The social and economic value of the Mend 7-13 Programme

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The social and economic value of MEND7-13

Foreword by Peter Wanless

The Big Lottery Fund (BIG) is committed to bringing real improvements to communities and the lives of people most in need. To tackle some of the nation’s toughest challenges we seek innovative solutions which maximise the social returns on the investments we make.

BIG's £160m Well-being funding programme, launched in 2006, is based around three intertwining strands that make up the key priority areas for the programme: physical activity; healthy eating; and mental health. The programme is focused on supporting communities with the highest levels of need, fostering partnership working, empowering communities to define their own needs and allow a wide range of approaches and initiatives to be funded.

In 2006, under the Well-being funding programme, we awarded a grant of £7.9 million to support 19,300 families in England to tackle childhood obesity by sponsoring their places on MEND’s family-based treatment and prevention programme for overweight and obese children aged 7-13 and their families. The project was developed with Great Ormond Street Hospital and the Institute of Child Health and it is an exemplary example of the benefits of partnership working. The excellent work of the MEND is reflected in the high social and economic return illustrated within this report.

By engaging the whole family in treating and preventing childhood obesity, MEND7-13 not only delivers measured improvements in child health; it also transforms lives. Children who are involved in the programme talk of doing better at school, joining an after school sports club or trying out for the school play.

As an intelligent funder we are interested in the social and economic impact of our grants. This report is encouraging news not only because it shows the value for money of the MEND portfolio, but because it shows that Social Return on Investment can provide a step towards valuing the soft outcomes that are so important to the Well-being programme.

MEND has seen significant political interest in the lessons that the project has learned. I hope that this report will enable it to build upon this interest and better explain its outcomes to a government and a country clearly looking for value for money.

Peter Wanless
Chief Executive
Executive summary

Obesity is one of the most significant challenges facing the UK. Costs to the NHS alone are forecast to reach £10 billion annually by 2050. With childhood obesity a leading predictor of obesity in adulthood, tackling the obesity problem requires intervention at an early age.

This report examines the economic and social value of MEND 7-13, a community based weight management programme for overweight and obese children aged 7 to 13. It presents the findings of two analyses, which have been undertaken in parallel:

- An evaluation, following NICE guidelines, by York Health Economics of the cost-effectiveness of the programme
- An assessment, following Social Return on Investment (SROI) principles, by nef consulting of the social value that is created by improvements in the well-being of participants and their families

To date the MEND 7-13 programme has been completed by 16,000 children and their parents, some 32,000 people in total. The analyses in this report are informed by a Randomised Control Trial (RCT) conducted in 2005-07, data from the subsequent roll-out to 16,000 children and new stakeholder engagement with children, parents and programme staff conducted specifically for the nef consulting analysis.

The study shows that MEND 7-13 is not only an effective intervention to reduce the number of obese children, but that it represents a cost-effective use of healthcare resources. The incremental cost-effectiveness ratio (ICER) of the programme is £1,671 per QALY gained. This places MEND 7-13 considerably below the NICE threshold for cost-effectiveness of £20,000-£30,000 per QALY gained and compares favourably with other obesity interventions.

Children attend MEND 7-13 with a parent or carer; it costs an average of £416 for them to participate, together. The Programme creates health and social outcomes, which have a combined total value of £3,831 - £5,331 per enrolled child. These comprise:

- Health outcomes worth £3,025 – £4,538
- Improved self esteem to participating children worth £297.
- Increased autonomy and control to participating parents worth £61
- £473 to participating families as a result of spending more time together.

The study concludes that MEND 7-13 is a cost effective intervention which provides returns on public investment of 967% -1331%.

An investment of £77 million to make the programme available to 245,000 children in England can be expected to create health and social outcomes worth £0.99bn - £1.36bn and a total of 200,511 QALYs.
Introduction

Obesity is one of the biggest challenges facing the United Kingdom. The scale of the challenge has been compared to the threat posed by climate change, and it is estimated that the annual costs to the NHS alone will reach £10 billion by 2050.

Childhood obesity is a key predictor of obesity in adulthood, and is also increasing at a worrying pace.

MEND (Mind, Exercise, Nutrition … Do It!) is a social enterprise that tackles the obesity problem by offering community-based programmes which support the adoption of healthy lifestyles.

This report examines the economic and social value created by a child weight management programme for 7 to 13 year olds; MEND 7-13. It presents the findings of two analyses:

- An analysis by York Health Economics of the cost-effectiveness of MEND 7-13. This analysis follows NICE guidelines and is concerned primarily with the outcomes that result from a reduction in BMI.

- An analysis by nef consulting of the social value that is created through increasing the well-being of children, parents and their families that participate in MEND 7-13. This analysis is informed by the principles of Social Return on Investment (SROI).

These two studies were undertaken in parallel. Together they quantify the value of both clinical and non-clinical outcomes that result from MEND 7-13. It is recognised that findings may be conservative. Additional benefits identified in the course of the analyses, including outcomes around friendships, relationships and parental health improvements, have not been valued. Further, the methodology used to value health outcomes probably underestimates quantum.
1. Programme and Policy Overview

About MEND 7-13

MEND 7-13 was developed by experts at the Great Ormond Street Hospital for Children NHS Trust, and the University College London Institute of Child Health. Funded by charitable donors, corporate sponsors and public commissioners, the programme has been made available free of charge. MEND’s group-based after-school courses are available in over 300 locations across the UK, delivered by one or more local delivery partners. In each locality, local health, education and fitness professionals are trained by MEND to deliver clinically-effective behaviour-change programmes. Children attend the courses with their parents.

Programmes are available for children aged 2-4, 5-7 and 7-13. The scope of this report is restricted to the latter: MEND 7-13.

The national policy context: obesity

Child obesity is a growing problem in the United Kingdom. Results from the National Child Measurement Programme (NCMP) for the 2008/9 school year indicate that 22.8% of children in reception are either overweight or obese and that this rises to nearly one in three by Year 6.\(^1\)

Obesity is linked to many serious health risks in children and young people as well as adults. These include cardiovascular problems, type-2 diabetes, respiratory illnesses, sleep apnoea and certain types of cancer. In addition, overweight or obese children are particularly susceptible to psychological disorders, such as depression and low self-esteem which can lead to lowered academic achievement. They are also at increased risk from bullying and evidence shows that weight problems in childhood are usually carried through to adulthood.

