Cover sheet

Title

Multisystemic Therapy for social, emotional, and behavioral problems in youth aged 10-17

Reviewers

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Dates

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Contribution of reviewers

JL (lead author) wrote the text of the published protocol; BF helped devise and run the search strategy; MP helped develop and implement data abstraction procedures.

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None

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What's new

Dates

Date review re-formatted: / /
Date new studies sought but none found: / /
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Date new studies found and included/excluded: / /
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Date comment/criticism added: / /
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Text of review

Synopsis

Abstract

Background

Objectives

Search strategy

Selection criteria

Data collection & analysis

Main results

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Background

Reviews of research on juvenile delinquency and other psychosocial problems in childhood and adolescence point to the influences of a variety of individual, family, school, peer, neighborhood, and community characteristics (Fraser 1997a, Henggeler 1998). If these problems are multidetermined, 'it follows that effective interventions should be relatively complex, considering adolescent characteristics as well as aspects of the key systems in which adolescents are embedded' (Henggeler 1995, p. 116). This is consistent with social ecological theories of human development (e.g., Bronfenbrenner 1979), in which behavior is viewed as a product of reciprocal

interactions between individuals and their social environments, and with family systems theories, in which children's behaviors are thought to reflect more complex family interactions (Haley 1976, Minuchin 1974).

Multisystemic treatment (MST) is a multi-faceted, short-term, home- and community-based intervention for families of youth with severe psychosocial and behavioral problems. Based on social ecological and family systems theories, and on research on the causes and correlates of serious antisocial behavior in youth (Henggeler 1998, Henggeler 2002a), MST is designed to address complex psychosocial problems and provide alternatives to out-of-home placement of children and youth. Treatment is individualized to address specific needs of youth and families, and includes work with other social systems including schools and peer groups (hence, the name multisystemic). Described in a detailed treatment manual (Henggeler 1998), MST uses a 'family preservation service delivery model' that provides time-limited services (4 to 6 months) to the entire family. Treatment teams consist of professional therapists and crisis caseworkers, who are supervised by clinical psychologists or psychiatrists. Therapists are mental health professionals with masters or doctoral degrees; they have small caseloads and are available to program participants 24 hours a day, seven days a week.

Clinical features of MST include a comprehensive assessment of child development, family interactions, and family members' interactions in other social systems. Interviews with family members usually take place in the family's home. In consultation with family members, the therapist identifies a well-defined set of treatment goals. Tasks required to accomplish these goals are identified, assigned to family members, and monitored in regular family sessions that occur at least once a week, sometimes daily, in the family's home.

MST does not have a unique set of intervention techniques; instead, 'intervention strategies are integrated from other pragmatic, problem-focused treatment models' including strategic family therapy, structural family therapy, and cognitive behavior therapy (Henggeler 1995, p. 121). 'Multisystemic therapy is distinguished from other intervention approaches by its comprehensive conceptualisation of clinical problems and the multi-faceted nature of its interventions' (Henggeler 1995, p. 121). MST is not limited to interventions within the family or interventions that are systemic.; it may include interventions with individuals (e.g., cognitive behavior therapy).

Replication

There are more than 250 licensed MST teams in North America and Europe, treating approximately 10,000 serious juvenile offenders and other youth with serious social, emotional, and behavioral problems each year (Henggeler 2003). Considerable attention has been paid to the transportability and dissemination of MST, and to the fidelity of MST replications (e.g., Henggeler 2002b, Schoenwald 2000b, Schoenwald 2001). 'Treatment adherence is optimized by quality assurance mechanisms that . . . include task-oriented on-site supervision, measurement of adherence to the treatment model using research-validated instruments, and intensive training for all MST staff including a five day orientation training, weekly case consultation with an MST expert, and quarterly booster training' (MST Services 2003).

