NIHR HTA Programme

07 March 2013

The NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC), based at the University of Southampton, manages evaluation research programmes and activities for the NIHR

Health Technology Assessment Programme
National Institute for Health Research
Evaluation, Trials and Studies Coordinating Centre
University of Southampton, Alpha House
Enterprise Road, Southampton, SO16 7NS

tel: +44(0)23 8059 5586
fax: +44(0)23 8059 5639

email: hta@hta.ac.uk
web: www.hta.ac.uk

1. Project title

The effectiveness, acceptability and cost-effectiveness of psychosocial interventions for maltreated children and adolescents: An evidence synthesis

2. Aims and Objectives

Aims

To provide an evidence synthesis of the clinical effectiveness of psychosocial interventions, relevant to the NHS, for the treatment of maltreated infants, children and adolescents. The synthesis will take a developmental perspective, considering the implications of maltreatment for children at different ages, and in different contexts (family, out-of-home placement, clinic etc).

Primary objectives

i) To provide a comprehensive overview of the current state of evidence pertaining to the wide range of psychosocial interventions available for the treatment of maltreated children.
ii) To identify interventions most likely to be suited to maltreated infants, children and adolescents of differing ages, types of maltreatment profiles and in different settings.
iii) To review and, where possible, to synthesise the cost-effectiveness evidence for interventions used to address the adverse consequences of maltreatment.
iv) To examine the acceptability of the available portfolio of psychosocial interventions to key stakeholders, including children and adolescents, therapists, and other service providers.

Secondary objectives

i) To identify barriers to the delivery and implementation of those interventions that have most empirical support, and factors that facilitate their adoption.
ii) To identify, from the perspective of key stakeholders including children, young people, the NHS and NICE, research priorities around interventions for this vulnerable group.
iii) To provide information in a form relevant to, and suitable for, NICE guideline development.

3. Background

3.1 Maltreatment

Maltreatment has been defined as any act or series of acts of commission (physical abuse, sexual abuse, emotional/psychological abuse) or omission (neglect) by a parent, caregiver or other person that leads to harm, the potential for harm, or threat of harm to a child (up to 17 years). Children may be maltreated within the family, in an institutional or a community setting. The perpetrators of abuse are usually known to them, but they may be strangers. Whilst most maltreatment is attributable to adults, child to child maltreatment is also a concern. Some forms of maltreatment can take place on the internet. Detailed definitions can be found in a number of guidelines[1-4]. Briefly:

Physical abuse may involve hitting, shaking, throwing, poisoning, burning or scalding, drowning, suffocating, or otherwise causing physical harm to a child. Physical harm may also be caused when a parent or carer fabricates the symptoms of, or deliberately induces, illness in a child.

Emotional / psychological abuse[1] is the persistent emotional maltreatment of a child such as to cause severe and persistent adverse effects on the child's emotional development. It may feature the imposition of age or developmentally inappropriate expectations on children. It may involve: conveying to children that they are worthless or unloved; not giving them opportunities to express their views or 'making fun' of what they say or how they communicate; seeing or hearing the ill-treatment of another; being seriously bullied (including cyberbullying), or exploited or corrupted. Emotional abuse is involved in all types of maltreatment, though it may occur alone. Children who are the subject of fabricated illness are also subject to emotional abuse, either as a result of being brought up in a fabricated sick role, or because of an abnormal relationship with their carer, or disturbed family relationships[5-10].

Sexual abuse involves forcing or enticing a child or young person to take part in sexual activities, not necessarily involving a high level of violence, whether or not the child is aware of what is happening. Activities may involve physical contact, including assault by penetration; non-penetrative acts and non-contact activities, such as involving children in watching sexual activities, encouraging them to behave in sexually inappropriate ways, or grooming them in preparation for abuse (including via the internet). Sexual abuse is perpetrated by men and women, and can occur between children.

Neglect is the persistent failure to meet a child's basic physical and/or psychological needs, likely to result in the serious impairment of his or her health or development. Neglect may occur during pregnancy as a result of maternal substance abuse. Once a child is born, neglect may involve a parent or carer failing to provide a child with adequate food, clothing and shelter (including exclusion from home or abandonment), or failing to protect him or her from physical and emotional harm or danger, or ensure access to appropriate medical care or treatment. It may include neglect of, or unresponsiveness to, a child's basic emotional needs.

Most children experience more than one form of maltreatment, and there is growing recognition of the need better to take into account children's profiles of maltreatment in order to improve policy and practice[11-13.] Although maltreatment can result in death, serious injury or impairment (see below), it is not itself a disorder but an event or exposure; not all maltreated children experience impairment.

3.2 Prevalence

Child maltreatment poses significant threats to children's health, development and well-being. Crime statistics on the number of recorded offences against children, referrals to child protection services, and the numbers of children for whom there is a child protection plan, are recognized as an underestimate of the scale of the problem within the UK. As at March 2009, registrations[2] in the UK were: England 34,100; Wales 2,512, NI, 2,488 and Scotland 2,682. It is important to note that these data may not be measuring precisely the same thing in each jurisdiction. Whilst there is some evidence of a fall in the numbers of violent child deaths in infancy and middle childhood within the UK[14], these data are difficult to interpret[15] the numbers of children registered in each jurisdiction has increased steadily from 2002. The 2010 figure for children registered in England as at March 31st was 45,985 (excluding unborn children). The NSPCC last year published a cross-sectional, self-report survey of 2,275 children aged 11-17 and adults aged 18-24. Their findings indicated that 18.6% of the 11-17 year olds 'had been physically attacked by an adult, sexually abused, or severely neglected' and 25.3% of the 18-24 year olds reported severe maltreatment during childhood[16].

[1] These terms are often used interchangeably. We will use the term emotional maltreatment in this proposal.

[2] This term is used to describe children for whom there is a child protection plan and children whose names are on child protection registers. Systems differ within the UK

3.3 Consequences of maltreatment

The adverse effects of maltreatment can be found in the brain[17] and across multiple domains of functioning, including physical and mental health and well-being, security of attachment, cognitive and emotional development, aggression, violence and criminality, and socioeconomic attainment[18-23]. Maltreatment is a non-specific risk factor for a wide range of adverse long term outcomes, and children who experience multiple forms of maltreatment are at increased risk[24-26]. There is also evidence of type-specific risks. For example, Widom *et al.* found that both child physical abuse and neglect, but not sexual abuse, were associated with an increased risk for lifetime major depressive disorder in young adulthood, with children exposed both to physical *and* neglect being most at risk[27]. A longitudinal study by Kotch *et al.* [28] found that neglect within the first two years of life, in the absence of other forms of maltreatment, predicted levels of aggression at ages 4, 6, and 8 years. Preschool children exposed to severe physical neglect have been found to evidence increased rates of internalizing symptomatology and withdrawn behaviour compared with other maltreated children[29].

The impact of maltreatment may depend on the interaction of a number of factors, including the child's genetic endowment, age, gender, type(s) of abuse, severity, frequency and duration of maltreatment, and the availability of protective factors that function to enhance a child's resilience[30-36]. Children who appear to be 'asymptomatic' following maltreatment may nonetheless be at risk for the development of later psychosocial problems, triggered by subsequent stressors and the need to negotiate key developmental tasks, e.g. forming intimate relationships, managing interpersonal conflict, becoming a parent, and so on.

For the child who is removed from their birth parents or other primary carers under relevant legislation, the adverse effects of maltreatment may be compounded by delays arising from lengthy care proceedings and instability of placements. For infants and young children, these factors may exacerbate attachment difficulties or disorders. In developing effective interventions, it is therefore important to understand how and why maltreatment impacts throughout the life course, and the variables that mediate and moderate adverse sequelae.

The economic costs of maltreatment, both to individuals[37-41] and society[42-46], are well documented. Costs to individuals include adverse effects on physical and mental health; social and emotional development; cognitive development and levels of educational attainment, and employment status and earnings. Societal costs include the health and social care costs of illness or injury, the intergenerational costs of teenage pregnancy and poor parenting; criminal justice system costs, and losses in productivity.