The government recognises the urgency and seriousness of the obesity problem. It commissioned Sir David King, then Chief Scientific Advisor, to lead on the development of a strategy for tackling obesity over the next 40 years.

This culminated in the 2007 Foresight report, *Tackling Obesities: Future choices.*\(^2\) Modelling in the report forecasts that on current trends 60% of adult men, 50% of adult women and 25% of children will be obese by 2050.

The associated costs of such high levels of obesity to the State and society are striking. The report estimates that by 2050 obesity-related costs to the NHS will have doubled to reach £10 billion per year. Wider costs to society and businesses are expected to reach £49.9 billion annually.

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\(^2\) Full report is available to download at: [http://www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/KeyInfo/Index.asp](http://www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/KeyInfo/Index.asp)
The Foresight report compares the scale of the challenge posed by the growing obesity epidemic to the challenge posed by climate change. It argues for a whole system approach that intervenes to reform the obesogenic environment that is the root cause of rising obesity. It calls for changes to the built environment, food production and promotion, and values in order to prevent obesity from developing on such a large scale in the first place. In addition, the report recognises the value of community-based programmes for working with those that are already overweight or obese.

A number of other local and national government initiatives recognise and provide guidance on child obesity, including the following:

- The National Healthy Schools Programme and the (Enhanced) Healthy Schools Programme actively involves parents in activities such as the development of physical activity and healthy eating policies. It also offers guidance when recommending local obesity, nutrition and physical activity-based interventions. These state that programmes must be evidence-based and respect children’s rights to protection and privacy, and must not provoke bullying or stigmatisation.
- The Department of Health’s Healthy Weight, Healthy Lives policy includes the National Child Measurement Programme (NCMP). MEND 7-13 provides a referral pathway for children that have been identified as overweight or obese in the NCMP.
- The Every Child Matters (Change for Children) agenda puts the health of children and young people firmly in the spotlight, emphasising that being healthy is essential if children and young people are to get the best out of life and fulfil their potential. Maintaining a healthy weight is a key part of this.

In addition, tackling obesity is the policy objective of several government targets, including:

- PSA 12: Improve the health and well-being of children and young people (includes a target to reduce child obesity to 2000 levels by 2020)³
- PSA 19: Better Care for All
- NI 56: Reducing obesity among children in the final year of their primary education.⁴
- NI 57: Participation in high quality PE and sport

The obesity agenda also connects up with broader issues around health inequalities. As with other non-communicable diseases, the prevalence of obesity correlates negatively with income. And consequently, the costs of childhood obesity are borne, disproportionately by low-income households.

Reducing health inequalities is both a matter of fairness and social justice in a country where people living in the poorest neighbourhoods die, on average, seven years earlier than people living in the richest neighbourhoods⁵.

³ [http://www hm treasury gov uk/d/pbrcsr07_psa12 pdf](http://www.hm-treasury.gov.uk/d/pbrcsr07_psa12.pdf)
⁴ ibid
⁵
Within this context, health inequalities have remained consistently high on the policy agenda. PSA Delivery Agreement 18 was established in 2007 to reduce health inequalities by 10% by 2010 as measured by infant mortality and life expectancy at birth.

In March 2009, a House of Commons Parliamentary Select Committee on Health Inequalities reported that progress towards this policy objective had been negligible. 12 months later the Marmot Review published a comprehensive set of recommendations to address health inequalities after the PSA target had lapsed.

The national policy context: well-being

Obesity is most often considered in terms of its impacts on physical health. Yet there are also significant non-clinical impacts. Obesity has been associated with lower self-esteem, increased bullying, and increased incidence of depression and mental ill-health. Taken together, we might see these as impacting the well-being of individuals above normal weight.

Maximising well-being is emerging as a key public policy objective.

In 2006, the UK Government cross-departmental Whitehall Well-Being Working Group set out to develop a ‘shared understanding’ of well-being. It defined well-being as follows:

“a positive physical, social and mental state... that individuals have a sense of purpose, that they feel able to achieve important personal goals and participate in society. It is enhanced by conditions that include supportive personal relationships, strong and inclusive communities, good health, financial and personal security, rewarding employment, and a healthy attractive environment”

A subsequent Foresight report on Mental Capital and Well-being (2008) brought together the views of 400 academic researchers and advised the government on how to achieve the best possible mental development and mental wellbeing for everyone in the UK in the future.

There is recognition within emergent well-being policy frameworks that physical health and mental well-being should be considered together. The Department of Health White Papers, Choosing Health (2004) and Our Health, Our Care, Our Say, place well-being in a health context. Similarly PSA 18 is concerned with promoting ‘better health and well-being for all’.

A number of initiatives have been introduced to improve the well-being of children:

- Every Child Matters (ECM) places the well-being of children at the heart of service delivery by focusing on the holistic needs of each child. In other words, it focuses on facets of well-being that are important to children themselves.
- The National Healthy Schools Programme requires schools to “promote positive emotional health and well-being and help pupils understand and

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express their feelings and build their confidence and emotional resilience and therefore their capacity to learn”.

- The Children’s Plan, published in 2007, highlights the government’s commitment to increasing the well-being of children and young people. The Children’s Plan includes several goals that are to be achieved by 2020 that are directly related to well-being. This includes a drive to improve child health with the proportion of obese and overweight children reduced to 2000 levels.

- PSA Delivery Agreement 12: Improve the health and wellbeing of children and young people.

- National Indicator 50 (NI 50) is about the emotional health and well-being of children and young people. It is based on the percentage of children with good relationships.

- National Indicator 119 (NI119) is a self-reported measure of people’s overall health and wellbeing. This is influenced by perceived autonomy, and in the case of parents, by the strength of relationships within the family.

