Multisystemic therapy compared with management as usual for adolescents at risk of offending: the START II RCT

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Declared competing interests of authors: All authors report grants from the Department for Children, Schools and Families (now the Department for Education), grants from the Department of Health and Social Care, non-financial support from the Youth Justice Board for England and Wales, grants and non-financial support from the National Institute for Health Research (NIHR) Clinical Research Network, during the conduct of the study. David Cottrell reports being the chairperson of the NIHR Clinician Scientist Fellowship panel during the conduct of the study. Ian M Goodyer reports personal fees from Lundbeck (Copenhagen, Denmark), outside the submitted work, and was a member of Efficacy and Mechanism Evaluation Prioritisation Group during the conduct of the study.

Published May 2020
DOI: 10.3310/hsdr08230

Scientific summary

The START II RCT

Health Services and Delivery Research 2020; Vol. 8: No. 23
DOI: 10.3310/hsdr08230

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Scientific summary

Background

Conduct disorder is a behavioural disorder characterised by antisocial behaviour. Risk factors for developing conduct disorder include impulsiveness and inconsistent parenting, and it is more common in young people who come from low-income households, or live in an area with high levels of criminal activity. Young people with conduct disorder are more likely to experience adverse outcomes in adulthood, including poor academic and professional attainment, substance misuse and involvement in criminal activity.

Multisystemic therapy (MST) is an intensive family-based therapy that emphasises involving all possible contributing sources to the young person's antisocial behaviour, including home and family, peers, school and the community. It combines elements of cognitive, behavioural and family therapy. The intervention was initially developed in the USA to reduce criminal activity, antisocial behaviour and recidivism in young people. Although studies in the USA have found evidence that MST leads to better outcomes than management as usual (MAU), research outside the USA has yielded more mixed results.

The Systemic Therapy for At Risk Teens (START) trial was a randomised evaluation of MST in a UK context. A total of 684 families took part in the pragmatic, individually randomised, single-blind, controlled superiority trial conducted across nine community-based MST services in England. Young people were aged 11–17 years at baseline. Results from the first phase of the trial (from baseline to 18-month follow-up) did not find any significant differences in the proportion of out-of-home placement between the MST and MAU groups, or in time to first offence. Improvements to conduct disorder were significant in both groups, but no group differences were found.

Objectives

The purpose of the second phase of the START trial was to evaluate the long-term effectiveness of MST compared with MAU. The primary objective was to compare MST and MAU for the proportion of young people who have at least one criminal conviction in the follow-up period between 18 months and 5 years. Offending data were collected using the Police National Computer, a centralised database of criminal offending in the UK. Secondary outcomes included group comparisons on psychiatric and emotional well-being, behavioural problems and areas in which conduct disorder can lead to poorer outcomes, such as educational and workplace attainment, social relationships, pregnancy and physical health. Secondary outcomes were collected to 4 years using self-report completed by both young people and their parents or carers.

The cost-effectiveness of the MST programme compared with MAU was evaluated at the 48-month follow-up point in terms of quality-adjusted life-years (QALYs) and offending. Two qualitative studies were carried out at 18 months and 48 months with a subset of families to gain a better understanding of the families' subjective experiences using semistructured interviews.

Two qualitative studies were carried out to evaluate the participants' subjective experiences of MST and its long-term impacts.

Methods

Participants were referred to the trial by youth offending teams, children's services, educational services, and child and adolescent mental health services (CAMHS). Participating MST sites were located across nine areas of England: Peterborough, Leeds, Trafford, Barnsley, Sheffield, Reading, Hackney, Greenwich, and Merton and Kingston. Those who met the criteria and agreed to take part were randomly allocated to MST or MAU, controlling for the number of past convictions, gender and age at onset of criminal behaviour. Secondary outcome data (self-report questionnaires) were collected at baseline, and at 6, 12, 18, 24, 36 and 48 months post randomisation. At the 24-month follow-up, 239 families remained in the MST group of the trial and 239 remained in the MAU group.

The self-report measures included assessments of antisocial behaviour and beliefs, callous and unemotional traits, conduct and behavioural problems, materialistic values, attention deficit hyperactivity disorder symptoms, parenting approaches, family functioning, conflict within the parental relationship, well-being and adjustment, psychiatric disorders, quality of life, significant life events, psychological resilience and affective disorders.

The MST programme is delivered within the family home by a dedicated MST therapist. The intervention typically lasts between 3 and 5 months, with the therapist visiting the family home three times per week and available on call 24/7. The therapist focuses primarily on the young person's parent(s) or caregiver(s), helping them to improve their parenting and communication skills, foster support from social networks, improve the young person's engagement with education and reduce contact with delinquent peers. Once a family competed the MST programme, they continued with MAU services.