Research
Funding for research on MST rose from $5 million (US dollars) in 1995 to approximately $18 million in 2000 to $35 million in 2003 (Henggeler 2003). At least 15 randomised controlled trials (RCTs) have been conducted to assess the impacts of MST, of which the results of eight are published (Borduin 1990, Borduin 1995, Henggeler 1992, Henggeler 1997, Henggeler 1999a, Henggeler 1999b, Leschied 2002, Ogden [in press]). Approximately 30 further RCTS are underway (MST Services 2003). Most of these studies have been or are being conducted by the developers of MST, based at the Family Services Research Center at the Medical University of South Carolina, USA.

Previous reviews
MST trials have been included in meta-analytic reviews of effects of a wider array of interventions with juvenile offenders (Lipsey 1998), family treatment of youth delinquency (Latimer 2001), and family and parenting interventions for conduct disorder and delinquency (Woolfenden 2002, Woolfenden 2003). However, there are no systematic reviews of the impacts of MST per se.

Results of MST outcome studies have been summarized in non-systematic reviews of the effects of family preservation services (Fraser 1997b), interventions for child physical and sexual abuse (Swenson 2003), treatment for substance abuse (NIDA 1999), treatment for delinquency and disruptive behavior in youth (Smith 1997) children's mental health services (Burns 2004, Burns 2000, Kazdin 1998), and programs to reduce crime (Aos 2001, US DHHS 2001). Several reviewers suggested that MST is one of the most promising empirically-based treatments for children and youth (Hoagwood 2001, Kazdin 1998). 'MST is unique insofar as providing multiple replications across problems, therapists, and settings. This shows that the treatment and methods of decision making can be extended and that treatment effects are reliable' (Kazdin 1998, pp. 27-28). Chorpita and colleagues classified MST as a 'probably efficacious treatment' for conduct and oppositional disorders, but noted that 'no studies to date support MST other than those conducted by its developers' (Chorpita 2002, p. 177).

Using data from three studies of effects of MST on criminal outcomes, Aos and colleagues (Aos 2001) reported a mean effect size of -.31 (sd=.10). They estimated that the net direct cost of the program per participant was $4,743 (US dollars). When they compared this cost with estimated economic benefits of anticipated reductions in crime, the estimated net benefits of MST range from $31,661 (for taxpayers only) to $131,918 (for taxpayers and crime victims) per MST program participant. Thus, a program that served ten participant families would be expected to produce a net savings of $316,610 in public funds plus over $1 million in savings to potential crime victims.

Objectives

To assess the impacts of MST on out-of-home living arrangements, recidivism, behavioral and psychosocial outcomes for children and youth, and family outcomes.

Criteria for considering studies for this review

Types of studies

The review will be limited to experimental studies in which participants were randomly assigned to groups. Studies using other (quasi-experimental) group designs will be identified, but will not be included in this review.

Types of participants

Children and youth (ages 10-17) with severe social, emotional, and behavioral problems, and their family members. These youth may be at risk of out-of-home placement. Participants include:

- abused, neglected, and dependent children and youth who may be at risk of foster care or other out-of-home placements in child welfare settings;
- children and youth with mental health problems who may be at risk of psychiatric hospitalization; and
- delinquent youth who may be at risk of incarceration or placement in residential treatment settings.

Types of interventions

Multisystemic treatment (as defined above) will be compared with 'usual services,' other treatment conditions, and no treatment.

Types of outcome measures

Measures of behavioral, psychosocial, and family outcomes will be examined.

- Behavioral outcomes include antisocial behavior (as measured by arrest, conviction of a criminal offense), drug use (self-reports and biologic measures), and school attendance.

- Psychosocial outcomes include measures of psychiatric symptoms (on standardized scales), school performance (teacher reports), peer relations (self-reports and parent or teacher reports), and parental stress.

- Family outcomes include living arrangements for children and youth (primarily in-home versus out-of-home care), qualities of parent-child interactions (e.g., child abuse or neglect, conflict/hostility, approval/support) and qualities of family functioning (e.g., adaptability, cohesion, parental monitoring).