As the health and well-being agendas align, MEND 7-13 sits comfortably within this policy context. This is because it delivers measured improvements in both physical health and self-esteem. Section 3 quantifies the value created in each of these areas.
2. MEND 7-13 theory of change

Introduction and Methodology

The social and economic value of MEND 7-13 is dependent on change in the children and families that participate in it. To understand the story of change for these children and families, a series of workshops and interviews were carried out. The first workshop was held with 15 parents that had completed MEND 7-13 in the last 24 months. The second workshop was held with 12 programme leaders and programme managers who had been involved in service delivery. Both workshops took place in London and used a facilitated ‘Storyboard’ exercise. In addition, two family interviews were conducted to better understand the changes experienced by families as a result of attending MEND 7-13.

The engagement with beneficiaries and programme staff was used to construct a theory of change for MEND 7-13. This is the story of how MEND 7-13 uses resources to deliver a series of activities that in turn lead to change – or outcomes – for children, parents and other stakeholders, such as the State.

Existing large-scale quantitative studies are later used to evidence this change.

Impact map

Table 2.1 illustrates the impact map for MEND 7-13. It summarises the theory of change for the four key stakeholder groups identified through the workshops and interviews.

These groups are:

- The children who participated
- The parents who participated along with their children
- The family unit of those participating
- The state (NHS primarily, but also Local Authorities and other commissioners)

The theory of change asserts that each of these stakeholder groups benefits either directly or indirectly from MEND 7-13 as a result of the outcomes depicted on the impact map.

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6 For more information on the Storyboard, see http://www.proveit.org.uk/storyboard.html
Table 2.1: Impact map for MEND 7-13

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Inputs</th>
<th>Outputs/activities</th>
<th>Initial outcomes</th>
<th>Longer term outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children participating in the programme</td>
<td>Time:</td>
<td>Participation in the group-based programme with their parents.</td>
<td>Weight loss and improved fitness</td>
<td>Improved physical health (measured in QALYs)</td>
</tr>
<tr>
<td></td>
<td>Attending the programme</td>
<td>MEND 7-13 has 3 key elements:</td>
<td>Increased knowledge of healthy eating leads to healthier food choices</td>
<td>Increased personal and social well-being</td>
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<td></td>
<td></td>
<td>• Sessions to provide nutritional information and guidance.</td>
<td>Other physical improvements (e.g. around asthma) due to the weight loss</td>
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<tr>
<td></td>
<td></td>
<td>• Sessions to encourage behaviour change.</td>
<td>Increased confidence and self-esteem</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Exercise classes for the children.</td>
<td>More friendships and peer support</td>
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<td></td>
<td>Better relationship with the parent</td>
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<td></td>
<td>More disciplined as a result of boundaries being set for the first time by the parent</td>
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</tr>
<tr>
<td>Stakeholders</td>
<td>Inputs</td>
<td>Outputs/activities</td>
<td>Initial outcomes</td>
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</tr>
<tr>
<td>Parents participating in the programme</td>
<td>Time:</td>
<td>Participating in the group-based MEND programme with their children.</td>
<td>Increased feeling of autonomy and control as a result of learning how to effectively set boundaries for their child</td>
<td>Increased personal and social well-being</td>
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<tr>
<td></td>
<td>Attending the programme</td>
<td>For parents, this primarily consists of:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Sessions to provide nutritional information and guidance.</td>
<td>Increased confidence</td>
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<tr>
<td></td>
<td></td>
<td>- Sessions to encourage behaviour change in themselves and their children</td>
<td>New friendships and peer support.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Increased knowledge of healthy eating leads to healthier food choices</td>
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<td></td>
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<td></td>
<td>Better relationship with the child</td>
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<td></td>
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<td></td>
<td>May realise they have a problem with eating and inactivity also and begin to make changes for themselves that lead to weight loss and improved health</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>May begin to role model healthier lifestyle for their children</td>
<td></td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Inputs</td>
<td>Outputs/activities</td>
<td>Initial outcomes</td>
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<tr>
<td>Families where at least one parent and child has participated in the MEND programme</td>
<td>Knowledge and learning of the MEND programme is transferred to rest of the family.</td>
<td>▪ Increased social well-being from family members spending more time together</td>
<td>▪ Health benefits of healthier food choices and increased activity</td>
<td>▪ Better relationships between family members</td>
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<td>▪ Families eating together on a regular basis for the first time</td>
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<td>▪ Families spending time together doing exercise (e.g. bike rides)</td>
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<tr>
<td>▪ Healthier eating for the whole family</td>
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</tr>
<tr>
<td>State</td>
<td>Investment through PCTs, local authorities and other commissioning bodies.</td>
<td>Delivery of the MEND programme</td>
<td>▪ Community-based staff trained, equipped and supported to provide approved public health services.</td>
<td>▪ Reduced spending on obesity-related health costs by NHS as future demand for obesity treatment services is reduced.</td>
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<td></td>
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<td></td>
<td></td>
<td>▪ Reduction in health inequalities</td>
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</table>
The needs addressed by MEND 7-13

MEND 7-13 fills a strong need among parents for better information and guidance on healthy lifestyles for their children and themselves. Participants in the workshops pointed to the high and rising levels of obesity in the UK, a range of socio-cultural factors and concerns relating to the lack of existing service provision as creating a strong need for a programme such as MEND.

The following were identified as key barriers to leading a healthy lifestyle:

- Mixed messages about healthy eating which result in parents not knowing what is good for their children
- Technological changes that have led to increasing inactivity (e.g. dominance of computer games; driving in cars rather than walking)
- Lack of facilities for exercise
- Parents finding it difficult to do the ‘right thing’ because ‘abundance’ has become a dominant cultural norm and so limiting food types and intake is perceived as ‘mean’
- Television advertising that promotes unhealthy food to children
- Unhealthy food in schools and fast food restaurants near schools or on the way home from schools.

Many of the parents said that before coming to MEND they did not know what to do for their child. Those that self-referred to the programme had a strong desire to make changes towards a healthier lifestyle but said that without MEND they would not have had the knowledge or skills to make the right changes so easily. In their view, MEND is important because it is a structured and engaging way of learning more about healthy eating and exercise. Many said it was the only programme of its kind in their area.