The families in the MAU group were offered services specific to their particular needs, such as programmes for help with substance misuse, or help with engaging in education. Service use was monitored using the Child and Adolescent Service Use Schedule (CA-SUS), which indicated that MAU programmes were multicomponent and no less resource-intensive than MST.

The economic evaluation recorded resource use over the 48-month follow-up period, taking a broad perspective (including health, social care and education-based services, plus family out-of-pocket expenditure and criminal justice sector resources), and applied nationally applicable unit costs. QALYs were calculated from the three-level version of the EuroQol-5 Dimensions (EQ-5D-3L) measure of health-related quality of life.

The first qualitative study (at 18 months) recruited 14 MST families. Participants responded to an open-ended, semistructured interview schedule, which addressed their experiences of MST and how they felt it helped (or had not helped) them. Interviews were audio-recorded and transcribed, and then analysed using a thematic coding framework.

The second qualitative study (at 48 months) recruited 16 young people from the MST group and 16 young people from the MAU group. A semistructured interview was used to focus on recent events in the young person's life, their current social relationships and their outlook on the future. Interviews were audio-recorded and analysed using interpretative phenomenological analysis.

Results

There were no significant group differences in the main outcome: the proportion of young people with a criminal conviction at 60 months' follow-up. There were also no group differences in the median time to first offence, or in the mean number of overall offences. At 48 months, those in the MST group had an average of 0.39 offences compared with 0.38 in the MAU group [0.38 offences, 95% confidence interval (CI) 0.03 to 0.72 offences; $p = 0.033$]. However, these differences were no longer present at 60 months' follow-up. There were no group differences when violent and non-violent offences were analysed separately.

After correcting for multiple testing, only one secondary measure showed significant group differences: the Antisocial Beliefs and Attitudes Scale. At 24 months' follow-up, young people in the MST group (mean 75.22) reported significantly lower levels of antisocial beliefs and attitudes than those in the MAU group (mean 75.25) (adjusted difference 8.58, 95% CI 5.71 to 11.45; $p < 0.0001$). However, there was a significant difference in the other direction at the 18-month follow-up, so this finding is probably an artefact of the model used.

None of the other self-report measures completed by young people yielded any group differences. This was also true for employment, education and pregnancy.

For secondary outcome measures completed by parents or carers, those in the MAU group rated young people higher (mean 26.56) on the Inventory of Callous-Unemotional Traits than MST (mean 25.21), but only at 24 months (95% CI –5.58 to –2.22; $p < 0.0001$). Parents or carers in the MAU group reported higher levels of inconsistent discipline (mean 8.22) on the Alabama Parenting Questionnaire compared with those in the MST group (mean 7.74), but at 24-month follow-up only (95% CI –1.05 to –0.24; $p = 0.0023$). No other measures completed by parents or carers were significantly different between the groups.

Service use was found to be similar for MST and MAU groups, with general practitioner visits being the most common, and around 50% of families in both groups having contact with a social worker. Young people in the MST group spent more time in foster and residential care (29 days on average) than those in the MAU group (18 days on average). The majority of costs were composed of criminal justice system costs and community service costs. The total costs were not statistically significant between MST and MAU. QALYs were slightly lower in the MST group than in the MAU group, but the difference was not significant. The economic analysis did not find evidence to support the cost-effectiveness of MST compared with MAU, whether based on QALYs or offending.

The first qualitative study generated 15 themes, including (1) different trajectories of change after MST (continuing to improve, struggling to maintain positive changes or seeing no changes), (2) different factors to which families attributed initial changes (including the motivation to change, the therapeutic alliance, using specific techniques, learning better communication and understanding, and seeing the results), (3) different factors to which families attributed their ability to sustain those changes (including continuing to use technique, generalising their skills, improved family relationships and continuing despite setbacks) and (4) changes not attributed to MST (including individual and environmental factors).

The second qualitative study rated young people on their maturity score (mature vs. stuck); among young men, those who received MST scored higher on the maturity scale than those who received MAU. In the qualitative interviews, young men spoke about becoming adults, the positive effects of gaining work experience, developing better social relationships and, to a lesser extent, maintaining calmer family relationships. Young women also spoke about transcending adversity into adulthood, professional aspirations for the future, identifying negative relationships and learning to reframe family relationships positively.

