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Behavioral Interventions and Counseling to Prevent Child Abuse and Neglect: Systematic Review to Update the U.S. Preventive Services Task Force Recommendation

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Structured Abstract

Purpose: To review new evidence on the benefits and harms of behavioral interventions and counseling in health care settings to reduce child abuse and neglect and related health outcomes for the U.S. Preventive Services Task Force.

Data Sources: MEDLINE and PsycINFO (January 2002 to June 2012), Cochrane Central Register of Controlled Trials and Cochrane Database of Systematic Reviews (second quarter 2012), Scopus, and reference lists were searched for English-language trials of the effectiveness of behavioral interventions and counseling and studies of any design about adverse effects.

Data Synthesis: Eleven fair-quality randomized trials of interventions and no studies of adverse effects met inclusion criteria. A trial of risk assessment and interventions for abuse and neglect in pediatric clinics for families with children age 5 years and younger indicated reduced physical assault, Child Protective Services reports, medical care nonadherence, and immunization delay among screened children. Ten trials of early childhood home visitation reported reduced Child Protective Services reports, emergency department visits, hospitalizations, and self-reports of abuse and neglect or improved adherence to immunizations and well-child care, although results were inconsistent.

Limitations: Trials were limited by heterogeneity, low adherence, high loss to followup, and lack of standardized measures.

Conclusions: Risk assessment and behavioral interventions in pediatric clinics reduced abuse and neglect outcomes for young children. Early childhood home visitation also reduced abuse and neglect, but results were inconsistent. Additional research on interventions to prevent child abuse and neglect is needed.

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CHAPTER 1. INTRODUCTION

Purpose of Review and Prior U.S. Preventive Services Task Force Recommendation

This systematic review is an update for the U.S. Preventive Services Task Force (USPSTF) that addresses the effectiveness and adverse effects of behavioral interventions and counseling to prevent child abuse and neglect for children at potentially increased risk. This review focuses on children without obvious signs or symptoms of abuse or neglect who are seen in health care settings. A separate review examines screening women for intimate partner violence and screening for elder abuse.[1,2]

In 2004, based on results of a previous review of screening for abuse and neglect,[3,4] the USPSTF found insufficient evidence to recommend for or against routine screening of parents or guardians for the physical abuse or neglect of children (I statement).[5,6] The USPSTF could not determine the balance between the benefits and harms of screening because of the lack of critical evidence. Limitations included the following:

- Interventions were predominantly home visitation programs that utilized varied and often inadequately described components during the prenatal, postpartum, and early childhood periods. It is unknown whether these models would work in other populations or with older children.
- There were no studies of screening for child abuse and neglect in health care settings that reported health outcomes, including premature death and disability.
- There were no studies of the adverse effects of screening and interventions.
- There was no demonstration of a gold standard screening instrument. Instruments designed to screen for child abuse and neglect had fairly high sensitivity in the few studies evaluating test performance, but they had low specificity. Instruments were primarily directed at pregnant women and lacked testing in other populations, particularly older children in the context of usual health care.
- Studies were conducted in high-risk populations.
- There were no studies of the feasibility of screening procedures and interventions in the primary care setting, including identification of barriers to screening.

Condition Definition

Child abuse and neglect has been defined from medical as well as legal perspectives. The Centers for Disease Control and Prevention (CDC) recognize four categories of violence, including physical violence, sexual violence, threat of physical or sexual violence, and psychological/emotional abuse.[7] The CDC defines child maltreatment as any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child from birth through age 17 years.[8] Child abuse (acts of commission) includes harmful words or overt actions such as physical, sexual, and psychological abuse. Child neglect (acts of omission) includes

the failure to provide for a child's basic physical, emotional, or educational needs or to protect a child from harm or potential harm. This includes failure to provide, such as physical, emotional, medical/dental, or educational neglect, and failure to supervise, such as inadequate supervision or exposure to violent environments.

The 2003 Keeping Children and Families Safe Act amendment to the 1996 Federal Child Abuse Prevention and Treatment Act (CAPTA) (42 U.S.C.A. §5106g) defines child abuse and neglect as any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, or sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm.[9-11] Individual States are required to define child abuse and neglect using the minimum standards in the federal law according to CAPTA; however, State definitions vary.[12]

In 2009, the U.S. Department of Health and Human Services' (DHHS') Administration for Children and Families used the following definitions:

> **Physical abuse** is any nonaccidental physical injury to the child and can include striking, kicking, burning, or biting or any action that results in a physical impairment of the child. In most States, the definition of abuse also includes acts or circumstances that threaten the child with harm or create a substantial risk of harm to the child's health or welfare.
>
> **Neglect** is the failure of a parent or other person with responsibility for the child to provide needed food, clothing, shelter, medical care, or supervision such that the child's health, safety, and well-being are threatened. Several States also include failure to educate the child as required by law in their definition of neglect. Seven States specifically define medical neglect as failing to provide any special medical treatment or mental health care needed by the child. In addition, four States define medical neglect as the withholding of medical treatment or nutrition from disabled infants with life-threatening conditions.
>
> **Sexual abuse/exploitation.** All States include sexual abuse in their definitions of child abuse. Some refer in general terms to sexual abuse, while others specify various acts. Sexual exploitation is an element of the definition of sexual abuse in most jurisdictions. Sexual exploitation includes allowing the child to engage in prostitution or in the production of child pornography.
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> **Emotional/psychological abuse.** Nearly all States include emotional/psychological maltreatment as part of their definitions of abuse or neglect. This is often defined as injury to the psychological capacity or emotional stability of the child, as evidenced by an observable or substantial change in behavior, emotional response, or cognition or as evidenced by anxiety, depression, withdrawal, or aggressive behavior.
>
> **Parental substance abuse** is an element of the definition of child abuse or neglect in some States, including prenatal exposure from the mother's use of an illegal drug or other substance; manufacture of a controlled substance in the presence of a child or on the premises occupied by a child; allowing a child to be present where the chemicals or equipment for the manufacture of controlled substances are used or

stored; selling, distributing, or giving drugs or alcohol to a child; and use of a controlled substance by a caregiver that impairs the caregiver's ability to adequately care for the child.

Abandonment. Several States include abandonment in their definition of abuse or neglect. This includes situations when the parent's identity or whereabouts are unknown, the child has been left by the parent in circumstances in which the child suffers serious harm, or the parent has failed to maintain contact with the child or to provide reasonable support for a specified period of time.

Definitions used in child abuse and neglect research are highly variable.[12] The absence of standard operational definitions limits communications, has led to a lack of consensus on the magnitude and distribution of child abuse and neglect, and creates difficulties in determining and collecting accurate measurements.[9,13]

Prevalence and Burden of Disease

Child Protective Services (CPS), part of the larger Department of Human Services (DHS) that specifically responds to child abuse reports, received 3.3 million referrals representing 6 million children nationally in 2009 (43 referrals per 1,000 children).[11] Of children receiving a CPS investigation, one fifth were found to have been victims of abuse and neglect.[11]

According to the National Child Abuse and Neglect Data System, approximately 695,000 children were victims of child abuse and neglect in 2010, and 1,537 children died.[14] Approximately 78 percent of victims suffered from neglect, 18 percent physical abuse, 9 percent sexual abuse, 8 percent emotional or psychological abuse, and 2 percent medical neglect. In addition, 10 percent of children experienced other types of abuse and neglect, such as abandonment, threats of harm, and congenital drug addiction.[14] Rates of abuse were similar for boys and girls. The majority of deaths from abuse and neglect occurred in very young children (48% age <1 year, 14% age 1 year, 12% age 2 years, 6% age 3 years). An analysis of self-reported abuse and neglect from 15,197 participants in the National Longitudinal Study of Adolescent Health found that 28 percent experienced physical assault, 12 percent physical neglect, 5 percent contact sexual abuse, and 42 percent supervision neglect.[15]

