asthma status than Caucasian youth, even after controlling for socioeconomic variables.
- Twice as likely to be hospitalized and four times as likely to die from asthma.
- Poor illness management may account for asthma morbidity and mortality.
- However, few asthma management interventions have targeted these adolescents.

Asthma is a chronic disease that can be managed, but management can be complicated.

OBJECTIVE

To determine if MST improves illness management and health outcomes among urban African American adolescents with persistent asthma compared to an active control condition.

METHODS

RANDOMIZED CONTROL TRIAL:

- 138 African-American youths (12-16 yrs)
- Moderate to severe persistent asthma
- At least 1 hospitalization or 2 ED visits (asthma-related) in the past year
- Randomization was stratified based on frequency of hospitalization/ED visits for asthma
- low vs. high (≥ 3 in last 12 months)
- Assessed at baseline and 7 months

OUTCOME MEASURES:

ILLNESS MANAGEMENT: FAMSS

- Family Asthma Management System Scale
- Clinical interview: parents & teens
- 9-point rating on subscales of asthma management (ie., Asthma Knowledge, Medication Adherence..)
- For these analyses, only adherence subscale used

LUNG FUNCTION:

- FEV-1: Spirometer-Forced Expiratory Volume
- A marker for the degree of obstruction for asthma
- Reliable information about airflow and correlates with clinical outcomes

- FeNO: Airway inflammation: increased levels fractional exhaled nitric oxide (FeNO)
- The American Thoracic Society (ATS) strongly recommends FeNO measurement to aid in the assessment, management, and long-term monitoring of asthma.
- High FeNo (>50 ppb in ≥12 yrs of age) or rising FeNo (>40% change from previously stable levels): implicates uncontrolled or deteriorating eosinophilic airway inflammation

DEMOGRAPHICS:

- Mean age was 13.5 years (SD=1.35)
- 61% were male, 39% were female
- Yearly income: 53% of families ≥$16,000
- MST (n = 74) & SHV (n = 64)
- There was not a significant difference between treatment groups at baseline for either measure

CONCLUSIONS

- Although this trial is ongoing, results are supportive of the utility of MST as a treatment to improve illness management and health outcomes among inner-city African American youths with high-risk asthma.
- Using FeNO as an indicator of illness management is promising.
- Additional studies are needed to assess stability of intervention effects over time.

INTERVENTION

Multisystemic Therapy (MST) versus Supportive Home Visits (SHV)

<table>
<thead>
<tr>
<th>Theory</th>
<th>Duration</th>
<th>Session(s) weekly</th>
<th>Location of Intervention</th>
<th>Intervention Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>MST</td>
<td>Bronfenbrenner’s Ecological model</td>
<td>6 months</td>
<td>Home, clinic, school, &amp; neighborhood</td>
<td>Intensive initial assessment &amp; Tailored intervention: CBT with teens or parents TO improving communication and relations with asthma clinic staff</td>
</tr>
<tr>
<td>SHV</td>
<td>Rogerian</td>
<td>6 months</td>
<td>Home</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2-3 sessions</td>
<td></td>
<td>Client-centered, non-directive supportive family counseling &amp; Promote parent-youth communicati on regarding asthma care</td>
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</tbody>
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RESULTS

Mixed design 2x2 (Treatment x Time) ANOVA examined the effect of the intervention on asthma outcomes

ILLNESS MANAGEMENT

- Significant effect was found for medication adherence
  - F(1,136)=9.30, p = .003
  - MST youths reporting greater improvement in medication adherence compared to SHV youths.
  - Medication adherence on the FAMSS was related to FEV-1 at follow-up (r=0.17, p=.05).

LUNG FUNCTION: FEV-1

- Trend to significant effect was found for lung functioning
  - F(1,134)=3.03, p = .08
  - MST youths had a tendency toward greater improvement in FEV-1 compared to SHV youths.
  - Mean improvement in FEV-1 for MST was 10% vs. 4% for SHV

LUNG FUNCTION: FeNO

- Change in FeNO (ppm) was not statistically significant but was clinically significant
  - MST youths showed a 16% mean improvement while the SHV youths a mean worsening of 8%
  - Higher scores represent a deficit in lung functioning