3.4 Psychosocial interventions

There is a wide range of psychosocial interventions currently provided to children and young people who have experienced maltreatment, although availability varies enormously[47-49]. Interventions may be delivered in one or more of a range of contexts, e.g. clinic, school, community. They may include the maltreating parents or entail a change of caregiver, as in adoption, enhanced foster care or residential care. Interventions may be individual or group based, or a combination; and both forms may involve only the child or the child and his or her primary carer/s. Based on intervention studies within the published literature, interventions provided to maltreated children and adolescents are based on different theoretical underpinnings and include:

- Interventions based on cognitive theories, including cognitive-behavioural therapy (CBT); trauma-focused CBT, abuse-focused CBT.
- Eye Movement Desensitization and Reprocessing (EMDR).
- Interventions based primarily on forms of expression and communication drawn from the arts, including art therapy; drama therapy; music therapy; play therapy; narrative group therapy.
- Attachment based interventions

- Interventions based on psychoanalytic theories, offered to the child or parent-child dyads
- Family / systemic interventions
- Multisystemic therapy (MST)
- Peer mentoring
- Enhanced foster care, including treatment foster care
- Residential care, including models of therapeutic residential care such as CARE® and Sanctuary®.

Most are commissioned or provided by the NHS. Some are available from a range of voluntary and private sector providers and some are primarily social care or education based. Currently, little is known about which modalities particular children and young people need, or would most benefit from, including the question of a residential treatment approach as opposed to therapy in community settings.

3.5 Existing research: pilot scoping study of the literature and previous systematic reviews

In preparation for this application, an initial scoping study was undertaken of systematic reviews published since 2005, concerned with psychosocial interventions for maltreated children. This confirmed a predominance of reviews (and studies) of primary prevention. We identified 11 published reviews of interventions aimed at maltreated children (see linked document in application form *Systematic Reviews from 2005*), plus 6 Cochrane protocols[50-66]. The profile of these reviews indicates that the existing evidence base is characterized by poor coverage of the range of available treatments, with a bias towards syntheses of the effects of interventions for children who have been sexually abused. Apart from two Cochrane protocols under development[67-68], the most recent systematic review of attachment interventions was published in 2003[69]. Even when reviews are examining a wide range of interventions, included studies are generally dominated by studies of cognitive-behavioural interventions; a bias most likely arising from other inclusion criteria, such as study design.

3.6 Economic evaluations

As with studies and reviews of interventions, most studies of the cost-effectiveness of interventions appear to have focused on primary prevention rather than secondary and tertiary prevention, or the treatment of children who have experienced maltreatmente.g.[70-72]. A review by Goldhaber-Fiebert *et al*. [73] identified 19 reviews and 30 original papers reporting research on the costs and effectiveness of interventions for children at risk of (the majority), or already involved in, child welfare (protection) services. They observe that existing model-based evaluations of secondary prevention have, so far, used 'relatively simple multiplicative decision trees' which do not reflect the variety of pathways that children follow, how these may impact on the effectiveness of subsequent interventions, or adequately address factors such as the child's age (p. 737). They conclude that current epidemiological data, combined with evidence from well conducted outcome studies and improved modelling techniques, make it timely to revisit the cost-effectiveness of interventions for maltreated children.

3.7 Quality and coverage of existing evidence

Existing reviews suffer from a number of other weaknesses[74]. These include: i) searches that are out of date, have restricted search dates or language restrictions; ii) the predominance of research conducted in North America with little or no consideration of the generalisability of evidence to other policy contexts; iii) a failure adequately to consider the maltreatment profiles of study participants; iv) a failure to explore the logic models underpinning included interventions; v) inadequate, and sometimes no, consideration of the risk of bias of included studies; vi) heterogeneity of outcomes and measures used, and vii) a failure to consider acceptability or accessibility for children and their families.

Children who have experienced abuse and neglect can be difficult to engage, because of the impact of maltreatment on their views of the trustworthiness of adults. Evidence from a recent NSPCC survey indicated that around 80% of young adult women reported that they had talked to professional when hurt by a caregiver, compared with just 18% of boys. Boys tended to confide later, to partners. Seeking help from a professional was not always thought to have brought about a better outcome. Carers can feel excluded from some therapeutic approaches and their involvement may be critical. To our knowledge, no existing review has yet explored these issues.

Most reviews restrict their inclusion criteria to randomised trials or quasi-randomised trials. Whilst this is an appropriate threshold for assessing efficacy and effectiveness, the exclusion of other types of study that might provide valuable information may be premature in a field where ethical and technical challenges are considerable. Whilst it is arguably unethical to expose maltreated children to interventions of unknown effectiveness, the technical challenges of implementing randomised trials of maltreatment interventions can result in studies with high risk of bias[75-76] or very little useful information.

3.8 Questions that remain unanswered

Currently, a significant problem for clinicians and policy makers is the absence of a comprehensive overview of the relative effectiveness of the wide range of interventions currently made available to children who have experienced maltreatment. It is uncertain:

i) What interventions are effective, for which children, with what maltreatment profiles, in what circumstances?
ii) Where two or more interventions might be appropriate, which is most likely to be effective?
iii) What interventions are of no benefit, or may result in harm?
iv) What interventions are most accessible and acceptable to carers, children and young people?

In addition, policy makers and commissioners of services and research currently lack information on the economic benefits of interventions, and the potential value of undertaking future research. This study will establish what we know about the answers to each of these questions.

4. Approach to the proposed study

To ensure relevance, maximise implementation and facilitate the subsequent development of NICE Guidelines, it is important that key stakeholders are closely involved in the review process. Their involvement will ensure that relevant questions are asked, that meaningful outcomes are identified, and that the interpretation of evidence and the conclusions drawn from it, reflect the realities of maltreated children within the UK. They can also help to identify potential barriers to the implementation of any NICE guidelines that might follow.

We will therefore establish three advisory groups: two young persons' advisory groups (including young people who have been looked after) and a professionals' advisory group. The professionals' advisory group will comprise practitioners from the range of professions involved in the management of maltreated infants, children and young people, including foster carers and residential care workers. We will consult these groups at the outset of the review process (see section 7) and again when a draft report is ready. The initial consultations will take place in parallel with protocol development, and will focus on identifying the needs of the child / young person and the setting in which they are cared for, and the outcomes that matter to them. The final meetings will take the form of consensus meetings, and will provide an opportunity to 'reality test' the conclusions of the evidence synthesis, its applicability to the UK context, and to explore their views of the barriers to implementation, training needs etc.

5. Planned Investigation

We will address our research objectives by searching the published and unpublished literature and conducting an evidence synthesis of i) studies of the effectiveness of psychosocial interventions provided for children and adolescents who have suffered maltreatment, ii) the cost-effectiveness of interventions, and iii) studies of their acceptability to children, adolescents and their carers. The inclusion criteria will be tailored to those objectives, and the proposed evidence syntheses will be conducted in accordance with guidance provided by the Cochrane Collaboration[77] and the Centre for Reviews and Dissemination[78]. Outcomes will be assessed and presented using GRADE Pro software (http://ims.cochrane.org/gradepro) and in accordance with methodology specified by the National Institute of Health and Clinical Excellence (http://www.nice.org.uk/guidelinesmanual). The final study protocol is registered with PROSPERO.

5.1 Proposed Inclusion/Exclusion Criteria

Population/participants Children aged 0-17[3] who have experienced any form of maltreatment. Whole studies will be included if recruitment is targeted at, or otherwise biased towards, maltreated children and young people of this age range. We will also include appropriate results from any study where data are reported separately (or are obtainable) for maltreated participants (as opposed, for example, participants suffering other kinds of trauma such as violent assault by a stranger). We will use subgroup analyses to explore the impact of age and setting on outcomes of intervention. We recognize that not all maltreated children will be 'symptomatic'. Rather than excluding studies in which children are recruited on the basis of experiencing an event or series of events, we will explore the impact of the existence of symptoms on outcome (see below).