Immediate health consequences of child abuse and neglect include injuries and death related to physical and sexual assault, as well as emotional and behavioral problems.[16,17] Related long-term physical conditions include neurological and musculoskeletal disorders; gastrointestinal problems such as peptic ulcers; metabolic conditions including diabetes; autoimmune disorders;[18,19] obesity;[20,21] chronic pain;[22,23] teen pregnancy and pregnancy complications such as premature contractions, cervical insufficiency, and premature birth;[24] and several disabilities.[25] Chronic mental health conditions include psychosis, anxiety and posttraumatic stress disorder, alcohol and substance abuse, risky sexual behaviors, depression and suicide, eating disorders, attention problems, and personality disorders.[20,26-33]

Risk Factors/Indicators

Risk factors for child abuse and neglect are wide-ranging, but nonspecific. According to the CDC[34] and additional studies, risk factors include parents' lack of understanding of child development and inadequate parenting skills; parental history of child abuse;[35] substance abuse in the family;[36] young, single,[37] or nonbiological parents; parental thoughts and emotions supportive of maltreatment behaviors; and parental stress and distress, including depression[36] or other mental health conditions. Family risk factors include social isolation;[35] poverty[15,38] and other socioeconomic disadvantage,[35] such as unemployment or lack of education;[15,36] family disorganization, dissolution, and violence, including intimate partner violence (IPV); and poor parent-child relationships. Risk factors for child victimization include age younger than 4 years; disabilities,[11,35,37] developmental delay,[36] or mental retardation; and other conditions that may increase caregiver burden, such as preterm birth, congenital addiction, or admission to the neonatal intensive care unit.[39]

Rationale for Screening/Screening Strategies

Screening children without obvious signs of abuse and neglect in health care settings could identify children who have experienced abuse and neglect as well as children at risk, and lead to interventions that reduce abuse and neglect and improve health outcomes. However, children, caretakers, perpetrators, or other family members may not self-disclose abuse because of the negative ramifications of doing so. These include involvement of CPS, dissolution of families, legal concerns for the perpetrators, and increased risk of abuse for the child or family, among other reasons. Young children usually are not capable of recognizing abuse or neglect, do not have the verbal skills to describe the abuse, and do not know a trusted individual with whom to confide. Children may want to protect their families or keep them intact, keep abuse secretive due to shame or other reasons, or fear speaking out due to fear of unknown consequences.

Interventions

Referral to the local CPS agency is the main intervention for responding to child abuse and neglect.[11] CPS may provide preventive services to high-risk families to improve parents' understanding of child development and parenting practices. Other services include family support, child daycare, education and training, information and referral, and assistance with employment and housing.[11] Postinvestigation services for substantiated cases focus on the safety of the child and are based on family assessments. These include in-home family services when the child remains living at home, such as counseling, treatment for mental health problems and substance abuse, and other services, or foster care services when the child needs to be removed from the home and placed with either relatives or others. Court actions may also ensue, including legal actions for custody on behalf of the child.[11]

Most preventive services that target at-risk families are not provided by CPS, which deals with abuse reports. Preventive services include hospital-based maternity case management, community-based home visitation programs, and other models that focus on early childhood. In these programs,

at-risk families are identified during pregnancy or postpartum and supportive services are provided over several months to years. Eligibility criteria for services, types of services, delivery, duration, and effectiveness vary widely.[40] Many of these preventive services are now included in the Patient Protection and Affordable Care Act, which established a Maternal, Infant, and Early Childhood Home Visiting Program, providing $1.5 billion over 5 years to States to establish home visiting program models for at-risk pregnant women and children from birth to age 5 years.

Current Clinical Practice

In the United States, all States have laws that require physicians and other health care workers, as well as other professionals who interact with children, to report suspected child abuse and neglect to CPS.[41] In 2009, teachers (17%), law enforcement and legal personnel (16%), and social services staff (11%) reported three fifths of CPS reports, while anonymous sources (9%), other relatives (7%), parents (7%), and friends and neighbors (5%) reported the remaining.[11] CAPTA specifies that children younger than age 3 years with substantiated cases of abuse or neglect must have access to rapid or immediate intervention[10] and legal representation for custodial care.[11]

Identifying abuse or neglect and linking children to these services has been problematic. Pediatricians, family physicians, and other primary care providers are in a unique position to identify children experiencing abuse or neglect during well-child and other visits. However, while pediatricians believe screening for abuse and neglect is one of their important roles,[42] they rarely screen in practice, or screen only in selected cases.[43,44] Barriers to screening include lack of experience, training, and confidence in handling abuse cases.[43,45-47]

Recommendations of Other Groups

Recommendations of other medical groups are summarized in **Table 1**. In 2010, the American Academy of Pediatrics published a clinical report advocating for the pediatrician's prominent role in the prevention of child abuse and neglect and providing specific guidelines and information on specific risk factors and protective factors.[42] The American Medical Association recommends routine inquiry about child abuse or neglect.[48] Other organizations do not specifically recommend universal screening, but recommend that pediatricians and family practice clinicians remain alert for indications of abuse or neglect[49,50] or recommend screening in pediatric offices for intimate partner and family violence.[51,52] The Canadian Task Force on Preventive Health Care issued various recommendations in 2000 that do not support screening. However, it recommends home visitation for disadvantaged families from the prenatal period through infancy, but not other forms of interventions.[53] Disadvantaged families are defined as first-time mothers with one or more of the following characteristics: younger than age 19 years, single parent status, and low socioeconomic status. The Community Preventive Services Task Force does not recommend for or against screening for child abuse and neglect, but recommends early childhood home visitation interventions.[54]

CHAPTER 2. METHODS

Key Questions and Analytic Framework

Based on evidence gaps identified from the previous review,[3,4,56] the USPSTF and Agency for Healthcare Research and Quality (AHRQ) determined the key questions for this update using the methods of the USPSTF.[57] Investigators created an analytic framework incorporating the key questions and outlining the patient populations, interventions, outcomes, and potential adverse effects (**Figure**).

Key Questions

1. For children without obvious signs and symptoms of abuse or neglect, but potentially at increased risk, how well do behavioral interventions and counseling initiated in primary care settings reduce exposure to abuse or neglect, physical or mental harms, or mortality?
2. What are the adverse effects of behavioral interventions and counseling to reduce harm from abuse and neglect?

The target population includes children from birth to age 18 years and their caregivers who interact with health care providers in clinical settings where primary care is delivered to children. The review does not include studies of children with signs, symptoms, or complaints of abuse or neglect because children with these findings would undergo evaluations outside the scope of primary prevention recommendations.

The outcomes included in this review incorporate current accepted definitions of child abuse and neglect, an understanding of a continuum of potential outcomes, and acknowledgement that only some outcomes are actually measureable in research studies. Intermediate outcomes, such as referral rates or measures of parent-child bonding, are outside the scope of this review. Based on these considerations, main outcomes include measures of reduced exposure to abuse and neglect (CPS reports, removal of the child from home, and caregiver self-reports of abuse or neglect), measures of health outcomes related to abuse (physical injuries, mortality, emergency department visits, and hospitalizations), and measures of child neglect (adherence with immunizations and well-child visits). For self-reported measures of abuse, we report severe and very severe abuse and harsh parenting (spanking and slapping) directed at infants.

Search Strategies

In conjunction with a research librarian, investigators used the National Library of Medicine's medical subject headings keyword nomenclature to search the Cochrane Central Register of Controlled Trials and Cochrane Database of Systematic Reviews through the second quarter of 2012, and MEDLINE and PsycINFO from 2002 to June 2012 for relevant English-language studies, systematic reviews, and meta-analyses. Search strategies are listed in **Appendix A1**. Secondary referencing was done by manually reviewing reference lists of papers and reviewing citations of

key studies using Scopus.

Study Selection

Investigators developed inclusion and exclusion criteria for abstracts and articles based on the target population, key questions, and outcome measures (**Appendix A2**). Research conducted in the United States or in similar populations who receive services and interventions applicable to medical practice in the United States published in 2003 or later was considered. After an initial review of abstracts, full-text articles were reviewed using additional inclusion criteria. Studies rated poor-quality were excluded. **Appendix A3** shows the results of the literature search and selection process and **Appendix A4** lists excluded studies with reasons for their exclusion.