How the programme works

MEND 7-13 is a group-based after-school course that teaches healthy living to children (aged 7-13) and their parents. The programme is delivered in community settings by one or more local partners with training and course resources supplied by MEND Central.

The programme consists of twice weekly two-hour sessions. The content covers three main areas:

- Nutrition
- Behaviour change
- Exercise

The sessions are a combination of information-giving and applied learning. The course includes, for example, a food tasting session and a group visit to the supermarket to read food labels, as well as classroom-based learning about fats and sugars.
Many of the sessions are conducted with children and parents together. The exercise classes, however, are only attended by children and this is an opportunity to hold sessions with parents on their own. The involvement of parents and children together was identified as a key strength by many parents. They felt this gave them and their child a common purpose and understanding of the change that was needed to become healthier.

Parents also told us that the group-setting was key to the success of the programme. Many said it made their child feel accepted and comfortable with participating in physical activity. It also created a sense of positive peer pressure that encouraged healthier eating and exercise. For the parents themselves, the group setting normalised their own experiences of trying to make healthier choices for their families.

Improvements in health and wellbeing delivered to children, parents, families and the State

The final step in the theory of change is understanding the outcomes for beneficiaries. The outcomes are the change that is experienced by each stakeholder group and enable us to ascertain the social and economic value of MEND 7-13.

Children

The children that participate in the programme experience the following initial changes\(^7\) as summarised on the impact map:

- Weight loss and improved fitness
- Increased knowledge of healthy eating, which in turn leads to healthier food choices
- Other physical improvements (e.g. around asthma) due to the weight loss
- Increased confidence and self-esteem
- More friendships and peer support
- Better relationship with the parent
- More disciplined as a result of boundaries being set for the first time by the parent

The outcomes can be clustered into two primary domains. The first three outcomes are within the domain of physical health. The next three are subsets of individual and social well-being.

Over the longer term, with appropriate follow-up support these initial changes may be converted into long term improvements in health and well-being.\(^8\) Where this occurs considerable value may accrue to the individual and State, given the high social and economic costs associated with obesity.

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\(^7\) Initial changes are defined as occurring 3 to 6 months after the programme start.

\(^8\) MEND currently offers a follow-up ‘Grad Programme’ in some of its localities. There are plans to make this more widely available to encourage higher maintenance of the initial outcomes.
The health economics analysis considers the value of a reduction in BMI over the long term.

**Parents**

For the parents participating in the programme, the initial changes are as follows:

- Increased feeling of autonomy and control as a result of learning how to effectively set boundaries for their child
- Increased confidence
- New friendships and peer support.
- Increased knowledge of healthy eating leads to healthier food choices
- Better relationship with the child
- May realise they have a problem with eating and inactivity also and begin to make changes for themselves that lead to weight loss and improved health
- May begin to role model healthier lifestyle for their children

The most significant changes for the parents centred around their well-being. Feeling a greater sense of control was particularly important, as was the support from other parents on the programme. Some parents also told us that they felt healthier but this was not as widespread.

As with children, these well-being benefits may be maintained into the future with appropriate follow-up support.

**Families**

The initial changes for families are as follows:

- Increased social well-being from family members spending more time together
- Health benefits of healthier food choices and increased activity
- Better relationships between family members

The first of these was seen by many to be the most significant. As one workshop participant put it, ‘MEND brings families together’. This starts with parents and children spending time together attending the programme but then often is maintained outside the programme. Families might start to eat together for the first time on a regular basis, or engage in outdoor activities. Together these outcomes can be understood in terms of an improvement in the social well-being of families.

**State**

The State benefits from changes in the children and families which, in turn, have implications for public service use and the public purse. In the case of MEND 7-13 the most significant outcome is in relation to the use of health services. Reductions in the use of health services will occur where weight loss and health improvements are maintained over the longer term.
Case studies

Tom, 8 years old

Tom enrolled on MEND 7-13 when he was 8 years old. His mum, Sandra, was getting worried about his weight. She found out about MEND through an ad in the local paper.

Tom says that before starting MEND he used to always come ‘dead last’ in any sports races at school. His asthma also gave him a lot of trouble. He used to have to use his inhaler on a daily basis and would need a few puffs halfway through a race.

It’s been six months since Tom finished MEND 7-13. He no longer comes ‘dead last’, but sometimes finishes 3rd or 4th. At his last MEND follow-up measure, his heartbeat per minute had dropped by 20 beats. His asthma is much improved too.

Sandra says that she had been wanting to make changes to their lifestyle and MEND gave her the knowledge and techniques to do it. One of the techniques she uses is the MEND reward chart. Tom’s goal on the chart is 60 minutes of exercise a day. When he achieves this every day for a week, he is rewarded with an activity-based treat.

Sandra says that even teachers at Tom’s school have noticed that he is healthier and fitter. Sandra and Tom are determined to keep up the healthy eating and exercise habits they have learned through MEND.

Tamsin, 12 years old

Tamsin’s mum, Jackie, also came across MEND 7-13 through an ad in the local paper.

At the time Jackie was very worried about Tamsin’s 16 year-old sister, who suffers from an eating disorder. Jackie wanted to learn new techniques to help tackle her binge eating. The age restriction on the 7-13 programme meant that Jackie could only attend the course with Tamsin, who was also struggling with her weight.

Before starting MEND, Tamsin was self-conscious and shy. She didn’t have many friends and hardly ever went out. The biggest change for Tamsin was around her confidence. She made new friends on the programme and now goes out almost every week.

Jackie showed me a professional photograph that had recently been taken of Tamsin and some of her friends. She said that before MEND Tamsin used to hate photos and even refused to have her school photograph taken.

Jackie says she learned a lot about healthy food choices on the programme. She struggles at times to put this into practice. Money is tight in their household and it doesn’t always stretch to trips to the swimming pools or the healthier food choices.
3. The value of health and well-being outcomes delivered by MEND 7-13

MEND 7-13 delivers health and social outcomes that both create value for the individuals that experience the change and for wider society and the State.