We will exclude studies which are not targeted at/do not include maltreated children e.g. psychosocial interventions for depression, where participants do not include maltreated children.

Interventions Any psychosocial intervention provided to maltreated infants, children or adolescents in any setting (e.g. family, community, residential), and by any provider, aiming specifically to address the sequelae of any form of maltreatment, in any setting (e.g. family, institution, school), with or without the involvement of a carer or carers. Examples of eligible interventions are listed above (*3.4*). Subgroup analyses will be used to explore the effect on outcomes of setting or provider, whether or not the intervention was provided with or without adjunctive treatments; format, frequency and duration of intervention.

Types of study design The study designs included for each part of the synthesis are:

i) Synthesis of evidence of effectiveness: All controlled studies (randomised trials, quasi-randomised trials, quasi experimental controlled studies and controlled observational studies), in which psychosocial interventions are compared with no-treatment, waitlist-controls, 'treatment as usual' and 'other treatment controls'. Where no controlled effectiveness studies are identified, other designs will be evaluated in order to inform future research priorities.

We will exclude case studies, descriptive studies, editorials, opinion papers, evaluations of pharmacological or physical interventions without an adjunctive psychosocial component.

ii) Acceptability: Any study that (1) asks participants for their views, irrespective of study design (and including qualitative research), or (2) provides quantitative data on non-participation, withdrawal and adherence rates, as part of an effectiveness study.

iii) Decision-analytic modelling: Uncontrolled designs, such as uncontrolled costing studies, may be included as part of the decision-analytic modelling (see also below).

[3] Because i) young people in care remain entitled to support up until the age of 25; ii) the effects of maltreatment are not always immediate, and iii) to minimize 'loss of data', we will include studies in which maltreatment took place before 17, but participants are aged up to 25.

Outcomes We will not use 'outcomes' as inclusion/exclusion criteria. We will map treatment goals and measures used in order to inform research priorities, and as part of an examination of the underpinning 'logic model' of interventions. We will finalise a set of primary and secondary outcomes, and meaningful time points for their assessment, following consultations with key stakeholders. Likely primary outcomes for children will include the following domains: i) psychological distress/mental health (particularly PTSD, depression and anxiety, self-harm); ii) behaviour (particularly internalizing and externalizing behaviours); iii) social functioning, including attachment and relationships with family and others; iv) cognitive / academic attainment, and v) quality of life (see section 6). Secondary outcomes will include: a) substance misuse; b) delinquency; c) resilience, and d) acceptability. In addition we will examine carer distress, carer efficacy (the degree to which they feel empowered to care for the child appropriately and safely) and, where appropriate, placement stability. Data on core outcomes will be extracted for all studies (where available) and the evidence will be presented in GRADE profiles.

The range of outcomes and measures used in this research area is extensive and presents a considerable challenge to developing a robust evidence base. As part of this study, appropriate links will be made with the Core Outcome Measures in Effectiveness Trials (COMET) initiative.

5.2 Search Strategy

Research, professional, policy and grey literature will be searched using systematic and comprehensive search strategies in appropriate databases and on the Internet

1. Searches will be undertaken on electronic databases for i) health and allied health literature (MEDLINE, CINAHL PSYCInfo, EMBASE, Cochrane Central Database of Controlled Trials (CENTRAL), Cochrane Database of Systematic Reviews, Database of Reviews of Effectiveness (DARE), Science Citation Index-expanded, Health Management Information Consortium (HMIC)); ii) social sciences and social welfare (International Bibliography of the Social Sciences (IBSS), Social Services Abstracts, Social Care Online, ChildData, , Sociological Abstracts, Social Science Citation Index, National Criminal Justice Reference Service Abstracts, Campbell Library); iii) education (ERIC, AUEI, BRIE) iv) other evidence-based research repositories (metaRegister of Controlled Trials (mRCT), HSRProj, UK Clinical Research Network Study Portfolio, Database of Promoting Health Effectiveness Reviews (DoPHER), The Trials Register of Promoting Health Interventions (TRoPHI); v) economic databases (the NHS Economic Evaluation database (NHS EED), the Paediatric Economic Evaluation database (PEDE), the Health Economic Evaluations database (HEED), the American Economic Association's electronic bibliography (EconLit) and the IDEAS economics database. We will also use our knowledge of existing sources of data including NHS cost information[79] and national sources of unit costs for health and social care services[80] in costing services for economic evaluations.

2. Material generated by user-led or voluntary sector enquiry will be identified via OpenGrey, searching the internet (using Google and Google Scholar) and browsing the websites of relevant UK government departments and charities e.g., Mental Health Foundation, Barnados, Carers UK, Childline, Children's Society, Depression Alliance, MIND, AnxietyUK, NSPCC, Princess Royal Trust for Carers, SANE, The Site, Turning Point, Young Minds.

3. Additional studies will be identified by scanning the bibliographies of recent reviews and newly retrieved articles, by brief targeted author searches and forward citation searching, through requests to members of an advisory panel (see below) and the establishment of a website for the review through which additional references can be submitted. Authors of ongoing and recently completed research projects will be contacted directly to enquire

whether or not the research has been completed and if there are any subsequent publications.

Search terms relating to the key concepts of the review will be identified via i) discussion between the research team and Information Scientists working for the Cochrane Developmental, Psychosocial and Learning Problems Review Group and the Cochrane Depression, Anxiety and Neurosis Group, ii) scanning the background literature and iii) consulting the controlled vocabulary lists of relevant databases (e.g. MeSH terms in MEDLINE). All databases will be searched from their inception to the date of the search. No language limits or study methods filters will be applied. The relevance of international literature and initiatives to the UK health system will be considered against the stated inclusion criteria, in conjunction with stakeholder consultation regarding the acceptability and feasibility of future service implementation.

5.3 Selection of studies

All potentially eligible records will be imported into Endnote 10, a bibliographic referencing software programme, and duplicate references identified and deleted. One reviewer will first screen titles and abstracts, and remove any that are obviously irrelevant (e.g. not concerned with a psychosocial intervention or with maltreated children or young people; not an evaluation study). A second reviewer will check a sample of these. Two reviewers will then independently screen the remaining titles and abstracts against the inclusion/exclusion criteria. A measure of inter-rater reliability will be recorded. Where there is sufficient information and agreement between reviewers that a title is not relevant, it will be discarded and a record maintained of the reasons for exclusion at this stage. Where potentially relevant studies are published as abstracts, or where there is insufficient information to assess eligibility or extract the relevant data, authors will be contacted directly. When both reviewers agree on inclusion, and whenever there is disagreement or uncertainty, the full text article will be obtained. Two reviewers will independently read full reports and determine whether these meet the inclusion criteria. Any unresolved disagreements will be discussed with the study team. Within the final report we will document the principal reason for exclusion of any study, the title or abstract of which might lead one to expect that it met inclusion criteria.

5.4 Data extraction and management

For each included study, two review authors will independently extract and record the following data using a piloted data collection form: study design and methods, sample characteristics, intervention characteristics (including theoretical underpinning of services, delivery, duration, outcomes and within-intervention variability), outcome measures and assessment time points.

In the event of disagreements, reviewers will first discuss with reference to the study papers or other information. Where necessary, study investigators will be contacted for clarification, missing information or data in a different format (e.g. raw rather than adjusted). Any differences that cannot be thus resolved will be discussed with the whole team. We will collect information on study design and implementation in a format best suited to the assessment of risk of bias[81]. We will collect raw (unadjusted) results in preference to adjusted results, both for consistency of interpretation across studies and because we think this choice of analysis is less susceptible to selective reporting bias (in particular, the strategy prevents the possibility of a biased selection of covariates for inclusion in the model). However, we acknowledge that the approach may be more open to biases introduced by differences at baseline (e.g. due to differential drop-out). We will compare baseline characteristics between arms and across studies and consider using meta-regression to adjust for baseline imbalance.

