

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

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## 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.**



## INTERVENTION

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

	MST	SHV
Theory	Bronfenbrenner's Ecological model	Rogerian
Duration	6 months	6 months
Session(s) weekly	2-3 sessions	1 session
Location of Intervention	Home, clinic, school, & neighborhood	Home
Intervention Details	<ul style="list-style-type: none"> <li>Intensive initial assessment</li> <li>Tailored intervention: CBT with teens or parents TO improving communication and relations with asthma clinic staff</li> </ul>	<ul style="list-style-type: none"> <li>Client-centered, non-directive supportive family counseling</li> <li>Promote parent-youth communication on regarding asthma care</li> </ul>

## 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 ( $\geq 3$  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

#### LUNG FUNCTION: 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  $\geq 12$  yrs of age) or rising FeNo ( $>40\%$  change from previously stable levels): implies uncontrolled or deteriorating eosinophilic airway inflammation

### DEMOGRAPHICS:

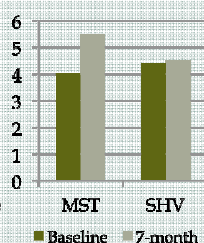
- Mean age was 13.5 years ( $SD=1.35$ )
- 61% were male, 39% were female
- Yearly income: 53% of families  $>\$16,000$
- MST ( $n = 74$ ) & SHV ( $n = 64$ )
- There was not a significant difference between

## RESULTS

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

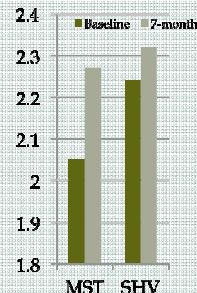
### ILLNESS MANAGEMENT

- 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 ( $r=0.17, p=.05$ ).



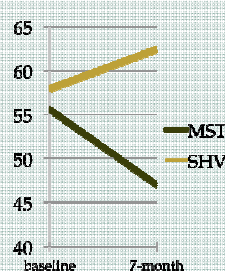
### LUNG FUNCTION: FEV-1

- 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



## 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.