Search strategy for identification of studies

Relevant studies will be identified through the Cochrane Central Register of Controlled Trials (CENTRAL) and electronic searches of bibliographic databases, government policy databanks and internet search engines including:

Biomedical Sciences Databases
MEDLINE
EMBASE
CINAHL
PsycINFO

Social Sciences and general references databases:
ASSIA
C2-SPECTR
Cambridge Journals
Dissertation Abstracts International (DAI)
ERIC
Family Services Research Center of the Medical University of South Carolina (www.musc.edu/fsrc)
Info Trac
Science Direct
Sociological Abstracts
Social Work Abstracts
Web of Knowledge / Web of Science

Government policy sources:
U.S. Department of Health and Human Services
U.S. National Institutes of Health, CRISP database
U.S. Centers for Disease Control
U.S. Government Printing Office
UK Home Office

Search engines
Biblioline
Google

Search terms for MEDLINE (modified as necessary for other databases) will be as follows:

(multisystemic therap$) AND (research or evaluation or outcom$)
(multi-systemic therap$) AND (research or evaluation or outcome$)
(multisystemic treatment) AND (research or evaluation or outcome$)
(multi-systemic treatment) AND (research or evaluation or outcome$)

Personal contacts
Personal contacts with MST developers and independent investigators will be made to identify unpublished reports and ongoing studies. (These contacts will include Steve Aos, Robert Barnowski, Charles Borduin, Alison Cunningham, Scott Henggeler, Alan Leschied, Mark Lipsey, Terge Ogden, Jane Timmons-Mitchell, and Bahr Weiss.)

Cross-referencing of bibliographies

The references in reviews and primary studies will be scanned to identify new leads. There will be no language restrictions.

Methods of the review

Selection of trials
Two reviewers (JL and BF) will independently screen titles and abstracts identified in the search and indicate which reports should be retrieved. If there is not enough information in the title and abstract to make such decisions, the full text will be retrieved. Both reviewers will independently read full reports and determine whether these studies meet the inclusion criteria. Selection decisions will be reviewed and any disagreements will be resolved by the review team. Specific reasons for exclusion will be documented for each study that does not meet inclusion criteria.

Assessment of methodological quality
Assessment of methodological quality
Random allocation is an inclusion criterion for this review, given that research indicating its importance in minimising bias (Schulz 1995). Two reviewers (JL & BF) will independently assign each selected study to quality categories described in the Cochrane Handbook (Clarke 2004) where:

(A) indicates adequate concealment of the allocation (for example, by telephone randomisation, or use of consecutively numbered, sealed, opaque envelopes);
(B) indicates uncertainty about whether the allocation was adequately concealed (for example, where the method of concealment is not known);
(C) indicates that the allocation was definitely not adequately concealed (for example, open random number lists or quasi-randomisation
such as alternate days, odd/even date of birth, or hospital number)

For the purposes of this review, only trials meeting categories (A) and (B) will be included. Included studies will also be assessed on: adequate implementation of random assignment, standardization and blinding of assessments, attrition, and intent-to-treat analysis. Studies will be rank-ordered in terms of their ability to support intent-to-treat analysis and use of standardized or objective outcome measures.

Data management
Information on study design and implementation, sample characteristics, intervention characteristics, and outcomes will be extracted from studies and coded on a data extraction form. Two reviewers (JL and MP) will independently code all studies. Differences between coders will be resolved in order to refine coding schemes and establish inter-rater reliability. Citations and data will be entered and organized in RevMan 4.2.3. Authors of studies with missing data will be contacted.

Data synthesis and analysis
Data synthesis will be conducted with RevMan 4.2.3, the latest version of the Cochrane Collaboration's meta-analysis software.

Continuous data will be analyzed if means and standard deviations were available and there is no clear evidence of skew in the distribution. Where scales measured the same

clinical outcomes (e.g., psychiatric symptoms) in different ways, standardized mean differences (SMD) will be compared across studies. The RevMan formula for SMD is Hedge's g, which is like Cohen's d but includes an adjustment for small sample bias. Inverse variance methods will be used to pool SMDs, so that each effect size is weighted by the inverse of its variance in an overall estimate of effect size. Confidence intervals of 95% will be used for individual study data and pooled estimates.