This section reports on the findings of analyses by York Health Economics and nef consulting which quantify the value of select outcomes of MEND 7-13.

Both analyses draw on existing research from the pilot and subsequent roll-out of MEND 7-13.9,10

The Health Economics of MEND 7-13

York Health Economics Consortium conducted a long-term economic evaluation of the BMI reductions that are evidenced in the MEND 7-13 roll-out data.

Informed by this data, researchers followed NICE guidelines to calculate an incremental cost-effectiveness ratio (ICER). This is defined as the additional costs of the intervention divided by the additional quality-adjusted life years (QALY) gained:

\[
\text{ICER} = \frac{\text{additional cost of MEND 7-13}}{\text{additional QALY gained from MEND 7-13}}
\]

Interventions that have an ICER of less than £20,000-£30,000 per QALY gained are deemed cost-effective according to NICE guidance.

A full technical report setting out the methodology, assumptions and results has been produced by York Health Economics Consortium.11 Here, attention is given to the key assumptions and findings of the analysis.

Key Assumptions

The ICER is derived from constructing a project scenario, which is informed by the following key assumptions:

- MEND 7-13 is fully implemented by making it available to the eligible population of 1,325,638 7 - 13 year olds in England that have a BMI greater, or equal to, the 91st centile in 2010.

10 Sacher et. al. (2010) “Randomized controlled trial of the MEND program: A family-based community intervention for childhood obesity,” Obesity, 16 (Supp. 2): S1-S7
- Effectiveness of MEND 7-13 in reducing BMI concurs with the 3-month follow-up data from the roll-out. The percentage of obese children averted into non-obesity is, therefore, 15.27%.

- The future medical costs of obesity are drawn from the Foresight report. These are applied only to the age group reached if the MEND 7-13 is implemented in 2010 and costs are linearly distributed.

- Health outcomes are measured in QALYs calculated using the EQ-5DL measure. The estimate of life years gained is based on survival probabilities at different BMI.

- Survival curves (based on projected BMI at age 27) do not permit movement between groups and so may overestimate life expectancy of the non-obese group.

Findings

As it costs, on average, £415.77 to make MEND 7-13 available to each child, a budget of £551.2 million would be required to deliver the service across the total eligible population of 1,325,638 children in 2010.

However, implementing MEND 7-13 in 2010 would decrease the number of obese adults in 2027 by 119,627. This results in direct medical cost savings of £216 million (an average of £166 per participating child\(^{12}\)). A total of 200,511 QALYs would be gained from such a roll-out. This is the equivalent to 0.15 QALY per participating child. Based on NICE guidelines it is estimated that MEND 7-13 delivers health outcomes worth £3,025 – £4,537.70 per enrolled child.

The ICER for MEND 7-13 is:

\[
\text{ICER} = \frac{\text{additional cost of MEND 7-13}}{\text{additional QALY gained from MEND 7-13}}
\]

\[
= \frac{(\text{cost of MEND 7-13}) - (\text{future obesity costs avoided})}{\text{additional QALY gained}}
\]

\[
= \frac{\£551.2\text{million} - \£216\text{million}}{200,511}
\]

\[
= \£1,671.5\text{ per QALY gained}
\]

\(^{12}\) This figure is based on the obese children observed in the RCT. The Programme also assists overweight children. Depending on the frequency and longevity of the health improvements for this group, savings to the state potentially could be higher.
This suggests that MEND 7-13 is a cost-effective intervention for tackling obesity. Recall that NICE guidance defines cost-effective interventions as those with an ICER of less than £20,000-£30,000.

This ICER is considered cost-effective according to the NICE guidance (National Institute for Clinical Excellence, 2008) and is also low compared with some other obesity treatments (Table 3.1)

**Table 3.1: Cost-effectiveness ratios for obesity interventions**

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Cost/QALY Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>£6,289-8,527</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td>£6,349-£24,431</td>
</tr>
<tr>
<td>Non-pharmacological approaches (diet and ph</td>
<td>£174-9,971</td>
</tr>
<tr>
<td>Public health interventions</td>
<td>£265-3,018</td>
</tr>
</tbody>
</table>

It should be recognised that the net benefit calculated in this analysis may in fact be an underestimation. The baseline prevalence of obesity to which the MEND reduction is applied dates from a young population in 1973-74, when obesity was much lower. Furthermore, the EQ-5D measure may not capture all material benefits and underestimate the role of self-esteem.

**The value of well-being delivered by MEND 7-13**

The nef consulting analyses draws on the principles of Social Return on Investment (SROI) to establish the social value created as a result of the improvements in well-being for the children, parents and families that participate in MEND 7-13.

The social value of the following three outcomes is calculated:

1. The value to the child of increased self-esteem
2. The value to the parent of greater autonomy and control
3. The value to families of spending more time together

To ascertain the social value created in each case requires a four-step calculation. First, the incidence of each outcome is determined. This is how often the outcome occurs.

Second, a number of factors are evaluated to determine impact. Impact is the added value created by MEND 7-13 and refers to the outcomes that remain after taking into consideration:

- Deadweight: what would have happened in the absence of MEND 7-13?

---

13 Sources: Nice (2006); and Counterweight Project Team (2010)
• Attribution: were there other actors involved in achieving the change that can also claim credit for some of the outcomes?

Once impact has been determined, the third step translates the remaining outcomes into social value through the use of a financial proxy. Standard techniques of economic valuation for non-traded outcomes are used to achieve this. The purpose of monetising in this way is to translate diverse outcomes into a common unit of value in order to enable comparisons to be made between different outcomes.

Finally, in the fourth step, value is projected into the future for any outcomes that endure beyond the initial intervention period of the programme. To acknowledge that even where outcomes last longer than the intervention there is invariably some reduction in the degree of maintenance, a ‘drop off’ rate is applied to future benefits. All future benefits are discounted to their present value.

Social value is calculated for two scenarios:

1. Total social value for the 16,000 children that have already completed MEND 7-13

2. Potential social value if MEND 7-13 is rolled out to a further 245,000 children through an investment of £77 million

The value to the child of increased self esteem

Self esteem is a key domain of well-being. Alongside physical health gains, the MEND programme has been shown to increase the self esteem of children.