Randomized, controlled trials (RCTs) of the effectiveness of behavioral interventions and counseling to reduce exposure to abuse or neglect or improve health outcomes were included. Studies were eligible for inclusion if they enrolled children without obvious signs or symptoms of abuse or neglect, used a method to identify families or children at risk that was applicable to primary care, evaluated an intervention that primary care clinicians could access or provide referral to, measured outcomes related to abuse or neglect (specified above), and compared outcomes between intervention and nonintervention groups. All types of CPS reports (confirmed/not confirmed) were included because research indicates no association between substantiation status and behavioral and developmental outcomes.[58] Studies that focused on clinician education, methods to increase screening rates, perceptions and attitudes of physicians and other clinicians, studies of public awareness campaigns or other interventions not applicable to primary care settings, and studies of interventions directed at perpetrators were not included. Studies that reported use of services or referral for services as outcome measures without also reporting abuse or health outcomes were also not included.

Studies of any design were included to describe potential adverse effects of behavioral interventions and counseling. Potential adverse effects include escalating levels of abuse and neglect; false-positive evaluations; adverse consequences as a result of the investigation process; labeling, stigmatizing, and psychological distress; dissolution of families; and legal issues, among others.

Data Abstraction and Quality Rating

An investigator abstracted data about the study design and setting, participant characteristics, data collection procedures, numbers enrolled and lost to followup, methods of exposure and outcome ascertainment, analytic methods including adjustment for confounders, and outcomes. A second investigator confirmed the accuracy of data. By using predefined criteria developed by the USPSTF (described in **Appendix A5**),[57,59] two investigators rated the quality of studies (good, fair, poor) and resolved discrepancies by consensus. Studies that met basic inclusion criteria but had important design or methodologic flaws that compromised results (i.e., poor-quality rating) were not included in this report.[60-65] The applicability of studies was determined using the PICOTS (population, intervention, comparator, outcomes, timing of outcomes measurement, and setting) format, adapted to this topic.[66]

Data Synthesis

We assessed the aggregate quality of the body of evidence for each key question (good, fair, poor) using methods developed by the USPSTF based on the number, quality, and size of studies and consistency of results between studies.[57] Studies were considered consistent if outcomes were generally in the same direction of effect and ranges of effect sizes were narrow. No meta-analysis was performed because of the heterogeneity of the participants, interventions, outcome measurements, and followup periods, and because data were provided and analyzed in a variety of ways.

External Review

The draft report was reviewed by content experts, USPSTF members, AHRQ Project Officers, and collaborative partners (**Appendix A6**).

CHAPTER 3. RESULTS

Key Question 1. For Children Without Obvious Signs and Symptoms of Abuse or Neglect, but Potentially at Increased Risk, How Well Do Behavioral Interventions and Counseling Initiated in Primary Care Settings Reduce Exposure to Abuse or Neglect, Physical or Mental Harms, or Mortality?

Summary

Eleven fair-quality RCTs of interventions published since the previous review met inclusion criteria. One trial of risk assessment and interventions for abuse and neglect was conducted in pediatric clinics for families with children ages 5 years or younger. Results indicated significantly reduced physical assault, CPS reports, medical care nonadherence, and immunization delay among children randomized to screening compared with usual care 3 years after the intervention. Ten trials of early childhood home visitation reported reduced CPS reports, emergency visits, hospitalizations, and self-reports of severe abuse and neglect and improved adherence to immunizations and well-child care. Results were inconsistent across trials for most outcomes. Trials were limited by heterogeneity, low adherence, high loss to followup, and lack of standardized measures.

Evidence

Clinic-based intervention trial. A trial based in a pediatric clinic compared outcomes of children whose parents underwent risk assessment followed by physician and clinic-based social work interventions as needed with outcomes of children receiving usual primary care[67] (**Appendix B1** and **B2**). The trial was based on the Safe Environment for Every Kid (SEEK) Model, which includes risk assessment during the course of usual primary care services, physician training in addressing risk factors for abuse and neglect, informational resources for parents and physicians, and social work services for families desiring them. Outcome measures were obtained from CPS reports, children's medical charts, and parent responses on the Parent-Child Conflict Tactics Scale. Outcome data were collected at baseline and 3 years later.

The trial enrolled 729 participants from university-affiliated pediatric primary care resident continuity clinics serving low-income families in Baltimore. Children ranged from newborn to age 5 years, and most were African American with single mothers receiving Medicaid or State Children's Health Insurance Programs. Clinics were cluster randomized to either the SEEK Model or usual care based on clinic day of the week. The usual care control group received standard pediatric care and an onsite human services worker with similar responsibilities as the social worker for the intervention group. For those randomized to the intervention group, risk factor assessment was conducted using the Parent Screening Questionnaire, a 20-item self-reported questionnaire of safety issues, including major risk factors for child abuse and neglect, such as parental depression and substance abuse (see **Appendix C1**). For those with positive responses, trained physicians addressed concerns and provided educational materials, treatment, and referrals as needed. A social

worker provided clinic-based interventions on a case-by-case basis (personal communication with Howard Dubowitz, March 3, 2011).[67]

Seventy-six percent of enrolled participants completed the study protocol. Results indicated that while 12 percent of families in both groups were involved with CPS prior to the trial, families in the intervention group had fewer CPS reports than the usual care group up to 44 months after the intervention (13% vs. 19%; p=0.03). These findings represent all CPS reports except cases where abuse or neglect were explicitly ruled out. Also, parents in the intervention group reported fewer episodes of severe or very severe physical assault than usual care parents (average weighted Parent-Child Conflict Tactics Scale score, 0.11 vs. 0.33; p=0.04), fewer instances of nonadherence to medical care (5% vs. 8%; p=0.05), and fewer delays in immunizations (3% vs. 10%; p=0.002).

Factors reducing differences between groups include diffusion of the SEEK Model to the control clinics when physicians changed clinic days or communicated with colleagues, similarity of services for intervention and control groups, and surveillance bias that increased detection of abuse and neglect even in the absence of formal risk assessment. The study met criteria for fair quality because loss to followup was >20 percent, analysis was not intention-to-treat or not described, and randomized groups were not similar at followup. Applicability of the trial was limited by enrollment of participants from only one pediatric clinic setting serving a narrowly defined population, but was enhanced by using existing health care services within primary care practices to integrate risk assessment into usual health care processes.

Home visitation intervention trials. Ten trials that enrolled children on the basis of risk assessment for abuse and neglect and evaluated outcomes of home visitation interventions have been published since the previous USPSTF evidence review and met inclusion criteria (**Appendix B1**).[39,68-76] The new publications contribute to results of trials that were included in the previous report.[60,77-85] All trials used the same basic approach, but differed by enrollment criteria, duration of intervention and followup, type of provider, outcome measures, and other important factors.

All of the new included trials met criteria for fair quality because of specific methodological limitations or lack of information about methods (**Appendix B2**). These consist of inadequate inclusion and exclusion criteria,[69] randomization or allocation concealment,[39,69-74,76] or blinding;[39,73,75] low adherence with the intervention (≤50%);[70-72] high loss to followup (>20%);[39,71,73-76] dissimilar groups at baseline or followup;[70,72,74,76] and lack of intention-to-treat analysis.[39,68-76]

Enrollment eligibility for most trials was based on the presence of risk factors for child abuse and neglect, such as inadequate prenatal care; young age of parents; limited finances, education, and social support; or substance abuse history (**Table 2**).[69,73-75,77,80,81,84,85] In some studies, a two-step process was used that included an assessment of risk factors followed by an evaluation using a standardized instrument, such as the Kempe Family Stress Checklist.[70-72,82]

Home visits began either before or after birth and continued for 3 to 36 months after birth. The intervention was provided by either a paraprofessional, such as a lay person who had participated in a 9-week training course (nine trials),[69-73,75,81,82,85] or a professional, typically a nurse (five trials).[74,76-80,84,86]