Binary outcomes will be analyzed by calculating odds ratios with 95% confidence intervals. Although the odds ratio provides an effect for use in meta-analysis (Lipsey 2001), attempts will be made to preserve information about base rates (actual proportions) and differences in proportions, since this information is of interest to policy makers. RevMan 4.2 uses Mantel-Haenszel methods for combining binary outcome data across studies.

If some primary studies report an outcome (e.g., recidivism) as a dichotomous measure and others use a continuous measure of the same construct, two separate mea-analysis will be used (one for odds ratios and another for SMDs). When a primary outcome study provides multiple measures of the same construct (e.g., parent and youth reports on family cohesion) at the same point in time, an average effect size will be used to avoid dependence problems. When a primary outcome study reports multiple measures of the same construct at different points in time, we will use a single measure that is closest to a one-year follow-up.

Both fixed effect and random effects models will be examined. Heterogeneity will be evaluated with I^2, the Chi-square test of heterogeneity text, and by comparing results of fixed and random effects models (Higgins 2002). If there is evidence of heterogeneity, possible sources will be investigated.

Assessing bias
Funnel plots will be drawn to investigate relationships between effect size and study precision. Such a relationship could be due to publication or related biases or to systematic differences between small and large studies. If a relationship is identified, the clinical diversity of the studies will be examined as a possible explanation.

Subgroup analysis
Subgroup analyses will focus on service settings (juvenile justice, mental health, and child welfare), type of presenting problem, and the studies' independence from program developers. Depending on the number of primary studies in the analysis, attempts will be made to study variations in effect sizes between studies, using weighted multiple regression or categorical comparisons. These analyses will be exploratory, because they involve non-experimental (cross-study) comparisons. Moderator variables include service setting, presenting problem, duration of the observation period, counterfactual condition (i.e., 'usual services', other treatment conditions, no treatment), and independence from program developers.

Sensitivity analysis
Sensitivity analysis will be used to examine the robustness of conclusions. Separate analyses will examine studies that support intent-to-treat analysis and those in which the outcome assessment was blind to treatment allocation.

Use of qualitative research
The narrative review will draw on available qualitative data within studies to discuss program processes and implementation issues.

Use of data on program costs
We will summarize available data on the costs of programs within the studies under review.

Description of studies

Methodological quality of included studies

Results

Discussion

Reviewers' conclusions

Implications for practice

Implications for research

Acknowledgements

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Potential conflict of interest

None known.

References to studies

References to ongoing studies

Other references

Additional references

Aos 2001

Aos S, Phipps P, Barnoski R, Lieb R. The comparative costs and benefits of programs to reduce crime (Version 4.0). Document Number 01-05-1201. Washington State

Institute for Public Policy. http://www.wsipp.wa.gov/rptfiles/costbenefit.pdf 2001 (accessed February 2004).

Borduin 1990

Borduin CM, Henggeler SW, Blaske DM, Stein R. Multisystemic treatment of adolescent sexual offenders. International Journal of Offender Therapy and Comparative Criminology 1990;35:105-114.

Borduin 1995

Borduin CM, Mann BJ, Cone LT. Multisystemic treatment of serious juvenile offenders: long-term prevention of criminality and violence. Journal of Consulting and Clinical Psychology 1995;63:569-578.

Bronfenbrenner 1979

Bronfenbrenner U. The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press, 1979.

Burns 2000

Burns BJ, Schoenwald SK, Burchard JD, Faw L, Santos AB. Comprehensive community-based interventions for youth with severe emotional disorders: multisystemic therapy and the wrap-around process. Journal of Child and Family Studies 2000;9(3):283-314.

Burns 2004

Burns BJ, Compton SN, Egger HL, Farmer EMZ. An annotated review of the evidence base for psychosocial and psychopharmacological interventions for children with attention-deficit/hyperactivity disorder, major depressive disorder, disruptive behavior disorders, anxiety disorders, and posttraumatic stress disorder. NIDA Commissioned Paper (see http://www.drugabuse.gov/Meetings/Childhood/Commissioned/Burns_Compton_Egger_Farmer/Burns1.html) 2004 (accessed February 2004).