Discussion

The outcomes from the second phase of the trial (18–60 months) were consistent with those from the first phase (baseline to 18 months), that is, there was no evidence of MST's superiority to MAU in reducing criminal conviction. Secondary outcomes reported by young people did not yield substantial evidence that MST benefited young people's behavioural, emotional or psychological problems any better than MAU. Similarly, MST does not appear to contribute to superior improvements to education, employment or pregnancy rates. Among secondary outcomes rated by parents or carers, some differences were found in perceived callous-unemotional traits and inconsistent discipline. However, these differences were not consistent throughout all follow-up points. This finding is at odds with the first phase of the trial, which suggested that young people's antisocial behaviour improved more rapidly in the MST group than in the MAU group.

The economic analysis did not indicate any economic benefit of MST and instead provides some evidence to suggest that MAU had a higher probability of being cost-effective as a result of lower costs and better outcomes. It is interesting to note that EQ-5D-3L scores fell over time in both groups, which suggests a reduction in health-related quality of life over time, although this may be attributed to young people reaching adulthood and leaving familiar services.

There were some limitations to the trial, including the failure to deliver education data from the National Pupil Database, that it was not possible to collect data using the Children and Young People – Resources, Evaluation and Systems Schedule (CYPRESS) measure (a measure of service quality) during the second follow-up phase and the proportion of missing EQ-5D-3L questionnaires at baseline. The education data contained in the database could not be matched to the study follow-up points, as the data are stored based on term dates. Efforts to collect the data from schools directly did not prove successful. Although the CYPRESS measure was collected during the first phase, MST services had closed by the time the second phase of the trial took place; as a result, it was not possible to interview the same MST clinicians about their service delivery. The missing EQ-5D-3L data was an unfortunate administrative error that was corrected as soon as this was noticed. Where possible, analyses were conducted to minimise the impact of this error on the results.

It is unclear why the findings of this trial were at odds with previous research in the USA, which found MST to be more beneficial than MAU. One possibility is the differences between juvenile justice systems: more punitive in the USA but with a greater emphasis on rehabilitation in the UK. Perhaps the MAU services offered to young people in the trial adequately addressed their individual needs for reducing antisocial behaviour.

However, it is interesting that the outcomes of the qualitative study suggest that MST was more beneficial than MAU for young men in terms of improved maturity. It is possible that MST provided the structure and intensive intervention to help young men feel validated and heard, while gaining a better understanding of the impact of their behaviour on others, which in turn led to improvements not captured in the quantitative measures.

The extent to which the outcomes of the trial can be generalised to other populations is debatable. It is possible that the effects of MST would be more pronounced in a population with more severe difficulties, or when contrasted with different MAU services. Because services made proactive bids to take part in the trial, it is possible that these MAU services were of a higher standard than may be typically expected.

It is possible that the outcomes of the trial were affected by selective attrition; however, primary outcome data were collected from an objective database. In some cases, parents or carers were not able to complete the measures because they had lost touch with their children, which may have also affected the results.

Although the results of the economic analysis do not indicate that MST is more cost-effective than MAU, it is possible that the EQ-5D-5L was not sensitive enough to pick up on changes to the broader quality of young people's lives. Service use was also self-reported, which may have limited accuracy, but there is also no reason to suspect differences in reporting bias between the groups.

The research team has several follow-up analyses planned, including causal modelling to identify new outcome predictors that have not already been evaluated. Future research directions may include identifying young people who may have benefited most from MST; the authors hypothesise that the intervention may have been most helpful to those with more severe behavioural problems, but this has not yet been tested.

Conclusion

The outcomes of the trial do not support MST as a superior intervention to MAU. There were no significant group differences in the proportion of criminal convictions by the 60-month end point, and any significant differences in secondary outcomes were not consistent across the follow-up time points. The qualitative outcomes suggest that some elements of MST may still be beneficial if integrated on a local level, but more research is needed.

Trial registration

This trial is registered as ISRCTN77132214 and London South-East REC registration number 09/H1102/55.

Funding

This project was funded by the National Institute for Health Research (NIHR) Health Services and Delivery Research programme and will be published in full in *Health Services and Delivery Research*; Vol. 8, No. 23. See the NIHR Journals Library website for further project information.

Health Services and Delivery Research

ISSN 2050-4349 (Print)

ISSN 2050-4357 (Online)

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This report

The research reported in this issue of the journal was funded by the HS&DR programme or one of its preceding programmes as project number 12/136/70. The contractual start date was in January 2014. The final report began editorial review in October 2018 and was accepted for publication in April 2019. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HS&DR editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report document. However, they do not accept liability for damages or losses arising from material published in this report.

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