5.5 Assessment of risk of bias/study quality

We will use the Cochrane Collaboration's tool for assessing risk of bias within effectiveness studies, and make use of additional guidance for non randomised trials[81]. Qualitative data on acceptability will be quality assessed against the relevant CASP tool[82] and the principles of good

practice for conducting social research with children. The quality of data included within the economic evaluation will be assessed via quality hierarchies of data sources for economic analyses. The quality/risk of bias of all eligible studies will be assessed, but no study will be excluded from the acceptability phase of the review on the basis of its strength of evidence. Wherever possible, the relative impact of methodological weaknesses on the findings will be explored in sensitivity analyses.

5.6 Data Synthesis: Effectiveness studies

We will first map all studies of interventions against type of maltreatment (specific or multiple) and goals of treatment (outcome domains and measures). Interventions will be classified into different intervention types using a simple classification system (for example, whether the intervention has a given component e.g. psychodynamic, cognitive). Priority will be given to randomised and quasi-randomised trials, followed by non-randomised studies with comparison groups. We will perform sensitivity analyses to the inclusion of the quasi-randomised and non-randomised studies. We will assess clinical heterogeneity by comparing important participant factors amongst studies (e.g. age, gender, and ethnicity) and trial/study factors (risks of bias, co-interventions), and describe statistical heterogeneity.

If some primary studies report an outcome as a dichotomous measure and others use a continuous measure of the same construct, we will convert results for the former from an odds ratio to a standardized mean difference, provided that we can assume the underlying continuous measure has approximately a normal or logistic distribution (otherwise we will carry out two separate analyses). Missing data will be sought from study authors, described for each included study and the extent to which they might alter the conclusions of the syntheses will be discussed. The extent to which primary analyses are sensitive to missing data will be assessed using the strategy recommended by Higgins[81].

Where interventions are similar and appropriate data are available (or can be obtained) evidence synthesis will be performed to pool the results. As clinical and trial heterogeneity are to be expected (even similar interventions are provided under different circumstances, by different providers, to different groups), we will use a random effects model, taking care to interpret the summary result as an estimate of the average treatment, rather than the common effect[83]. We will then extend this analysis by fitting Network Meta-Analysis models to explore the effectiveness of different types and different components of interventions[84-85]. This approach will enable us to estimate and adjust for bias within and across study designs[86]. These more complex synthesis models will be fitted with Bayesian methods using Markov Chain Monte Carlo simulation in WinBUGS[87].

Where possible, we will explore the extent to which age, maltreatment history (including whether intra- or extra-familial), time since maltreatment, care setting (family / out-of-home care including foster care/residential), care history, and characteristics of intervention (type, setting, provider, duration) moderate the effects of psychosocial interventions. Where possible, publication bias and small study effects will be investigated using standards methods (e.g. funnel plots) and also within the synthesis models[88]. Where the data do not support such methods, the likelihood of publication bias will be summarized narratively.

5.7 Data Synthesis: Acceptability

A synthesis of acceptability data will be undertaken, using a narrative approach to synthesis[89]. Studies will be grouped into theoretically significant subgroups, providing the basis for subgroup syntheses. The structure of this narrative will be informed and framed by the content and methodological expertise available within the research team, and consultation with the young persons' advisory groups.

6. Evidence of Cost-effectiveness

The objectives of the economic component of the proposed work are i) systematically to review the economic evidence relating to interventions designed to improve outcomes for maltreated children and ii) to produce a decision-analytic model to explore their expected cost-effectiveness.

6.1 Included studies

Synthesis of the cost-effectiveness evidence will prioritise randomised controlled trials, quasi-experimental controlled studies and controlled observational studies (cohort studies and case control studies). Other designs (i.e. uncontrolled costing studies) may also be included for the purpose of populating the decision model.

6.2 Decision analysis

Data from the systematic review will be used to populate a decision-analytic model to explore the expected cost-effectiveness of the different types of intervention identified in the review, for which adequate resource use, cost and effectiveness data are available. Decision analysis is a structured way of thinking about the likely impact of a decision and involves the construction of a logical model to represent long-term costs and outcomes, in order to inform resource allocation decisions under conditions of uncertainty[90-91]. Rather than waiting for the results of a formal evaluation, in decision analysis resource allocation is explored by modelling existing data on costs, outcomes and probabilities from a range of possible sources including completed studies, from the literature or from expert opinion, to generate more timely results. In the proposed model, data will primarily come from the review. Once constructed, the assumptions and the data used in a model can be amended as more relevant and up-to-date information becomes available. This is particularly valuable in areas, such as this one, where little rigorous evidence is available.

6.3 Data

The primary cost perspective of the analysis will focus on health and personal social services, although additional perspectives (e.g. education, the young person and their family) will be explored if data are available. Dependent on data availability, outcomes will be guided by the data available from the systematic review, although with a preference for validated generic or population-specific quality of life measures.

The model will be populated primarily by data from the systematic review. Estimates of intervention efficacy/effectiveness will be taken from the synthesis modelling work, adjusted for bias if appropriate. Where gaps in the literature exist, consultation with experts (including service providers and other stakeholders - see Section 7) will be undertaken. The decision model is thus likely to be populated by data taken from sources of varying quality. The quality of data included will be assessed with reference to quality hierarchies of data sources for economic analyses[91] and the impact of poorer quality data explored in sensitivity analyses, as described below.

6.4 Data analysis

Decision analyses will be carried out using TreeAge Pro software. The decision model structure will be guided by the results of the systematic review. Whilst a simple decision tree structure may be sufficient for the proposed work, decision trees are limited by their fairly simplistic representation of reality and they can often become unwieldy as attempts are made to make them sufficiently complex to model real-world scenarios. A Markov model may provide a useful alternative since they are better able to deal with more complicated structures and are often used when costs and outcomes need to be considered over longer periods of time. Markov modelling will therefore be considered if a more[94] sophisticated approach is deemed appropriate[92].

Decision analytic modelling often relies on assumptions and data of variable quality. Uncertainty will be characterized by assigning distributions to each model input and applying Monte Carlo simulation techniques. For intervention effect parameters, the Markov Chain Monte Carlo simulations from the synthesis models will be used, in order to preserve correlations between

parameters. Probabilistic sensitivity analysis will be used to explore the impact of uncertainty on key model parameters[90].

6.5 Value of information analysis (VOI)

Cost-effectiveness analysis enables a decision as to which is the most cost-effective intervention for a given monetary value assigned to the effectiveness outcome. However, there may be uncertainty in the effectiveness and cost parameters that feed into the cost-effectiveness model, which in turn may lead to uncertainty in the optimal decision. In other words, if the technology which *on average* is best is adopted, then there is a chance that a wrong decision has been made, and in fact an alternative intervention may have been better. A value of information (VOI) analysis quantifies the chance that a wrong decision is made and the associated loss in monetary value of the effectiveness outcome from using a sub-optimal intervention. VOI therefore measures what is lost by making decisions with uncertainty, and so provides a formal quantitative assessment of the extent to which further primary research to reduce uncertainty is warranted and may also be used to target where additional research will be most valuable. We will calculate the Expected Value of Perfect Information (EVPI) to find the maximum value that can be obtained by eliminating uncertainty on all of the parameters that feed into the cost-effectiveness analysis. If EVPI is large enough to suggest that there may be value in collecting further information, we will also calculate the Expected Value of Perfect Partial Information (EVPPI) to identify which particular parameters or subsets of parameters (for example, relative efficacy on particular types of interventions, costs, utility mappings etc.) there is greatest value in collecting further research on. If the EVPPI calculations indicate that there may be value in collecting further information on a particular subset of parameters, we will calculate the Expected Value of Sample Information (EVSI) to identify the optimal study design to collect further information. All analyses will be carried out using the statistical software R.

The results of this VOI analysis will be useful to assist in prioritising future research.