Chorpita 2002

Chorpita BF, Yim LM, Donkervoet JC, Arensdorf A, Amundsen MJ, McGee C, Serrano A, Yates A, Burns JA., Morelli P. Toward large-scale implementation of empirically supported treatments for children: A review and observations by the Hawaii Empirical Basis to Services Task Force. Clinical Psychology: Science and Practice 2002;9:167-190.

Clarke 2004

Clarke M, Oxman AD, editors. Cochrane Reviewers' Handbook 4.2.1 (updated December 2003). In: The Cochrane Library [database on CDROM]. The Cochrane Collaboration. Oxford: Update Software; 2004, Issue 2.

Fraser 1997a

Fraser MW. Risk and resilience in childhood : An ecological perspective. Washington DC: NASW Press, 1997.

Fraser 1997b

Fraser MW, Nelson KE, Rivard JC. Effectiveness of family preservation services. Social Work Research 1997;21(3):138-153.

Haley 1976

Haley J. Problem solving therapy. San Francisco: Jossey-Bass, 1976.

Henggeler 1992

Henggeler SW, Melton GB, Smith LA. Family preservation using Multisystemic Therapy: An effective alternative to incarcerating serious juvenile offenders. Journal of Consulting and Clinical Psychology 1992;60:953-961.

Henggeler 1995

Henggeler SW, Borduin CM. Multisystemic treatment of serious juvenile offenders and their families. In: Schwartz IM, AuClaire P, editor(s). Home-based services for troubled children. Lincoln, Nebraska: University of Nebraska Press, 1995.

Henggeler 1997

Henggeler SW, Melton GB, Brondino MJ, Schere DG. Multisystemic therapy with violent and chronic juvenile offenders and their families: the role of treatment fidelity in successful dissemination. Journal of Consulting and Clinical Psychology 1997;65:821-833.

Henggeler 1998

Henggeler SW, Schoenwald, SK, Borduin, CM, Rowland, MD, Cunningham PB. Multisystemic treatment of antisocial behavior in children and adolescents. New York: Guilford Press, 1998.

Henggeler 1999a

Henggeler SW, Pickrel SG, Brondino MJ. Multisystemic Treatment of substance-abusing and dependent delinquents: outcomes, treatment fidelity, and transportability. Mental Health Services Research 1999;1:171-184.

Henggeler 1999b

Henggeler SW, Rowland MD, Randall J. Home-based multisystemic therapy as an alternative to the hospitalization of youths in psychiatric crisis: clinical outcomes.

Journal of the American Academy of Child and Adolescent Psychiatry 1999;38:1331-1339.

Henggeler 2002a

Henggeler SW, Schoenwald, SK, Rowland, MD, Cunningham, PB. Serious emotional disturbances in children and adolescents: Multisystemic therapy. New York: Guilford Press, 2002.

Henggeler 2002b

Henggeler SW, Schoenwald SK, Liao JG, Letourneau EJ, Edwards DL. Transporting efficacious treatments to field settings: The link between supervisory practices and therapist fidelity in MST programs. Journal of Clinical Child and Adolescent Psychology 2002;31(2):155-167.

Henggeler 2003

Henggeler SW. Multisystemic therapy: An overview. Dissemination, Data, and Direction. NASMHPD Research Institute Conference February 2003.

Higgins 2002

Higgins JPT, Thompson SG. Quantifying heterogeneity in a meta-analysis. Statistics in Medicine 2002;21:1539-58.

Hoagwood 2001

Hoagwood K, Burns BJ, Kiser L, Ringeisen H, Schoenwald SK. Evidence-based practice in child and adolescent mental health services. Psychiatric Services 2001;52(9):1179-1189.

Kazdin 1998

Kazdin AE, Weisz JR. Identifying and developing empirically supported child and adolescent treatments. Journal of Consulting and Clinical Psychology 1998;66(1):19-36.