The trials were conducted in the United States, Canada, Australia, New Zealand, and the United Kingdom. Most were modeled after trials initiated more than 15 years ago in Elmira, New York[77] and Memphis, Tennessee.[80] In these trials, subjects were randomized to one of four groups, including: 1) no home visitation; 2) developmental screening and referral, with transportation services to the medical clinic during pregnancy; 3) home visitation during pregnancy every 2 weeks and two postpartum visits, in addition to transportation services; and 4) home visitation continuing through the child's second birthday, in addition to transportation services. In the Elmira study, the goals of home visitation included parent education, enhancement of support systems for the mother, and engagement of family members with health and social services.[77] In the Memphis study, goals included improvement of health-related behaviors for better pregnancy outcomes and child health, financial stability of families by helping parents find employment and complete their educations, and family planning.[80]

Trials evaluated child mortality,[68] CPS reports (six trials),[69-74] legal removal of the child from home (two trials),[69,70] emergency visits (three trials),[71,73,76] and hospitalizations (five trials).[69-71,73,76] Trials also reported additional relevant measures of medical neglect that were not included in the previous report, including adherence with early childhood immunizations (eight trials)[73,75,76,78,80,83-85] and adherence with well-child visits (five trials).[73,75,80,83,85] Six trials described self-reports of severe abuse and slapping or spanking of infants.[39,70-73,82]

Child mortality. In a long-term followup study of the Memphis trial that included 743 children, those receiving home visits by a nurse as infants were less likely to die by age 9 years than those in the usual care control group, although results were of borderline statistical significance (1 vs. 10 deaths; p=0.08) (**Table 3**).[68] In this study, the one death in the home visit group was the result of chromosomal abnormalities, whereas, of the 10 children who died in the control group, three died from complications of prematurity, three from Sudden Infant Death Syndrome, three from injury (homicide assault by firearm, accidental injury from firearm, and motor vehicle accident), and one from an intestinal infection.

CPS reports. Six trials provided CPS reports as an outcome, including confirmed CPS reports,[70-72] all types of CPS reports,[69,74] and parent descriptions of CPS reports[73] (**Table 4**). No trials found differences in rates of CPS reports between home-visited and control groups while the studies were ongoing.[69-74] However, one trial found that children visited by a professional clinical team had decreased CPS involvement at 3 years after enrollment (odds ratio [OR] for effect of the intervention, 2.1 [95% CI, 1.0 to 4.4]).[74] Three trials had very low (<50%) rates of family participation.[70-72]

The previous USPSTF review found inconsistent effects on CPS reports (**Table 4**). In the only good-quality trial,[77] results of a subgroup analysis at 2-year followup found that poor, high-risk teenage mothers who were visited by nurses were less likely to commit acts of confirmed child abuse and neglect compared with those without visits (4% vs. 19%; p=0.07). However, there were no differences for the entire sample, and results at 3- and 4-year followup showed no differences.[78] At the 15-year followup, children in the nurse-visited group were less likely to be involved in substantiated CPS reports (incidence rate, 0.44 vs. 0.73; p=0.04).[79] Also, nurse-visited mothers were less likely to be a substantiated perpetrator of child abuse (incidence rate, 0.32 vs. 0.65; p=0.01), regardless of the child involved (study child or other child), over the same 15-year period. Two

other fair-quality trials of visits by paraprofessionals found no differences in total CPS reports after either 1[85] or 3[81] years of followup.

Removal of the child from the home. Two trials reported removal of the child from the home (**Table 5**).[69,70] Although both reported higher proportions of children removed from the home in the home-visited group than in the control group, differences were not statistically significant over 18 (6% vs. 0%; p=not significant)[69] or 36 months of followup (1.8% vs. 0.8%; p=not significant).[70] The previous USPSTF review found no studies evaluating this outcome.

Emergency visits. Three trials evaluated hospital emergency visits by enrolled children (**Table 6**).[71,73,76] A trial specifically evaluating visits for injuries or ingestions reported reduced hospital visits for home-visited children (OR, 0.59 [95% CI, 0.36 to 0.98]).[73] Two other trials reported no differences in emergency visits for ambulatory care sensitive conditions (i.e., visits that might have been prevented if timely and appropriate care had been provided),[71] or total number of all types of indications.[76] However, the latter trial found that a significantly greater number of mothers in the intervention group never used the emergency room for child health problems compared with those in the control group (36% vs. 11%; $p<0.05$).

The previous USPSTF review included three trials[80,83,85] showing no differences in emergency visits and one trial indicating fewer visits for home-visited children[77,78] (**Table 6**). In this good-quality trial, nurse-visited children were less likely to visit hospital emergency services at several points of followup during their first 4 years ($p<0.05$).[77,78] They were also less likely to be seen specifically for accidents and poisoning during their second year ($p<0.01$), although this difference was not significant for longer followup. A fair-quality trial found no difference in emergency visits specifically for injuries and ingestions, but reported that nurse-visited children had fewer outpatient visits for injuries and ingestions than children in the control group ($p<0.05$).[80] Two other trials found no difference in total emergency visits for children visited by a paraprofessional during their first[83,85] or second year.[83]

Hospitalizations. Five new trials reported no significant effects of home visitation on the number or percentage of children hospitalized in general,[69,76] due to child abuse and neglect,[73] or for ambulatory care sensitive conditions[70,71] (**Table 7**). A trial with a 12-month nurse visitation intervention and followup of an additional 12 months found that nurse-visited children had fewer episodes of hospitalizations for all indications (19 vs. 36; $p<0.01$), and fewer mean hospitalization days (211 vs. 143; $p<0.001$) at 24 months than children in the control group.[76]

Four trials from the previous review reporting hospitalizations found no differences between groups,[78,80,83,85] however, one reported significantly fewer hospital days for nurse-visited children (7 vs. 89 days; p=0.001).[80] This trial also reported differences in the types of injuries. The three nurse-visited children were hospitalized for burns to the face, coin ingestion, and ingestion of iron medication for a total of 7 hospital days. The 13 control-group children were hospitalized for fractures (fibula, tibia, skull [two children]), head trauma without skull fracture (three children), strangulated hernia with delay in care, coin ingestion, suspected child abuse and neglect, burns (face and neck, both legs), and finger injury with osteomyelitis for a total of 89 hospital days.[80]

Adherence with child immunizations and well-child visits. Since 2003, three trials included

measures of potential medical neglect, either nonadherence with recommended immunizations or well-child visits or both[73,75,76] (**Table 8**). In one trial, home-visited children received immunizations at an earlier age than children in the control group, resulting in significant differences between groups through age 9 months (2.20 vs. 1.64 mean visits; p=0.01), but not at 12 months, although the trend continued.[75] Other trials indicated no differences in the second[76] or third year.[73] A trial reporting significant differences in the mean number of well-child visits at 9 (3.14 vs. 2.18 mean visits; p=0.0098) and 12 months (3.51 vs. 2.68 mean visits; p=0.0098) also found that the more contact the children had with study personnel, the more well-child visits they experienced at 12 months, for up to at least four visits (p=0.036).[75] In another trial of home visitation for the first 24 months, home-visited children were more likely to be up to date with well-child visits (42% vs. 30%; p<0.05) and enrolled for dental care (72% vs. 63%; p<0.05) over a 36-month period than children not in the program.[73]

Adherence with immunizations and well-child visits was not addressed by the previous review. Five trials published before 2003 indicate no significant differences between groups.[78,80,83-85]

Self-reports of abusive behavior toward the child. Five trials used the Parent-Child subscale of the Conflict Tactics Scale to assess mothers' self reports of severe abusive behaviors toward their children or infants[39,70-73] (**Table 9**). One trial found a significant difference in self-reported severe physical assault at 36 months (4% of home-visited mothers vs. 12% of control-group mothers; p<0.01).[73] While another trial indicated no differences in the prevalence of abuse at 24 months, home-visited mothers reported one fourth as many acts of serious physical abuse, such as kicking or hitting the child with a fist, compared with control-group mothers (p=0.03).[72] Two other trials reported no differences in severe child maltreatment between groups.[70,71] In a trial comparing a cognitive-based extension of the Healthy Start home visitation program with the usual Healthy Start program, there were few instances of self-reported infant abuse on the Conflict Tactics Scale.[39]

Self-reported child abuse was not addressed by the previous USPSTF review. One trial published before 2003 found that parents of high-risk infants (i.e., preterm infants or infants with low Apgar scores) in an enhanced home visitation group reported less infant spanking and slapping than parents of high-risk infants in unenhanced home visitation and control groups (18% vs. 42% in the unenhanced and control groups combined; p<0.05).[82]

Key Question 2. What Are the Adverse Effects of Behavioral Interventions and Counseling to Reduce Harm From Abuse and Neglect?