7. Consultations with stakeholders, including Service Users

7.1 Young peoples' Advisory Groups

Two young people's advisory groups will be set up at the start of the project, one in Bristol and a second in Belfast, to advise i) on general issues relevant to the experience of treatment from professionals concerned with maltreated children, ii) the factors that enhance acceptability, and what outcomes matter most to children and adolescents. The DECIPHer Involving People Officer will provide us with advice and guidance on involving young people in this research and will help us strengthen existing links and contacts to identify young people suitable and willing to be on the *Young Peoples' Advisory Group*. Due to the age spread and vulnerability of this group, participants in the *Young Peoples' Advisory Group* will need to be adequately supported. For example, our NSPCC co-applicant (Cotmore) can facilitate access to NSPCC regional youth participation groups across the country, all of which are facilitated by NSPCC staff. The support provided by the NSPCC staff and participation team will enable the involvement of people younger than 16 years, but the majority will be 16 or over. VOYPIC also provide adequate training, support and mentoring for this work. We also have links with the Education of Children Looked After Service in Bristol, which may be able to help identify suitable participants.

Meetings will be convened near the start of the project and towards the end, when a draft report is ready. Taking account of the time and resources invested by participants in our Young Peoples' Advisory groups, our meeting timetable will maximise the scope for input at key stages of the project, whilst balancing the expected workload of these groups and the resources required to adequately support them. Stakeholder meetings in months 1-3 will ensure that all advisory groups can contribute to more detailed planning of the project, framing specific questions and influencing data collection and interpretation. Stakeholder meetings between months 16-18 will

allow for input into and comments/feedback on the evidence synthesis work and consensus development draft recommendations from the project. It may be advantageous to meet more frequently with these groups, not least because of the breadth of the review i.e. having meetings more frequently to examine particular issues/sets of findings, as well as early discussions about what is important. Should this be deemed useful, to avoid undue burden on participants, , our NSPCC lead (Cotmore) could facilitate online options where appropriate. The NSPCC also have a secure networking site which about 50 young people (aged 15 to 18) are signed up to and which could provide opportunities for "live facilitated chats".

Both centres will draw on established organisational arrangements for consulting with young people in meaningful ways. In Bristol, the Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement (DECIPHer, UKCRC Public Health Centre of Excellence) will facilitate consultation. DECIPHer mainly undertakes research on children and young people, and has a dedicated *Involving People Officer* who will facilitate consultation. In Belfast, VOYPIC (Voice of the Child in Care) will facilitate consultation. VOYPIC has dedicated facilitators experienced in consulting with young people in care/previously in care.

7.2 Professionals' Advisory Group.

Whilst the research team includes experienced clinicians and wide professional representation, we think it is important to involve others in shaping the work, interpreting the evidence, and drawing conclusions from it. We therefore propose establishing a Professional Advisory Group of some 50 professionals from a range of disciplines, including mental health nurses, GPs, psychologists, psychiatrists, social workers, teachers and foster carers. Stakeholders would be drawn from a range of settings (tertiary care, CAMHS, residential care, community etc) and providers (NHS, private and voluntary sectors). We propose two meetings to be held in Bristol, one at the outset of the study and one towards the end, when a draft report is ready. The second meeting will take the form of a consensus meeting (see 4 above).

A number of paediatricians and child protection nurses in different parts of the UK have expressed their willingness to join the Professionals' Advisory Group, including Nuala Toner (Children's Services Manager, Community Nursing, Belfast Health & Social Care Trust), Jacalyn Mathers (Designated Nurse for Safeguarding Children, NHS Bristol), Celina Grant (Early Intervention Section Manager and Lead Nurse for Lambeth CAHMS, London), Catherine Powell, Consultant (Designated Nurse Safeguarding Children, St James' Hospital Trust, Portsmouth), Jane Schulte (Designated Doctor for Child Protection, Bristol and South Glos), Alison Livingstone (Consultant Community Paediatrician, Spring House, Child Development Centre, Antrim), Colin Michie (Consultant Senior Lecturer in Paediatrics, Paediatrics, Ealing Hospital, London).

Consulting with a wide range of professional stakeholders will help ensure relevance to the UK/NHS, and facilitate the subsequent development of NICE Guidelines. It will also help to identify the potential barriers and facilitators to implementation from the perspective of i) those involved in identifying children who need psychosocial interventions as a result of maltreatment, ii) those responsible for referring them to appropriate services, and iii) those delivering services. Research evidence is one of a number of factors that influence clinical decisions regarding the use of particular psychosocial interventions. The weight afforded research may depend on many factors, including the perceived match between the characteristics of research samples and those of patients or clients seen in 'real life'; the appropriateness of manualised treatments that might be thought not address the very individual needs of each patient, and the view that treatments that do well in the research literature are biased towards those interventions that are most easily manualised[93]. In addition, there may be challenges to implementation that are not evident from the included studies, particularly when these are conducted in policy contexts other than the UK. Clinicians may not have the requisite skills or training opportunities; resources may be such that, of two effective interventions, the one that is the less effective of the two might nonetheless be

more likely to be of use in a particular clinical setting. Consultations with professionals will help identify and prioritise key issues.

Project timetable and milestones

Preparations for consultations with stakeholders have already begun. The following is a summary project timescale.

Months 1-3 Meeting to initiate project; develop protocol and search strategy. Hold stakeholder meetings; finalise protocol and data extraction tool in light of feedback from Advisory Group meetings. *Months 4-6* Conduct searches; exclude irrelevant articles; obtain full text papers of likely studies. Finalise list of included studies in consultation with steering committee. Map studies by intervention, study design, participants, setting and goals; commence undertake data extraction and assessments of risk of bias. *Months 7-9* Continue data extraction, assessments of risk of bias and correspondence with authors; data entry and resolution of data problems. *Months 10-12* Synthesis of effectiveness evidence, and acceptability evidence. *Months 13-15* Synthesis of evidence of cost-effectiveness; preparation of HTA report. *Months 16-18* Consensus day conference with Professionals Advisory Group to consider findings of evidence synthesis. Finalise HTA Report. There is limited contingency available within the above timescale. If unanticipated and unavoidable delays were to occur, the research team would cover these at no additional cost to the funder.

8. The review team

8.1 Expertise of the team

The combination of methodological, professional, content and clinical expertise within the research team means that it is very well qualified to deliver the proposed research. Team members come from a range of disciplinary and professional background, including psychology (Bowes, Churchill, Fisher, Livingstone), psychiatry (Glaser, Rutter), epidemiology (Churchill, Fisher), qualitative research methods (Campbell, Audrey), health economics (Byford, Welton), multi-parameter evidence synthesis modelling (Welton), information science (Anderson), sociology (Audrey) and social work and youth work (Macdonald, Audrey respectively). Macdonald, Churchill and Byford bring the necessary methodological expertise, and Churchill and Macdonald also bring content expertise in mental health (Churchill) and maltreatment (Macdonald). These three will, between them, supervise the three people employed to work on the review (Livingstone 100%, Bowes 50% and Carey 40%).

Two are Coordinating Editors of the most relevant Cochrane Review Groups: *Developmental, Psychosocial and Learning Problems* (Macdonald) and *Depression, Anxiety and Neurosis* (Churchill), and both have close links with other relevant review groups. Byers is co-convenor of the Campbell and Cochrane Economics Methods Group. Bowes, Fisher, Glaser, Macdonald, Mezey and Rutter all have content expertise in relation to maltreatment and its consequences, and have published in this area. Eight members of the team are trained and experienced in systematic review procedures (Anderson, Byford, Campbell, Churchill, Livingstone, Macdonald, Welton). We also have experience of advanced synthesis methods for multiple treatments (Network Meta-Analysis) (Welton, Churchill), including complex interventions (Welton) and bias modelling (Welton), and run international courses in synthesis methods for Network Meta-Analysis (Welton) and Evidence Synthesis for Decision Modelling (Welton). We have a national and international reputation for our work with mental health services (Byford, Churchill, Glaser, Macdonald), child and adolescent mental health (Byford, Churchill, Macdonald, Mezey) and the completion of systematic reviews and/or economic evaluations to inform healthcare policy and practice, including reviews of psychosocial interventions for maltreatment (Byford, Campbell, Churchill, Livingstone, Macdonald).