A randomised control trial of MEND 7-13 found that at 6 months post-intervention children’s self-esteem had increased by 0.2 (relative to a control group) on the 4-point global self esteem measure of the Harter self perception scale. At 12 months, this had increased to 0.3.

Early results from the roll-out point to similar effects on child self esteem. The assessment tool for self esteem in the roll-out data is the Strengths and Difficulties Questionnaire (SDQ). Pre- and post-intervention scores show a mean reduction of 3.2 on the 40-point scale with valid measurements for 3861 children.

The workshops and family interviews further confirmed that self esteem is a key and almost universal outcome for children participating in the programme. Parents said that their children now had the confidence to participate in physical activities at school. They were generally perceived as happier and often made new friends.

To establish the social value to the children of increased self esteem we followed the four steps set out above.

Outcome incidence

A total of 16,000 children have participated in MEND 7-13. Based on the data from the RCT, roll-out and workshops, we estimate that 95% of children experience an increase in self-esteem as a result of attending the programme.

14 Sacher et. al. (2010)
15 Sacher, P (2009)
Deadweight and attribution

Deadweight is derived from the performance of the control group in the pilot phase RCT. These were a delayed treatment group. They showed no practically significant improvement in self esteem. It is, therefore, assumed that without MEND 7-13 these changes would not have occurred and deadweight is zero.

Attribution to the MEND programme is 100%. This is based on information collected during the workshops and family interviews. Parents and leaders said that MEND 7-13 was usually the only programme of its kind and the only one that children and their families were accessing.

Financial proxy

Economic valuation where the beneficiaries are children is always a fraught task. Many standard techniques – such as willingness to pay, hedonic pricing, and contingent valuation – are not appropriate. It is generally accepted that given the methodological difficulties around economic valuation involving children, that their parents are used as a proxy\(^\text{16}\).

This is the approach adopted here. The financial proxy for the increased self-esteem is the willingness of parents to pay for family therapy that improves their child’s self esteem. The figure of £600 is derived from the average cost of family therapy according to the Association of Family Therapists.

Benefit Period and Drop Off

The RCT shows self esteem maintained at 12 months post-intervention. However, beyond this there is currently no monitoring of children’s self esteem. The roll-out data is only available to 3 months after the start of the intervention.

Adopting a conservative approach, a benefit period of 2 years is estimated for the purposes of this calculation. Furthermore a high drop off rate (90%) is applied to the period from 6 to 18 months. After this, it is assumed that those still exhibiting increased self esteem will have made lasting lifestyle changes and the drop off rate falls to 1%.

Total and potential value created

Table 3.2 provides a summary of the calculation.

For the 16,000 children that have already completed MEND 7-13, it shows that the total value of the improvement in self esteem amounts to £4.75 million.

An investment of £77 million would enable a more comprehensive national roll-out of MEND 7-13 to reach an additional 245,000 children. This would translate into £72.7 million in social value creation due to increased self esteem.

This calculation has only looked at the value to children of increased self esteem. It is likely that where these changes are maintained, value may also be created for the State and wider society from outcomes such as improved educational performance, increased economic activity and reductions in mental health service use.

Table 3.2: Value to the child of increased self esteem

<table>
<thead>
<tr>
<th>Calculation step</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children that have completed MEND 7-13</td>
<td>16,000</td>
</tr>
<tr>
<td>Percentage experiencing an improvement in self esteem</td>
<td>95%</td>
</tr>
<tr>
<td>Deadweight</td>
<td>0%</td>
</tr>
<tr>
<td>Attribution</td>
<td>100%</td>
</tr>
<tr>
<td>Number of children experiencing improvement in self esteem after attribution and deadweight</td>
<td>15,200</td>
</tr>
<tr>
<td>Financial proxy – average cost of 12 sessions with a family therapist</td>
<td>£600</td>
</tr>
<tr>
<td>Benefit period</td>
<td>24 months</td>
</tr>
<tr>
<td>Drop off (6-18 months)</td>
<td>90%</td>
</tr>
<tr>
<td>Drop off (18-24 months)</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Total value of improved self esteem to children already completed MEND 7-13**  
£4,748,470

**Value of improved self esteem per child already completed MEND 7-13**  
£296.78

**Number of children reached in roll-out**  
245,000

**Potential value of improved self esteem to children reached by the roll out**  
£72,710,950
The value to the parent of greater autonomy and control

Having a sense of autonomy and feeling in control is a constituent element of well-being. During the workshops and family interviews, greater sense of autonomy and control were identified as key outcomes for parents.

Parents described this initially in the context of the relationship they have with their child. The behaviour management techniques learned on MEND 7-13 enabled them to set boundaries for the child and effectively reward and discipline them. They also said that the information on healthy eating made them feel more in control of their families’ food choices. Taken together, these changes created a more global sense of autonomy and control.

Determining the social value to parents of the greater sense of autonomy and control is more difficult than for the increased child self esteem. There is no data set currently available for monitoring parents pre- and post-intervention. As a result, forecasts based on the child results are used to estimate outcome incidences and impact for parents.

The key steps in the calculation are set out below.

**Outcome incidence**

16,000 parents have attended MEND 7-13 with their child. Data from the workshops suggests that the greater sense of autonomy and control was widely experienced. As such, the 95% achievement rate of increased self esteem for children is applied as an estimate of the percentage of parents experiencing a greater sense of autonomy and control.

**Deadweight and attribution**

Deadweight and attribution are assumed to be the same as for the child outcomes.

**Financial proxy**

Time-value method is used to derive a financial proxy for the value of a greater sense of autonomy and control to parents. Investing time in an activity is an indication that one places some value on it. Time-value method uses a monetised unit of value for each hour to translate this into a financial proxy.

In this case, the proxy is based on the value of the time spent by parents attending 10-week parenting courses. It is estimated using the national median wage and halved to acknowledge that greater sense of autonomy and control are not the sole motivation for investing time in parenting interventions. The resulting financial proxy is £123.40 per parent attending.