Adverse effects of interventions were not explicitly evaluated in the trials, and additional studies of adverse effects were not identified by the literature searches. Although not described in the publication, during the SEEK trial, investigators maintained regular contact with the pediatric primary care practices involved in the trial and actively monitored potential adverse effects. No adverse effects were reported by participants (personal communication with Howard Dubowitz, March 3, 2011).

CHAPTER 4. DISCUSSION

Summary of Review Findings

Table 10 summarizes the evidence reviewed for this update. Key question 1 was addressed by 11 trials of interventions, and no studies provided data to address key question 2. An RCT of a clinic-based intervention to prevent child abuse and neglect using the SEEK Model screened families of young children for risk of abuse and offered educational materials and social work services to families with increased risk. Families in the intervention group had fewer CPS reports, episodes of severe or very severe physical assault, nonadherence to medical care, and delays in immunizations than those in the usual care group 3 years after the intervention. Although not reported in the publication, investigators indicated that no harms were identified. The SEEK Model is currently under further evaluation in a second trial that includes 66 pediatricians and 24 nurse practitioners in 18 private practices.[36] In this trial, mothers in SEEK practices reported less psychological aggression and minor physical assault than mothers in usual care practices.[87] Additional outcomes from this trial have not yet been published.

Ten new trials evaluated the effectiveness of early childhood home visitation for children with identified risk factors for abuse and neglect. Studies varied by design, outcomes, and intensity of the intervention. Differences between intervention and control groups were reported for several outcomes, including reduced CPS reports, emergency visits, hospitalizations, and self-reports of abuse, and improved adherence to immunizations and well-child care. However, adherence was low and results were inconsistent across trials for most outcomes.

The trials provide support for specific features of home visitation interventions. Results varied depending on who administered the intervention, the duration of home visits, the number or proportion of planned home visits actually accomplished, and if the intervention included additional educational components. Most of the statistically significant benefits were demonstrated by the trials with the more intense interventions, such as several nurse visits for 24 months or longer, suggesting that they are the most effective.[77,80] However, no studies directly compared the effectiveness of different lengths or intensities of home visitation.

The use of CPS reports as an outcome measure is complicated by the various types of reports available. Although trials differed regarding the reporting of total CPS reports or substantiated reports only, a study comparing types of reports found that child health and behavior outcomes between the two groups were minimal, and that close to 90 percent of children with at least one substantiated CPS report also had at least one unsubstantiated report.[88]

Limitations

Limitations of this review include using only English-language articles and studies applicable to the United States, and excluding studies of interventions for children who did not undergo risk assessment.

The primary limitation of the intervention trials concerns an almost complete focus on home visitation as the principle intervention. All of the trials assessed parents for child abuse risk based on the presence or absence of risk factors rather than screening the children themselves. Also, trials were limited to very young children. Although these are all important areas of research, no trials extend beyond this focus.

The home visitation trials are also highly heterogeneous, with the actual interventions differing widely. Interventions were performed by paraprofessionals with a high school diploma and some additional training[70,72] as well as by experienced nurses or other health care professionals.[77,80] They also differed in the number of home visitation sessions offered, from as few as nine[85] to as many as 41 sessions[69] over a time period ranging from 3 months[85] to 3 years after birth.[73] This heterogeneity contributes to the inconsistency of results.

For many trials, the approach to evaluating interventions often lacked a priori identification of primary and secondary outcomes. Outcomes also varied, and were expressed in different ways, such as prevalence rates or total numbers of events, and include some self-reported outcomes that are subject to bias. All of these differences limit comparisons. Additionally, this review did not evaluate child development outcomes, although several of the home visitation trials included in this review provided them.[69,73,74,80,83,89] Surveillance bias also confounded some outcomes, and two studies reported that CPS referrals were made by the home visitor.[70,71] Long-term followup beyond the intervention period would provide a less biased approach.

This review focuses on the primary prevention of child abuse and neglect identified through screening or risk assessment. Universal primary prevention programs, in which screening or risk assessment is not necessary because all caregivers are provided with the intervention, were not included. Nonetheless, these are also valuable strategies. Shaken baby prevention education in hospitals for parents of newborns is one such approach.[90] Studies of secondary prevention programs to prevent child abuse and neglect among caregivers with a history of abusing children,[91] treatment of abused children, and community-based programs were also outside the scope of this review.

The applicability of the intervention trials may be limited, and it is unclear if results would be similar for families who are not enrolled in the trials. However, several home visitation trials were conducted in the Healthy Families Program.[71,72] The Healthy Families America Program currently has home visitation programs in 35 States and the District of Columbia with 383 total sites, providing resources beyond the research trials.[92]

Emerging and Future Research

The use of biomarkers as screening tools for physical violence is an area of ongoing research. In a study of well-appearing infants with nonspecific symptoms and no history of trauma, those with elevations in serum and/or cerebrospinal fluid levels of neuron-specific enolase and myelin-basic protein were more likely to have inflicted traumatic brain injuries.[93] In another study, 44 serum biomarkers were studied in infants with mild inflicted traumatic brain injury and in those without known brain injury.[94] Discrimination between abused and nonabused infants was determined with 87 percent sensitivity and 90 percent specificity using classification algorithms. Use of pancreatic

and liver enzymes to screen for occult abdominal trauma in situations of possible physical abuse has also been explored.[95]

The relationship between harsh punishment, such as spanking, and child abuse needs to be further explored. In an anonymous telephone survey of mothers with children younger than age 18 years, the odds of physical child abuse were greatly elevated if the parents used an object to spank their children (OR, 8.9 [95% CI, 4.1 to 19.6]).[96] When spanking was confined to with the hands only, the association with physical abuse was less (OR, 1.03 [95% CI, 1.01 to 1.06]).[96] Escalation of violence along this continuum could be prevented if harsh punishment practices are recognized and alternatives considered.

The relationship between IPV and child abuse also requires additional research. In households where both partners assault each other, the odds that one or both parents used physical punishment with their children is twice that of households with no IPV, even after controlling for parenting stress, depression, and substance abuse.[97] Studies of IPV with child abuse outcomes are summarized in **Table 11**. Although few studies have addressed this issue, some of the most compelling results indicate worse birth outcomes for women experiencing IPV during pregnancy, including very low birth weight and very preterm birth.[98] Interventions directed at identifying and reducing IPV also result in benefits to children. Neonatal outcomes improve for women experiencing IPV who undergo counseling interventions during pregnancy.[99,100]

Additional research is also needed to determine effective methods for physicians and other health care clinicians to identify asymptomatic children at risk or currently experiencing abuse or neglect. Instruments applicable to children of all ages need to be developed, validated, and tested in the screening population. The lack of studies of older children, which was identified in the previous USPSTF report as an important evidence gap, has yet to be addressed. Efforts to improve the identification of abused and neglected children need to be coupled with the development and evaluation of effective interventions to which they can be referred once identified.

Research is also needed to confirm the efficacy of the observed benefits reported in the included intervention studies and expand their applicability. Standardization of interventions and outcomes would strengthen the evidence and allow quantitative meta-analysis. This research should also determine whether there are unintended harms as a result of screening, risk assessment, and interventions.

Conclusions

A trial of screening for risk of abuse and neglect among families with children age 5 years and younger in pediatric clinics indicated reductions in physical assault, CPS reports, episodes of nonadherence to medical care, and delays in immunizations among screened children. Risk factors were identified using an office-based questionnaire and were addressed by pediatricians supported by social work services in the clinic using existing health resources. Trials of early childhood home visitation reported reduced CPS reports, emergency visits, hospitalizations, and self-reports of abuse and neglect, as well as improved adherence to immunizations and well-child care. Clinicians are well positioned to identify children at risk for abuse and neglect and to connect families with appropriate prevention interventions. More research is needed in key areas to provide clinicians

with methods to do so, and to demonstrate the effectiveness of interventions once risk for abuse and neglect is identified.