We have undertaken externally-funded systematic reviews on a wide range of health and social care issues, (Macdonald, Livingstone) and the treatment of mental health problems more widely in children and young people (Campbell, Churchill, Macdonald). We have also published, or are currently involved in, meta-analyses of the clinical and cost-effectiveness of minimal interventions for common mental health problems (Churchill), antidepressants for depression and psychological interventions for depression, anxiety and other common mental disorders in children and adults (Churchill), antidepressants for depression according to symptom severity (Welton), and interventions for children and young people of parents with serious mental illness (Byford, Churchill). Macdonald has evaluated the effectiveness of training schemes for foster carers (Macdonald) and is currently completing a study of the effects of introducing a therapeutic approach to residential care for looked after children. Cotmore (NSPCC) is Head of Evaluation, and responsible for evaluations of NSPCC interventions provided to maltreated children.

8.2 Effective team working

Although members of the team are located at a number of institutions, all have experience of working with colleagues from other disciplines and at different locations, including internationally. Most have worked together, in various combinations, on one or more projects (e.g. Churchill, Macdonald, Welton, Bowes, Byford, Campbell, Riches, Fisher). Macdonald, Glaser and Bowes have experience of working with the NSPCC, and collaborators have a number of existing relationships with other team members and the applicants. A small steering committee comprising Churchill, Macdonald, Glaser and Riches will meet regularly throughout the study to assure quality and address any issues arising. We plan to hold a one-day planning meeting of all team members at the start to enable efficient and effective team working. Full use will be made during the project of email communication, web-based applications, teleconferencing and videoconference where appropriate.

9. Expected outputs

The proposed work will, minimally, result in the following outputs:

i) A comprehensive, accessible overview of the current state of evidence pertaining to the wide range of psychosocial interventions currently used in the treatment of maltreated children.

ii) A synthesis of the evidence relating to the effectiveness of psychosocial interventions, taking into account age, type of maltreatment or maltreatment profile and setting.

iii) A summary of those interventions most suited, or most likely to be suited, to children with particular maltreatment profiles.

iv) A synthesis of the cost-effectiveness of interventions used to address the adverse consequences of child and adolescent maltreatment.

v) A synthesis of the acceptability of the available portfolio of psychosocial interventions to key stakeholders, including children and adolescents, therapists, and other service providers, and the factors that impede or facilitate dissemination and implementation.

vi) Future research priorities and research value as judged from the perspective of the UK NHS and Personal Social Services will be identified.

vii) Consensus and dissemination meetings.

In addition, we will run an appropriately timed workshop for key stakeholder groups in order to cascade the findings of the review to different user groups and to maximise opportunities for dissemination. Ideally we would plan this workshop to coincide with a suitable conference already attended by our target audience, such as the annual meeting of the British Association for the Study and Prevention of Child Abuse and Neglect. In addition, we plan to hold a smaller

workshop in Bristol for key representatives from children services and charitable organisations such as Barnados.

We will adhere to PRISMA guidelines[94] and submit a final report to the HTA programme, for publication as monograph in the health technology assessment series. A series of publications describing different aspects of the project (e.g. effectiveness, cost effectiveness, acceptability) will be written and submitted to high impact academic and practice journals. Where possible, and as appropriate, opportunities to update or produce Cochrane reviews will be explored with the relevant Cochrane group. Abstracts will be submitted to relevant major national and international conferences. Future research priorities and research value as judged from the UK NHS perspective will be communicated to the HTA and also to other key research funders and research producers (e.g. the Cochrane collaboration).

REFERENCES

1. *HM Government. Working together to safeguard children. London: Stationery Office, 2006*
2. *National Institute for Health and Clinical Excellence. When to suspect child maltreatment. 2009. (Clinical guideline 89.) www.nice.org.uk/CG89.*
3. Department of Health, Home Office, Department for Education and Skills, Welsh Assembly Government *Safeguarding children in whom illness is fabricated or induced: supplementary guidance to working together to safeguard children*. London: Department of Health, 2002.
4. HM Government. Safeguarding children in whom illness is fabricated or induced: supplementary guidance to Working together to safeguard children. (2008) Nottingham: DCSF Publications.
5. Department for Children, Schools and Families *Incredibly caring (DVD + Booklet) A training resource for professionals in Fabricated or Induced Illness (FII) in children.* Milton Keynes: Radcliffe Publishing. 2008
6. Lazenbatt, A. and Taylor, J. Fabricated or induced illness in children: a rare form of child abuse? NSPCC Research Briefing. www.nspccc.org.uk/inform 2011.
7. Bass, C. and Jones, D.P.H. Fabricated or induced illness *Psychiatry*, 2006, 5, 2, 60-65.
8. Jones D, Byrne G, Newbold C. Management, treatment and outcomes. In: Eminson M, Postlethwaite R. (Eds.) *Munchausen syndrome by proxy abuse: a practical approach.* Oxford: Butterworth Heinemann, 2002.
9. Postlethwaite, R. Fabricated or Induced Illness. *Paediatrics and Child Health*, 2010, 20, 12, 561-565.
10. Glaser, D. How to deal with emotional abuse and neglect—Further development of a conceptual framework (FRAMEA). Child Abuse & Neglect, 2011, 35, 866–875.
11. Pears, K.C., Hyoun, K.K. and Fisher, P.A. Psychosocial and cognitive functioning of children with specific profiles of maltreatment. *Child Abuse and Neglect*, 2008, 32, 958-971.
12. McCrae, J. S., Chapman, M. V., and Christ, S. L. Profile of children investigated for sexual abuse: Association with psychopathology symptoms and services. *American Journal of Orthopsychiatry*, 2006, 76, 468–481.
13. Lau, A. S., Leeb, R. T., English, D., Graham, J. C., Briggs, E. C., Brody, K. E., & Marshall, J. M. What's in a name? A comparison of methods for classifying predominant type of maltreatment. *Child Abuse & Neglect*, 2005, 29, 533–551.
14. Sidebotham, P. Aktins, B. and Hutton, J.L. Changes in rates of violent child deaths in England and Wales between 1974 and 2008: an analysis of national mortality data. *Archives of Disease in Childhood*, 2001, published online April 27. DOI:10.1136/adc.2010.207647. (downloaded 22nd December 2011).
15. Gilbert, R., Fluke, J., O'Donnell, M., Gonzalez-Izquierdo, A., Brownett, M., Gulliver, P., Janson, S. and Sidebotham, P. Child maltreatment: variation in trends and policies in six developed countries. *Lancet*, 2011, DOI:10.1016/S0140-6736(11)61087-8 (downloaded 8th January 2012).
16. NSPCC *Child abuse and neglect in the UK today*. London: NSPCC. 2011
17. McCrory, E. De Brito, S. Viding, E. Research Review: The neurobiology and genetics of maltreatment and adversity". *Journal of Child Psychology and Psychiatry*, 2010, 51, 1079-1095.
18. Mills, R., Alati, R., O'Callaghan, M.O., Najman, J.M., Williams, G.M., Bor, W. and Strathern, L. Child Abuse and Neglect and Cognitive Function at 14 Years of Age: Findings from a Birth Cohort, *Pediatrics*, 2011, 127, 1, 4-10.
19. Zielinski, D. Child maltreatment and adult socioeconomic well-being *Child Abuse and Neglect*, 2009, 33, 666-678.
20. Gilbert, R., Widom, C.A., Browne, K., Fergusson, D., Webb, E. and Janson, S. Child Maltreatment 1: Burden and consequences of child maltreatment in high-income countries. *Lancet*, 2009, 373, 68-81.
21. Cicchetti, D. and Toth, S. Child maltreatment. *Annual Review of Clinical Psychology*, 2005, 1, 409–438.