**Benefit Period and Drop Off**

Benefit period and drop off are assumed to be the same as for the child outcomes.

**Total and potential value created**

Table 3.3 provides a summary of the calculation.

For the 16,000 parents that have already completed the MEND 7-13 programme, it shows that the total value of the greater sense of autonomy and control is £0.98 million.
The £77 million national roll-out of the MEND programme would reach an additional 245,000 parents and translate into £15.0 million in social value creation to parents from increased autonomy and control.

Table 3.3: Value to the parent of greater autonomy and control

<table>
<thead>
<tr>
<th>Calculation step</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of parents that have completed MEND 7-13</td>
<td>16,000</td>
</tr>
<tr>
<td>Percentage experiencing greater autonomy and control</td>
<td>95%</td>
</tr>
<tr>
<td>Deadweight</td>
<td>0%</td>
</tr>
<tr>
<td>Attribution</td>
<td>100%</td>
</tr>
<tr>
<td>Number of parents experiencing greater autonomy and control</td>
<td>15,200</td>
</tr>
<tr>
<td>Financial proxy – value of the time spent in parenting classes</td>
<td>£123.40</td>
</tr>
<tr>
<td>Benefit period</td>
<td>24 months</td>
</tr>
<tr>
<td>Drop off (6-18 months)</td>
<td>90%</td>
</tr>
<tr>
<td>Drop off (18-24 months)</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total value of greater autonomy and control to parents already completed MEND 7-13</strong></td>
<td><strong>£976,602</strong></td>
</tr>
<tr>
<td><strong>Value of greater autonomy and control per parent already completed MEND 7-13</strong></td>
<td><strong>£61.04</strong></td>
</tr>
<tr>
<td>Number of parents reached in roll-out</td>
<td>245,000</td>
</tr>
<tr>
<td><strong>Potential value of greater autonomy and control to parents reached by the roll out</strong></td>
<td><strong>£14,954,219</strong></td>
</tr>
</tbody>
</table>
The value to families of spending more time together

Social well-being is about our relationships with others, including family members. A dominant theme that emerged from the workshops and family interviews is that MEND, as one participant put it, ‘brings families together’.

Spending more time together starts on the programme itself, with parents attending the twice-weekly after school sessions alongside their child. The programme encourages parents and children to engage in more activities together. Many families start to eat meals together, rather than individually in front of the television. They might also engage in more outings together, such as trips to the local swimming pool or parks.

As with the outcome for parents, there is currently no data set that monitors the impact of the MEND programme on families. The information collected during the family interviews and workshops is, therefore, used alongside the child outcome data to determine the social value of families spending more time together.

**Outcome incidence**

16,000 families have participated in MEND 7-13. Due to the lack of outcomes data for families, the 95% achievement rate of the child self esteem outcome is applied here. The workshops and family interviews suggested this was a near universal outcome for families attending MEND 7-13.

**Deadweight and attribution**

Deadweight and attribution are assumed to be the same as for the child outcomes.

**Financial proxy**

Time-value method and willingness to pay are combined to estimate the value of families spending more time together.

The time-value component is based on the assumption that one-third of the additional time spent by children in active pursuits is spent jointly with other family members. The MEND roll-out data shows that children spend on average 3.4 additional hours engaged in physical activity. Therefore, annually 58.3 hours are spent together. This is monetised using the national median wage to arrive at a proxy of £705.85.

The willingness to pay component of the proxy is derived from ONS data on average annual household spending on leisure. This comes to £249.60.

The combined financial proxy is £955.45.

**Benefit Period and Drop Off**

Benefit period and drop off are assumed to be the same as for the child outcomes.

**Total and potential value created**

Table 3.4 provides a summary of the calculation.

---

For the 16,000 families that have already attended MEND 7-13, the total value created by spending more time together amounts to £7.56 million.

The £77 million national roll-out of the MEND 7-13 would reach an additional 245,000 families and translate into £115.8 million in social value creation to families for this outcome alone.

Table 3.4: Value to families of spending more time together

<table>
<thead>
<tr>
<th>Calculation step</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of families that have been reached by MEND 7-13</td>
<td>16,000</td>
</tr>
<tr>
<td>Percentage spending more time together</td>
<td>95%</td>
</tr>
<tr>
<td>Deadweight</td>
<td>0%</td>
</tr>
<tr>
<td>Attribution</td>
<td>100%</td>
</tr>
<tr>
<td>Number of families spending more time together</td>
<td>15,200</td>
</tr>
<tr>
<td>Financial proxy – combined value of average family leisure spending and time-value of additional joint activities</td>
<td>£955.48</td>
</tr>
<tr>
<td>Benefit period</td>
<td>24 months</td>
</tr>
<tr>
<td>Drop off (6-18 months)</td>
<td>90%</td>
</tr>
<tr>
<td>Drop off (18-24 months)</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total value of spending more time together to families already reached by MEND 7-13</strong></td>
<td><strong>£7,561,527</strong></td>
</tr>
<tr>
<td><strong>Value of spending more time together per family already reached by MEND 7-13</strong></td>
<td><strong>£472.60</strong></td>
</tr>
<tr>
<td>Number of families reached in roll-out</td>
<td>245,000</td>
</tr>
<tr>
<td><strong>Potential value of spending more time together to families reached by the roll out</strong></td>
<td><strong>£115,785,886</strong></td>
</tr>
</tbody>
</table>
The total value delivered by MEND 7-13

MEND 7-13 delivers both health and social outcomes. The select outcomes considered in the York Health and nef consulting analyses have a combined total value of £4,021.42 - £5,534.12 per enrolled child. These outcomes are delivered to a range of stakeholders and are aligned to the policy objectives of commissioners in both local and central government, as set out in Table 3.5.

MEND 7-13 is commissioned by Primary Care Trusts and Local Authorities at an average cost of £415.77 per family. Delivering combined social and health benefits provides returns on investment ratio of between 9.7:1 and 13.3:1. MEND 7-13, therefore, offers a compelling proposition to public commissioners.