Latimer 2001

Latimer J. A meta-analytic examination of youth delinquency, family treatment, and recidivism. Canadian Journal of Criminology / Revue Canadienne de Criminologie 2001;43(2):237-253.

Leschied 2002

Leschied AW, Cunningham A. Seeking effective interventions for young offenders: interim results of a four-year randomized study of multisystemic therapy in Ontario, Canada. London, Ontario: Centre for Children and Families in the Justice System, 2002.

Lipsey 1998

Lipsey MW, & Wilson, DB. Effective intervention for serious juvenile offenders. In: Loeber R, Farrington DP, editor(s). Serious and violent juvenile offenders: Risk factors and successful interventions. Thousand Oaks, CA: Sage Publications, 1998.

Lipsey 2001

Lipsey MW, Wilson DB. Practical meta-analysis. Thousand Oaks, CA: Sage Publications, 2001.

Minuchin 1974

Minuchin S. Families and family therapy. Cambridge, MA: Harvard University Press, 1974.

MST Services 2003

MST Services, Inc. Multisystemic Therapy. http://www.mstservices.com (accessed February 2004).

NIDA 1999

NIDA. Principles of drug addiction treatment: A research-based guide (http://www.nida.nih.gov/PODAT/PODATindex.html). Rockville, MD: National Institution on Drug Abuse, 1999.

Ogden [in press]

Ogden T, Halliday-Boykins C. Multisystemic treatment of antisocial adolescents in Norway: replication of clinical outcomes outside the US. Journal of Child and Adolescent Mental Health (in press).

Schoenwald 2000a

Schoenwald SK, Brown TL, Henggeler SW. Inside multisystemic therapy: Therapist, supervisory, and program practices. Journal of Emotional and Behavioral Disorders 2000;8(2):113-127.

Schoenwald 2000b

Schoenwald SK, Henggeler SW, Brondino MJ, Rowland MD. Multisystemic therapy: Monitoring treatment fidelity. Family Process 2000;39(1):83-103.

Schoenwald 2001

Schoenwald SK, Hoagwood K. Effectiveness, transportability, and dissemination of interventions: What matters when? Psychiatric Services 2001;52(9):1190-1197.

Schulz 1995

Schulz KF, Chalmers I, Hayes RJ, Altman DG. Empirical evidence of bias. Dimensions of methodological quality associated with estimates of treatment effects in controlled trials. JAMA 1995;273(5):408-412.

Smith 1997

Smith CA, Stern SB.. Delinquency and antisocial behavior: A review of family processes and intervention research. Social Service Review 1997;71(3):382-420.

Swenson 2003

Swenson CC, Henggeler SW. Multisystemic therapy (MST) for maltreated children and their families. In: BE Saunders, L Berliner, & RF Hanson, editor(s). Child Physical and Sexual Abuse: Guidelines for treatment (Final report: January 15, 2003). Charleston, SC: National Crime Victims Research and Treatment Center, 2003:75-78.

US DHHS 2001

United States Department of Health and Human Services, Office of the Surgeon General. Youth violence: A report of the Surgeon General. Washington, DC: US DHSS, 2001.

Woolfenden 2002

Woolfenden SR, Williams, K, Peat JK. Family and parenting interventions for conduct disorder and delinquency: A meta-analysis of randomized controlled trials. Archives of Disease in Childhood 2002;86:251-256.

Woolfenden 2003

Woolfenden S, Williams, K, Peat J. Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17 (Cochrane Review). In: The Cochrane Library, Issue 1, 2004. Oxford, UK: Update Software.

Notes

Unpublished CRG notes

Published notes

This protocol is co-registered within the Campell Collaboration and the Cochrane Collaboration. A revised version of the protocol (with amendments in accordance with advice from the Campbell Methods Group) was published in August 2004 on the Campbell Library (C2-RIPE) and will appear on the Cochrane Library in Issue 4, 2004 (due for release in October 2004).

Amended sections

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