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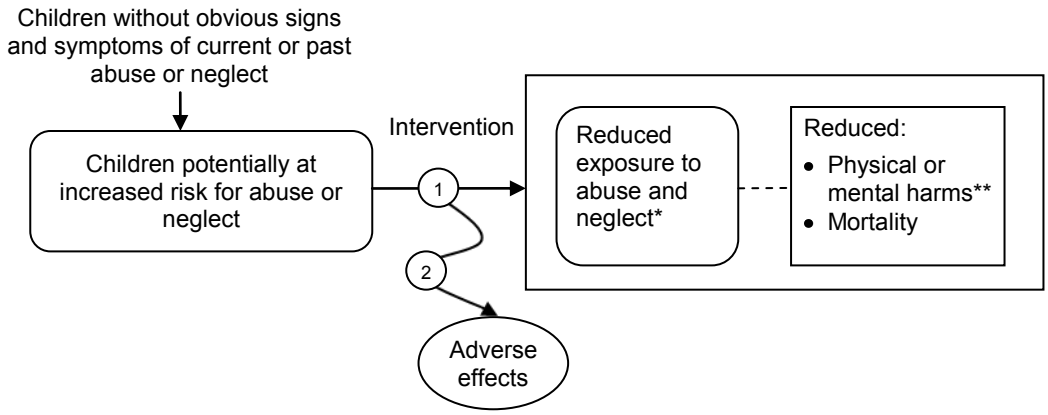
Figure. Analytic Framework



* Child Protective Services reports, removal of the child from the home, and reports of abuse or neglect.
** Physical injuries, mental health conditions, use of health care services, adherence with immunizations and well-child visits, and other relevant health measures.

Key Questions

1. For children without obvious signs and symptoms of abuse or neglect, but potentially at increased risk, how well do behavioral interventions and counseling initiated in primary care settings reduce exposure to abuse or neglect, physical or mental harms, or mortality?
2. What are the adverse effects of behavioral interventions and counseling to reduce harm from abuse and neglect?

Table 1. Recommendations of Other Groups

Organization, year	Recommendations
American Academy of Family Physicians, 2004[49]	Family physicians should be alert to physical and behavioral signs and symptoms associated with abuse or neglect. The American Academy of Family Physicians concludes that the evidence is insufficient to recommend for or against screening of parents or guardians for the physical abuse or neglect of children, and of adults or adolescents of either sex for intimate partner violence.
American Academy of Pediatrics, 2010[42]	The pediatrician can help to strengthen families and promote safe, stable, nurturing relationships with the aim of preventing maltreatment by: identifying family strengths, recognizing risk factors, providing helpful guidance, and referring families to programs and other resources with the goal of strengthening families, preventing child maltreatment, and enhancing child development.
American Medical Association, 2008[48]	Physicians should routinely inquire about physical, sexual, and psychological abuse as part of the medical history. Physicians should also consider abuse as a factor in the presentation of medical complaints because patients' experiences with interpersonal violence or abuse may adversely affect their health status or ability to adhere to medical recommendations.
Canadian Task Force on Preventive Health Care, 2000[53]	There is further evidence of fair quality to exclude screening procedures aimed at identifying individuals at risk of experiencing or committing child maltreatment (grade D recommendation). There is good evidence to continue recommending a program of home visitation for disadvantaged families during the perinatal period extending through infancy to prevent child abuse and neglect (grade A recommendation). The strongest evidence is for an intensive program of home visitation delivered by nurses beginning prenatally and extending until the child's second birthday. There is insufficient evidence to recommend a comprehensive health care program (grade C recommendation), a parent education and support program (grade C recommendation), or a combination of home-based services (grade C recommendation) as a strategy for preventing child maltreatment, but these interventions may be recommended for other reasons. There is insufficient evidence to recommend education programs for the prevention of sexual abuse (grade C recommendation); whether such programs reduce the incidence of sexual abuse has not been established.
Community Task Force on Preventive Services, 2010[55]	The Community Task Force does not recommend for or against screening. Early childhood home visitation interventions are recommended to prevent child maltreatment.
Council of International Neonatal Nurses, 2010[52]	Recommends the promotion of positive health outcomes for neonates via routine screening for intimate partner violence among women of childbearing age to prevent fetal loss, fetal injury, and premature birth associated with intimate partner violence, in addition to promoting the overall health of the family.
Emergency Nurses Association, 2006[50]	Emergency nurses should be involved in the development, implementation, and use of routine protocols and procedures for the assessment, identification, and referral of victims of family and intimate partner violence, maltreatment, and neglect.
Futures Without Violence[51]	Recommends screening for family violence during pediatric care; however, the focus is on intimate partner violence and the effects of intimate partner violence on children, adolescents, and teens.

Table 2. Enrollment Criteria for Intervention Trials With Significant Benefit Outcomes

Criteria		Elmira[77-79]	Memphis[68, 80]	Healthy Families Alaska[71]	Hawaii Healthy Start[70, 83]	Bugental 2002[82]	Bugental 2009[39]	Early Start Program[73]	Child First[74]	Early Intervention Program[76]	El-Mohandes 2003[75]	Healthy Families New York[72]
Pregnancy-related factors	First pregnancy	XX	XX							XX		
	Unplanned pregnancy							X[d]				
	<26 or <29 weeks' gestation		XX							XX	XX	
	Late, none, or poor prenatal care				X							
	History of abortion unsuccessfully sought				X							
	Adoption sought				X							
Parent-related factors	Parent age <18, <19, or <20 years	X[a]						X[d]		XX		X[l]
	Single parent	X[a]	X[b]		X							X[l]
	Low income or low socioeconomic status	X[a]			X	X[c]		X[d]				
	<12 years education		X[b]		X	X[c]						X[l]
	Parent unemployed		X[b]		X	X[c]						
	Unstable housing				X	X[c]						X[l]
	Low social support				X			X[d]				
	History of substance abuse			X	X			X[d]				
	Parent in permanent caregiving environment								X[g]			
	Parent requested participation	X[a]										
	Poor mental health/depression/psychiatric care			X	X							
	Domestic violence			X				X[d]				
	No phone				X							
	Marital or family problems				X							
Child-related factors	Child ages 6–36 months								XX			
	Child ages 0–5 years											
	Infant at medical risk (Cesarean section, preterm, medical issue)						XX					
	Child with social-emotional or behavior problem: BITSEA[j]								X[g]			
Health care–related factors	Parental risk factors on hospital chart				XX							
	Nurse has concerns							X				

Table 2. Enrollment Criteria for Intervention Trials With Significant Benefit Outcomes

Criteria		Elmira[77-79]	Memphis[68, 80]	Healthy Families Alaska[71]	Hawaii Healthy Start[70, 83]	Bugental 2002[82]	Bugental 2009[39]	Early Start Program[73]	Child First[74]	Early Intervention Program[76]	El-Mohandes 2003[75]	Healthy Families New York[72]
Parent Screening	Kempe Family Stress Checklist[i]			X[e]	X[e]	X[f]						X[h]
	Parent Screening Questionnaire											
	Parent Risk Questionnaire								X[g]			
	Preliminary Screening Questionnaire					XX						

X = Enrollment criteria.
XX = Required enrollment criteria.
[a]Need 1 of 3 criteria in addition to required.
[b]Need 2 of 3 criteria in addition to required.
[c]Need 2 or more criteria from Preliminary Screening Questionnaire.
[d]Need 2 or more criteria or nurse had concerns.
[e]Kempe Family Stress Checklist score ≥25.
[f]After meeting initial criteria, Kempe Family Stress Checklist score of 25–40 required.
[g]Child or adult may qualify. Child must be ages 6–36 months with social/emotional/behavioral problems or parent must screen high for risk on Parent Risk Questionnaire and be in a permanent caregiving environment.
[h]After meeting initial criteria; either parent must score ≥25.
[i]Kempe items include: abuse history, prior Child Protective Services involvement, current crisis, history of partner violence, belief in harsh punishment, perception that child is difficult, unrealistic child expectations, parental ambivalence about the child.
[j]Brief Infant-Toddler Social and Emotional Assessment.
[k]Intervention group only took the Parent Screening Questionnaire.
[l]These risk factors were given as an example, others may be used.