22. Colman, R.A. and Spatz Widom, C. Childhood abuse and neglect and adult intimate relationships: a prospective study. *Child Abuse and Neglect*, 2004, *28, 1133-1151.*
23. Veltman, M.W.M. and Browne KD. Three decades of child maltreatment research: implications for the school years. *Trauma Violence Abuse*, 2001, 2, 215–39.
24. Edwards, V.J., Holden, G.W., Felitti, V.J. & Anda, R.F. Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. *American Journal of Psychiatry*, 2003, 160, 8, 1453-1460.
25. Finkelhor, D., Ormrod, R.K. & Turner, H.A. Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect*, 2007, 31,1, 7-26.
26. Herrenkohl, T.I. & Herrenkohl, R.C. Examining the overlap and prediction of multiple forms of child maltreatment, stressors, and socioeconomic status: A longitudinal analysis of youth outcomes. *Journal of Family Violence*, 2007, 22, 7, 553-570.
27. Widom, C.S, DuMont, K. and Czahja, S.J. A Prospective investigation of Major Depressive Disorder and Comorbidity in Abused and Neglected Children Grown UP. *Archives of General Psychiatry*, 2007, 64, 49-56.
28. Kotch, J.B., Lewis, T., Jussey, J.M., English, D., Thompson, R., Litrownik, A.J., Runyan, D.K., Bangdiwali, S.I., Margolis, B. and Dubowitz, H. Importance of Early Neglect for Childhood Aggression. *Pediatrics*, 2008, 121, 4, 725- 731.
29. Manly JT, Kim JE, Rogosch FA, Cicchetti D. Dimensions of child maltreatment and children's adjustment: contributions of developmental timing and subtype. *Dev Psychopathol*. 2001, 13, 759-782.
30. Briere, J. and Jordan, C.A. Childhood Maltreatment, Intervening Variables, and Adult Psychological Difficulties in Women: An Overview. *Trauma, Violence, Abuse*, 2009, 10, 4, 375-388.
31. Cicchetti, D. & Rogosch, F.A. Adaptive coping under conditions of extreme stress: Multilevel influences on the determinants of resilience in maltreated children. *New directions for child and adolescent development*, 2009, 124, 47-59.
32. Collishaw, S., Pickles, A., Messer, J., Rutter, M., Shearer, C. & Maughan, B. Resilience to adult psychopathology following childhood maltreatment: Evidence from a community sample. *Child Abuse & Neglect*, 2007, 31, 3, 211-229.
33. Jaffee, S.R., Caspi, A., Moffitt, T.E., Polo-Tomas, M. & Taylor, A. Individual, family, and neighborhood factors distinguish resilient from non-resilient maltreated children: A cumulative stressors model. *Child Abuse & Neglect*, 2007, 31, 3, 231-253.
34. Jaffee, S.R. & Gallop, R. Social, emotional, and academic competence among children who have had contact with child protective services: Prevalence and stability estimates. *Journal of the American Academy of Child & Adolescent Psychiatry*, 2007, 46, 6, 757-765.
35. Koenen, K. C., Harley, R. M., Lyons, M. J., Wolfe, J., Simpson, J. C., Goldberg, J., Eisen, S.A. and Tsuang, M. A twin registry study of familial and individual risk factors for trauma exposure and posttraumatic stress disorder. *Journal of Nervous and Mental Disease*, 2002, 190, 209-218.
36. Koenen, K.C., Moffitt, T.E., Poulton, R., Martin, J., and Caspi, A. Early childhood factors associated with the development of post-traumatic stress disorder: Results from a longitudinal birth cohort. *Psychological Medicine*, 2007, 37, 181-192.
37. Mullen, P.E., Martin, J.L., Anderson, J.C., Romans, S.E., and Herbison, G.P. The effect of child sexual abuse on social, interpersonal, and sexual function in adult life. *British Journal of Psychiatry*, 1994, 165, 35-47.
38. Widom, C.S. Childhood Victimization: Early Adversity and Subsequent Psychopathology. In B.P. Dohrenwend (ed) *Adversity, Stress, and Psychopathology*. New York: Oxford University Press. pp. 81-95. 1998.
39. Hyman, B. The Economic Consequences of Child Sexual Abuse for Adult Lesbian Women. *Journal of Marriage and the Family*, 2000, 62, 199-211.
40. Currie, J. and Widom, C.S. Long-Term Consequences of Child Abuse and Neglect on Adult Economic Well-Being. *Child Maltreatment*, 2010, 15, 2, 111-120.
41. Corso, P.S., Edwards, V.J., Fang, X. and Mercy, J.A. Health-Related Quality of Life Among Adults Who Experienced Maltreatment During Childhood. *American Journal of Public Health*, 2008, 98, 6, 1094-1140.
42. Corso, P.S. and Lutzker, J.R. The need for economic analysis in research on child maltreatment. *Child Abuse and Neglect*, 2006, 30, 727-738.
43. Currie, J. & Tekin, E. "Does Child Abuse Cause Crime?" NBER Working Paper 12171. Available from http://www.nber.org/papers/w12171 2006 [accessed January 5th 2012]
44. Lansford, J.E., Berlin, L., Bates, J., & Pettit, G.S. Early Physical Abuse and Later Violent Delinquency: A Prospective Longitudinal Study. *Child Maltreatment, 2007*, 12, 233-245.
45. Fundudis, T., Kaplan, C., & Dickinson, H. A Comparison Study of Characteristics of Parents of Abused and Non-Abused Children. *Educational and Child Psychology*, 2003, 20, 90-108.
46. Berger, L. M. and J. Waldfogel *Economic Determinants and Consequences of Child Maltreatment* OECD Social, Employment and Migration Working Papers, 111, OECD Publishing. 2011.
47. Allnock, D., with Bunting, L., Price, A., Morgan-Klein, N., Illis, J., Radford, L. and Stafford, A. *Mapping the Provision of Therapeutic Services to Children and Young People who have been Sexually Abused in the UK* London: NSPCC. 2009.