Table 3.5: Summary table of value created per child

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Outcome</th>
<th>Value (£s) per child-</th>
<th>Policy target</th>
<th>Public body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>Improved physical health</td>
<td>£3,025 – £4,537.7</td>
<td>NI56</td>
<td>PCTs / SHAs</td>
</tr>
<tr>
<td></td>
<td>Increased personal and social well-being (improved self-esteem)</td>
<td>£296.78</td>
<td>NI50</td>
<td>PCTs / SHAs</td>
</tr>
<tr>
<td>Parents</td>
<td>Increased personal and social well-being (autonomy and control)</td>
<td>£61.04</td>
<td>NI 119</td>
<td>Local Authority</td>
</tr>
<tr>
<td>Families</td>
<td>Increased social well-being as family members spend time together. Better relations between family members</td>
<td>£472.60</td>
<td>PSA12; NI57</td>
<td>Local Authority</td>
</tr>
<tr>
<td>State*</td>
<td>Reduction in future obesity-related NHS costs</td>
<td>£166</td>
<td>NI 179</td>
<td>NHS</td>
</tr>
</tbody>
</table>

* This figure is based on the obese children observed in the RCT. The Programme also assists overweight children. Dependent on the frequency and longevity of the health improvements for this group, savings to the state potentially could be higher.
4. Scenarios for extending service delivery

The scenarios set out in this section indicate the potential returns on public investment if MEND 7-13 is made available to more eligible families across the United Kingdom.

As the Programme is designed to address childhood obesity at scale, it offers cost savings when commissioned at volume. Further, because the Programme is delivered in partnership between the leisure and health sectors, additional efficiencies are realised when the service is jointly commissioned by Local Authorities and the NHS.

It is estimated that 1,613,075 children aged 7-13 in the UK are either overweight or obese. Investment of approximately £500 million would make MEND 7-13 available to them and their families; the commitment would create net public value worth £6 billion - £8.4 billion (table 4.1).

Table 4.1: Extending MEND 7-13 across the whole of the United Kingdom

<table>
<thead>
<tr>
<th>Cost item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Eligible population MEND 7-13 (est.)</td>
<td>1.6 million</td>
</tr>
<tr>
<td>(2) Average cost per participating family</td>
<td>£300</td>
</tr>
<tr>
<td>(3) Investment committed (1)x(2)</td>
<td>£483 million</td>
</tr>
<tr>
<td>(4) Value of outcomes delivered</td>
<td>£6.5-£8.9 billion</td>
</tr>
<tr>
<td>(5) Net value created (4)-(3)</td>
<td>£6.0-£8.4 billion</td>
</tr>
</tbody>
</table>

The scenarios set out in table 4.2 indicate the potential returns on public investment if MEND 7-13 is made available (at different scales) to eligible families in different parts of the United Kingdom. Hypothetical examples are also presented for extending service provision for roll out across Local Authority / Primary Care Trusts and Strategic Health Authority settings. These examples illustrate the economies of scale that are delivered when MEND 7-13 is commissioned at volume. Even so, they are modest in their extent as none of the scenarios presented engage more than 40% of eligible families.
Table 4.2 Scenarios for creating public value by extending provision of MEND 7-13 programme across the United Kingdom

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>N. Ireland</th>
<th>SHA</th>
<th>LA/PCT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eligible population MEND 7-13</strong></td>
<td>1,325,638</td>
<td>129,500</td>
<td>91,262</td>
<td>66,675</td>
<td>29,046</td>
<td>4,840</td>
</tr>
<tr>
<td><strong>Families participating in service</strong></td>
<td>245,000</td>
<td>51,720</td>
<td>30,410</td>
<td>15,840</td>
<td>4,320</td>
<td>720</td>
</tr>
<tr>
<td><strong>Percentage of eligible population engaged</strong></td>
<td>18%</td>
<td>39%</td>
<td>33%</td>
<td>24%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Average cost per participating family</strong></td>
<td>£314</td>
<td>£342</td>
<td>£360</td>
<td>£399</td>
<td>£469</td>
<td>£578</td>
</tr>
<tr>
<td><strong>Investment committed (1)</strong></td>
<td>£76,930,000</td>
<td>£17,688,240</td>
<td>£10,947,600</td>
<td>£6,320,160</td>
<td>£2,026,080</td>
<td>£461,225</td>
</tr>
<tr>
<td><strong>Value of outcomes delivered (2)</strong></td>
<td>£986m-£1,360m</td>
<td>£208m-£290m</td>
<td>£128m-£168m</td>
<td>£67m-£87m</td>
<td>£18m-£24m</td>
<td>£3m-£4m</td>
</tr>
<tr>
<td><strong>Net value created (2)-(1)</strong></td>
<td>£891m-£1,229m</td>
<td>£90m-£272m</td>
<td>£117m-£157m</td>
<td>£61m-£80m</td>
<td>£15m-£22m</td>
<td>£2.5m-£3.5m</td>
</tr>
</tbody>
</table>
5. Conclusion

MEND 7-13 delivers health and well-being outcomes that have a combined value of £4,021.42 - £5,534.12 per enrolled child.

It has an ICER of £1,671.50 per QALY gained. This is considerably below the NICE threshold for cost-effectiveness of £20,000-£30,000 per QALY gained. It also compares favourably with other obesity treatments, such as gastric surgery that have ICERs of between £6,289 and £10,237.

The MEND programme is a holistic intervention that encourages healthy living. In addition to improvements in physical health, the programme leads to increased well-being for participants and their families. This creates substantial social value.

An investment of £77 million to roll out the programme to 245,000 children in England has the potential to create health and social outcomes worth £0.99 to £1.36 billion. These comprise:

- £745 million to £1.1 billion in value to participating children as a result of improvements in health
- £72.7 million in social value to participating children as a result of improved self esteem
- £15.0 million in social value to participating parents from increased autonomy and control
- £116 million in social value to participating families as a result of spending more time together
- £41 million direct medical cost savings due to reductions in obesity-related health problems

Obesity is a costly problem, both for the individuals who live with the consequences on a daily basis and for the State. Tackling the rising levels of obesity requires effective intervention at an early age. MEND 7-13 is a cost-effective intervention for children above a healthy weight.