Table 3. Home Visitation Trial Reporting Child Mortality

Author, Year *Study*	N; Study Duration	Referral Method; Country	Results, Intervention vs. Control	Quality
Olds et al, 2007[68] *Memphis Trial*	743; 9 years	Prenatal clinics; United States	1 vs. 10 deaths; OR, 0.22 (95% CI, 0.03 to1.74); p=0.08	Fair

CI = confidence interval; OR = odds ratio.

Table 4. Home Visitation Trials Reporting Child Protective Services Reports

Author, Year; *Study*	N; Study Duration	Referral Method; Country	Results, Intervention vs. Control	Quality
Current Report				
Barlow et al, 2007[69] *Family Partnership Model*	121; 18 months	Prenatal clinics; United Kingdom	Child protection register or care proceedings: RR, 2.02 (95% CI, 0.46–2.54) Child protection issues: 17% vs. 15%; NS Removal of child from home: 6% (4/68) vs. 0% (0/63); NS	Fair
Duggan et al, 2007[71] *Healthy Families Alaska*	364; 2 years	Community agencies; United States	Substantiated or overall CPS reports: no difference	Fair
Duggan et al, 2004[70] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinics; United States	No difference	Fair
DuMont et al, 2008[72] *Healthy Families New York*	1173; 2 years	University hospital; United States	CPS reports: no difference	Fair
Fergusson et al, 2005[73]	433; 3 years	Communitywide screening; New Zealand	CPS reports: no difference	Fair
Lowell et al, 2011[74]	157; 3 years	Primary care clinics, WIC programs; United States	CPS involvement at 36 months: 14% vs. 31%; OR, 2.1 (95% CI, 1.1–4.4); p<0.05	Fair
Previous Report				
Barth et al, 1991[81] *Child Parent Enrichment Project*	191; 6 months	Various agencies; United States	By family: increase in number of unsubstantiated reports: 13 vs. 10; NS; increase in number of substantiated reports: 10 vs. 13; NS By report: increase in number of unsubstantiated reports: 20 vs. 41; NS; increase in number of substantiated reports: 19 vs. 5; NS	Fair
Olds et al, 1986[77] *Elmira Trial*	400; 2 years	Prenatal clinics; United States	Higher risk subgroup (poor, unmarried teens): confirmed reports of abuse/neglect, 4% vs. 19%; p=0.07 Entire sample: no difference	Good
Olds et al, 1994,[78] *Elmira Trial*	400; 4 years	Prenatal clinics; United States	New cases, whole sample: OR, 0.56 (95% CI, 0.00–1.37)	Good
Eckenrode et al, 2000[79] *Elmira Trial*	400; 15 years	Prenatal clinics; United States	Incidence rate for substantiated child maltreatment reports involving mother as perpetrator: 0.32 vs. 0.65; p=0.01 Incidence rate for substantiated reports involving the study child as subject: 0.44 vs. 0.73; p=0.04	Good
Siegel et al, 1980[85]	321; 1 year	Prenatal clinic; United States	14 vs. 9 reports; NS	Fair

CI = confidence interval; CPS = Child Protective Services; NS = not significant; OR = odds ratio; RR = relative risk; WIC = supplementary nutrition program for Women, Infants, and Children.

Table 5. Home Visitation Trials Reporting Removal of the Child From the Home

Author, Year *Study*	N; Study Duration	Referral Method; Country	Results, Intervention vs. Control	Quality
Barlow et al, 2007[69] *Family Partnership Model*	121; 18 months	Prenatal clinics; United Kingdom	Removal of child from home: 6% (4/68) vs. 0% (0/63); NS	Fair
Duggan et al, 2004[70] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinic; United States	Placement in foster care: 1.8% vs. 0.8%; NS	Fair

NS = not significant.

Table 6. Home Visitation Trials Reporting Emergency Department Visits

Author, Year *Study*	N; Study Duration	Referral Method; Country	Results, Intervention vs. Control	Quality
Current Report				
Duggan et al, 2007[71] *Healthy Families Alaska*	364; 2 years	Prenatal clinics; United States	Emergency visits in first 2 years: 81% vs. 78%; p=0.42	Fair
Fergusson et al, 2005[73] *Early Start Program*	433; 3 years	Community nurses; New Zealand	Proportion seen in hospital for accident/injury or accidental poisoning (0 to 36 months): 17.5% vs. 26.3%; p<0.05; OR, 0.59 (95% CI, 0.36–0.98)	Fair
Koniak Griffin et al, 2003[76]	101; 2 years	Community Health Services; United States	Total number of children with emergency visits: 64% vs. 89%; NS Never used emergency services for child health problems: 36% vs. 11%; p<0.05	Fair
Previous Report				
Duggan et al, 1999[83] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinic; United States	Ever used emergency services, first 2 years: 58% vs. 60%; p=0.69	Fair
Kitzman et al, 1997[80] *Memphis Trial*	1139; 2 years	Public obstetric clinic; United States	Adjusted incidence of emergency visits for injuries/ingestions during first 2 years: 0.33 vs. 0.34; NS	Fair
Olds et al, 1986[77] *Elmira Trial*	400; 2 years	Prenatal clinics; United States	Intervention children had fewer visits to emergency room during their 1st and 2nd years (p<0.05 and p<0.01, respectively) and presented with fewer accidents and poisonings at 2 years (p<0.05)	Good
Olds et al, 1994,[78] *Elmira Trial*	400; 4 years	Prenatal clinics; United States	Nurse-visited children made 35% fewer visits to emergency department than controls (p=0.0008)	Good
Siegel et al, 1980[85]	321; 1 year	Prenatal clinic; United States	No difference in health care utilization, including emergency visits	Fair

CI = confidence interval; NS = not significant; OR = odds ratio.

Table 7. Home Visitation Trials Reporting Hospitalizations

Author, Year *Study*	N; Study Duration	Referral Method; Country	Results, Intervention vs. Control	Quality
Current Report				
Barlow et al, 2007[69] *Family Partnership Model*	121; 18 months	Prenatal clinics; United Kingdom	Proportion of admissions to hospital (maternal report): 8.1% vs. 14.3%; RR, 1.38 (95% CI, 0.68–2.8)	Fair
Duggan et al, 2004[70] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinic; United States	For those with complete hospitalization data: trauma admissions,1.5% vs. 1.7%; NS; ambulatory care sensitive conditions, 12% vs. 10%; p=0.39	Fair
Duggan et al, 2007[71] *Healthy Families Alaska*	364; 2 years	Prenatal clinics; United States	Child hospitalized for ambulatory care sensitive conditions: 9% vs. 9%; p=0.80	Fair
Fergusson et al, 2005[73] *Early Start Program*	433; 3 years	Community nurses; New Zealand	Admitted to hospital for child abuse or neglect: 1% vs. 2%; p=0.31	Fair
Koniak Griffin et al, 2003[76]	101; 2 years	Community Health Services; United States	Children hospitalized: 21% vs. 36%; NS Episodes of hospitalizations for all indications: 19 vs. 36; p<0.01 Days infants hospitalized: 143 vs. 211 days; p<0.001	Fair
Previous Report				
Duggan et al, 1999[83] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinic; United States	Ever hospitalized for any reason during the first 2 years: 19% vs. 22%; p=0.44	Fair
Kitzman et al, 1997[80] *Memphis Trial*	1139; 2 years	Prenatal clinic; United States	Adjusted incidence of hospitalizations for injuries or ingestions: 0.01 vs. 0.03; NS Days hospitalized for injuries or ingestions: 7 vs. 89; p=0.001	Fair
Olds et al, 1994,[78] *Elmira Trial*	400; 4 years	Prenatal clinics; United States	Mean number of hospitalizations: 0.14 vs. 0.11; NS	Good
Siegel et al, 1980[85]	321; 1 year	Prenatal clinic; United States	Number of hospitalizations: no difference	Fair

CI = confidence interval; NS = not significant; RR = relative risk.