48. Stafford, A., Morgan-Klen, and Kelly, S. *Mapping therapeutic services to children and young people who have been sexually abused. Services in Scotland. Summary Report.* Edinburgh: Univ of Edinburgh/NSPCC. 2009.
49. Radford, L., Aitken, R., Miller, P., Ellis, J., Roberts, J. and Firkic, A. *Meeting the needs of children living with domestic violence in London: Research report.* London: Refuge/NSPCC. 2011
50. Skowron, E. and Reinemann, D.H.S. Effectiveness of psychological interventions for child maltreatment: a meta-analysis. *Psychotherapy: Theory, Research and Practice, Training* 2005, 42, 1, 52-71.
51. Barlow J, Johnston I, Kendrick D, Polnay L, Stewart-Brown S. Individual and group-based parenting programmes for the treatment of physical child abuse and neglect. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD005463. DOI:10.1002/14651858.CD005463.pub2.
52. Turner W, Macdonald G, Dennis JA. Behavioural and cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour. *Cochrane Database of Systematic Reviews* 2007, Issue 1. Art. No.: CD003760. DOI:10.1002/14651858.CD003760.pub3.
53. Hetzel-Riggin, M.D., Brausch, A.M. and Montgomery, B.S. A meta-analytic investigation of therapy modality outcomes for sexually abused children and adolescents: An exploratory study. *Child Abuse and Neglect*, 2007, 31, 125-141.
54. Corcoran, J. and Pillai, V. A meta-Analysis of Parent-Involved Treatment for Child Sexual Abuse. *Research on Social Work Practice*, 2008, 18, 5, 453-464.
55. Silverman, W.K., Ortix, C.D. and Chockalingham, V. Evidence-based psychosocial treatments for children and adolescents exposed to traumatic events. *J. of Clin Child and Adol Psychology*, 2008, 37, 1, 156-183.
56. Macdonald G, Turner W. Treatment Foster Care for improving outcomes in children and young people. *Cochrane Database of Systematic Reviews* 2008, Issue 1. Art. No.: CD005649. DOI: 10.1002/14651858.CD005649.pub2.
57. Winokur M, Holtan A, Valentine D. Kinship care for the safety, permanency, and well-being of children removed from the home for maltreatment. *Cochrane Database of Systematic Reviews* 2009, Issue 1. Art. No.: CD006546. DOI:10.1002/14651858.CD006546.pub2.
58. de Medeiros Passarela, C., Mendes, D.D. and de Jesus Mari, J. A systematic review to study the efficacy of cognitive behavioral therapy for sexually abused children and adolescents with posttraumatic stress disorder. *Rev Psiq Clín.* 2010, 37, 2, 60-5.
59. Harvey, S.T. and Taylor, J.E. A meta-analysis of the effects of psychotherapy with sexually abused children. *Clinical Psychology Review*, 2010, 30, 517-535.
60. Trask, E.V., Walsh, K. and DiLillo, D. Treatment effects for common outcomes of child sexual abuse: A current meta-analysis. *Aggression and Violent Behavior*, 2011, 16, 6–19.
61. Macdonald G, Higgins JPT, Ramchandani P. Cognitive-behavioural interventions for children who have been sexually abused. *Cochrane Database of Systematic Reviews* 2006, Issue 4. Art. No.: CD001930. DOI: 10.1002/14651858.CD001930.pub2.
62. Gardner F, Bjornstad GJ, Ramchandani P, Tao X, Montgomery P. Family therapy for children who have been physically abused. *Cochrane Database of Systematic Reviews* 2009, Issue 2. Art. No.: CD007827. DOI: 10.1002/14651858.CD007827.
63. Christoffersen MN, Corcoran J, DePanfilis D, Daining C. Cognitive-behavioural therapy for parents who have physically abused their children. *Cochrane Database of Systematic Reviews* 2008, Issue 3. Art. No.: CD007329. DOI:10.1002/14651858.
64. Parker B, Turner W. Psychoanalytic/psychodynamic psychotherapy for children and adolescents who have been sexually abused. *Cochrane Database of Systematic Reviews* 2009, Issue 4. Art. No.: CD008162. DOI: 10.1002/14651858.CD008162.
65. Shlonsky A, Schumaker K, Cook C, Crampton D, Saini M, Backe-Hansen E, Kowalski K. Family Group Decision Making for children at risk of abuse and neglect. *Cochrane Database of Systematic Reviews* 2009, Issue 3. Art. No.: CD007984. DOI:10.1002/14651858.CD007984.
66. Bjornstad GJ, Ramchandani P, Montgomery P, Gardner F. Child-focused cognitive behavioural therapy for children who have been physically abused. *Cochrane Database of Systematic Reviews* 2009, Issue 2. Art. No.: CD007838. DOI:10.1002/14651858.CD007838.
67. Letourneau N, Dennis C-L, Giesbrecht G, Bhogal S. (forthcoming) Maternal sensitivity interventions for promoting parent-child attachment. Cochrane Database of Systematic Reviews.
68. Letourneau N, Dennis C-L, Giesbrecht G, Bhogal S. (forthcoming) Psychotherapeutic interventions to promote mother-child attachment. Cochrane Database of Systematic Reviews.
69. Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., and Juffer, F. Less is more: Meta-analysis of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, 2003, 129, 195–215.
70. Olds, D.L., Kitzman, H.J., Cole, R.E., Hanks, C.A., Arcoleo, K.J., Anson, E.A., Luckey, D.W., Knudtson, M.D., Charles R Henderson, C.R., Bondy, J. and Stevenson, A.J. Enduring effects of prenatal and infancy home visiting by nurses on maternal life course and government spending: follow-up of a randomized trial among children at age 12 years. *Archives of pediatrics & adolescent medicine*, 2010, 164, 5, 419-24.
71. McIntosh, E., Barlow, J., Davis, H. and Stewart-Brown, S. Economic evaluation of an intensive home visiting programme for vulnerable families: a cost-effectiveness analysis of a public health intervention *J Public Health*, 2009, 31, 3, 423-433.

72. Morrell CJ, Siby H, Stewart P., Walters, S. and Morgan, A. Costs and effectiveness of community postnatal support workers: randomised controlled trial. *Br Med Journal* 2002, 321:593-8.
73. Goldhaber-Fiebert, J.D., Snowden, L.R., Wulcyn, F., Landsverk, J. and Horwitz, S.M. Economic evaluation research in the context of Child Welfare policy: A structured literature re view and recommendations. *Child Abuse and Neglect*, 2011, 35, 722-740.
74. Macdonald, G., Livingstone, N., Davidson, G, Sloan, S., Fargas, M. and McSherry, D. *Improving the Mental Health of Northern Ireland's Children and Young People: Priorities for Research* NI: ICCR/HSC. 2011.
75. Oates, R.K. and Bross, D.C. What have we learned from treating physical abuse? *Child Abuse and Neglect*, 1995, 19, 4, 463 - 473.
76. Macdonald, G. Effective Interventions for Child Abuse and Neglect: *An Evidence Based Approach to Assessment, Planning and Intervention.* Chichester: John Wiley. 2001.
77. Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.0.0 [updated February 2008]. The Cochrane Collaboration, 2008. Available from www.cochrane-handbook.org.
78. NHS Centre for Reviews and Dissemination (1996) Making cost-effectiveness information available: the NHS Economic Evaluation Database Project. CRD Report No. 6. York: University of York.
79. Department of Health (2008) *Reference costs*. London: Department of Health, 2009.
80. Curtis, L. Unit costs of health and social care. Canterbury: Personal Social Services Research Unit, 2007.
81. Higgins JPT, Altman DG. Assessing risk of bias in included studies. In: Higgins JPT, Green S, editors(s) *Cochrane Handbook for Systematic Reviews of Interventions*. Chichester: John Wiley & Sons, 2008:187-235.
82. Critical Appraisal Skills Programme. Ten questions to help you make sense of qualitative research. 2006. http://www.phru.nhs.uk/Pages/PHD/resources.htm
83. Riley, R.D., Higgins, J.P.T. and Deeks, J.J. Interpretation of random effects meta-analyses. *British Medical Journal*, 2011, 342, d549.
84. Welton NJ, Caldwell DM, Adamopoulos E, Vedhara K. Mixed Treatment Comparison Meta-Analysis of Complex Interventions: Psychological Interventions in Coronary Heart Disease. *American Journal of Epidemiology* 2009, 169, 9, 1158-1165.
85. Chen Y-F, Madan J, Welton NJ, Aveyard P, Bauld L, Wang Dechao, Munafo MR. Computer and other electronic aids for smoking cessation. Health Technology Assessment 08/60/01 *In Press*
86. Dias S, Welton NJ, Marinho VCC, Salanti G, Higgins J, Ades AE. Estimation and adjustment of Bias in randomised evidence using Mixed Treatment Comparison Meta-analysis. JRSSA 2010 173:613-629.
87. Lunn, D.J., Thomas, A., Best, N., and Spiegelhalter, D. WinBUGS -- a Bayesian modelling framework: concepts, structure, and extensibility. *Statistics and Computing*, 2000. 10, 325-337.
88. Moreno SG, Sutton AJ, Ades AE, Cooper NJ, Abrams KR. Adjusting for publication biases across similar interventions performed well when compared with gold standard data. *J. Clin. Epid*. 2011; 64:1230-1241.
89. Popay J, Roberts H, Sowden A, Petticrew M, Arai L, Rodgers M., Britten, B. with Roen, K. and Duffy, S. *Guidance on the conduct of narrative synthesis in systematic reviews. A Product from the ESRC Methods Programme*. Version 1. April, University of Lancaster: UK. 2006.
90. Phillips Z, Ginnelly L, Sculpher M, Claxton K, Golder S, Riesmsa R *et al*. Review of guidelines for good practice in decision-analytic modelling in health technology assessment. HTA; 2004, 8(36).
91. Drummond, M., Sculpher, M., Torrance, G.W., O'Brien, B.J. and Stoddart, G. Methods for the economic evaluation of health care programmes. Oxford: Oxford University Press. 2005.
92. Briggs, A, Sculpher, M, and Claxton, K. Decision analytic modelling for health economic evaluation. Oxford: Oxford University Press. 2006.
93. Allen, B., Gharagozioo, L. and Johnson, J.C. (2011) Clinician Knowledge and Utilization of Empirically-Supported Treatments for Maltreated Children. *Child Maltreatment*, published online 23 November 2011.
94. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009, 6, 7: e1000097. doi:10.1371/journal.pmed.1000097.