Table 8. Home Visitation Trials Reporting Adherence With Immunizations and Well-Child Visits

Author, Year *Study*	N; Study Duration	Referral Method; Country	Immunization Results, Intervention vs. Control	Well-Child Visit Results, Intervention vs. Control	Quality
Current Report					
El-Mohandes et al, 2003[75]	286; 1 year	Obstetric hospital; United States	Mean # of immunization visits: At 4 mo: 1.01 vs. 0.77; p=0.0498 At 6 mo: 1.50 vs. 1.13; p=0.0295 At 9 mo: 2.20 vs. 1.64; p=0.0125 At 12 mo: 2.44 vs. 2.00; p=0.08	Well-infant care: Mean # of visits at 9 mo: 3.14 vs. 2.18; p=0.0098 Mean # of visits at 12 mo: 3.51 vs. 2.68; p=0.0098 Intensity of well-infant visits (12 mo): At least 1 visit: 93.6% vs. 75.3%; p=0.0022 At least 2 visits: 89.4% vs. 63.6%; p=0.0007 At least 3 visits: 78.7% vs. 51.9%; p=0.0018 At least 4 visits: 59.6% vs. 41.6%; p=0.0363 At least 5 visits: 27.7% vs. 23.4%; p=0.3475	Fair
Fergusson et al, 2005[73] *Early Start Program*	433; 3 years	Community nurses; New Zealand	Up to date with immunizations: 92.5% vs. 91.9%; p=0.83	Up to date with well-child visits: 41.9% vs. 30.1%; p<0.05 Enrolled for dental care: 72% vs. 63%; p<0.05	Fair
Koniak-Griffin et al, 2003[76]	101; 2 years	Community Health Services; United States	Adequately immunized: 77% vs. 87%; NS	Not reported	Fair
Older Trials					
Duggan et al, 1999[83] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinic; United States	Immunizations up to date: 87% vs. 85%; p=0.45	Adequate # of well-child visits: 60% vs. 59%; p=0.95	Fair
Fraser et al, 2000[84]	181; 1 year	Obstetric hospital; Australia	Age-appropriate completed immunizations: no difference (values not reported)	Not reported	Fair
Kitzman et al, 1997[80] *Memphis Trial*	1139; 2 years	Prenatal clinic; United States	Immunizations: 70% vs. 68%, OR, 1.1 (95% CI, 0.7–1.5)	Mean # of well-child visits (0–24 mo): 4.6 vs. 4.8; NS	Fair
Olds et al, 1994[78] *Elmira Trial*	400; 4 years	Prenatal clinics; United States	Mean # of health supervision visits: 1.26 vs. 1.56; NS	Not reported	Good
Siegel et al, 1980[85]	321; 1 year	Prenatal clinic; United States	Immunizations: no difference	Preventive care visits: no difference	Fair

CI = confidence interval; NS = not significant; OR = odds ratio.

Table 9. Home Visitation Trials Reporting Self-Reports of Child Abuse and Neglect

Author, Year *Study*	N; Study Duration	Referral Method; Country	Results, Intervention vs. Control	Quality
Current Report				
Bugental et al, 2009[39]	110; 1 year	Health care providers, social workers; United States	Self-reported physical abuse: 4% vs. 5%	Fair
Duggan et al, 2004[70] *Hawaii Healthy Start Program*	643; 3 years	Prenatal clinic; United States	Self-reported severe physical abuse (year 3): 22% vs. 15%; p=0.17 Self-reported very severe physical abuse (year 3): 6% vs. 7%	Fair
Duggan et al, 2007[71] *Healthy Families Alaska*	364; 2 years	Prenatal clinics; United States	Self-reported severe assault: 9% vs. 7%; p=0.67	Fair
DuMont et al, 2008[72] *Healthy Families New York*	1173; 2 years	Various agencies; United States	Self-reported episodes of very serious abuse: 0.01 vs. 0.08; p=0.04 (significant at year 1 only) Self-reported episodes of serious physical abuse: 0.01 vs. 0.04; p=0.03 (significant at year 2 only)	Fair
Fergusson et al, 2005[73] *Early Start Program*	433; 3 years	Community nurses; New Zealand	Proportion of parents reporting severe physical punishment: 4.4% vs. 11.7%; p<0.01; OR, 0.35 (95% CI, 0.15–0.80)	Fair
Older Trials				
Bugental et al, 2002[82]	96; 1 year	Primary care clinics; United States	Prevalence of infant spanking/slapping: 18% vs. 42%; p<0.05	Fair

CI = confidence interval; OR = odds ratio.

Table 10. Summary of Evidence

Studies, *n*	Design	Limitations	Consistency	Applicability	Overall quality	Findings
Key Question 1. For children without obvious signs and symptoms of abuse or neglect, but who are potentially at increased risk, how well do behavioral interventions and counseling initiated in primary care settings reduce exposure to abuse or neglect, physical or mental harms, or mortality?						
1 trial of a clinic-based program and 10 trials of early childhood home visitation	RCT	Trials were limited by heterogeneity, low adherence, high loss to followup, and lack of standardized measures	Inconsistent for some outcomes	Moderate	Fair	A trial in a pediatric clinic showed reduced physical assault, CPS reports, medical care nonadherence, and immunization delay among screened children. 10 trials of early childhood home visitation reported reduced CPS reports, emergency visits, hospitalizations, and self-reports of abuse and neglect and improved adherence to immunizations and well-child care, although results were inconsistent
Key Question 2. What are the adverse effects of behavioral interventions and counseling to reduce harm from abuse and neglect?						
1 trial of a clinic-based intervention (based on communication with investigators)	RCT	Studies of adverse effects were lacking	Not relevant	Moderate	Not relevant	The clinic-based trial reported no adverse effects from the interventions

RCT = randomized, controlled trial; CPS = Child Protective Services.

Table 11. Studies of Intimate Partner Violence Reporting Child Abuse Outcomes

Author, year *Study*	Findings
Eckenrode et al, 2000[79] *Elmira Trial*	Of women who reported 28 or fewer incidents of IPV (79% of sample), home-visited mothers had significantly fewer child maltreatment reports during the 15-year period than mothers not receiving the intervention (p=0.01); the treatment effect of home visitation decreased as IPV increased.
Duggan et al, 2007[71] *Healthy Families Alaska*	Program impact on IPV: psychological abuse (p=0.23), physical abuse (0.38), any injury (p=0.55).
Olds et al, 2004[101] *Memphis Trial*	There were no statistically significant program effects on IPV (birth to age 6, p=0.87).
Olds et al, 2007[68] *Memphis Trial*	Adjusted estimate of program effects on IPV from birth to age 6 (p=0.373).
Taylor et al, 2010[102]	Of couples who reported any family aggression (87%), 54% reported that both harsh punishment and IPV occurred. The most prevalent patterns of abuse involved both parents as aggressors toward either each other or the child. The presence of bilateral IPV doubled the odds that one or both parents would use corporal punishment, even after controlling for potential confounders such as parenting stress, depression, and alcohol or other drug use.
Kiely et al, 2010[100]	Women receiving tailored counseling sessions for IPV had significantly fewer very preterm neonates (p=0.03).
El-Mohandes et al, 2010[98]	IPV at baseline significantly increased the chances of very low birth weight and very preterm birth outcomes in neonates (OR, 3.75 and 2.71, respectively [p<0.05]).
McGuigan et al, 2000[103]	Mothers and fathers experiencing IPV viewed the child more negatively compared with mothers and fathers not experiencing IPV (p<0.001).

IPV = intimate partner violence; OR = odds ratio.

Appendix A1. Search Strategies

Search strategies of various populations (children, elder/vulnerable individuals, and adult women) were combined into one library and reviewed concurrently; therefore, strategies for all of these populations are included below.

Searches for Randomized, Controlled Trials

Children
Database: EBM Reviews – Cochrane Central Register of Controlled Trials
1 ((domestic$ or spous$ or husband$ or wife or wives or cohabitat$ or (intimat$ adj2 partner$)) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
2 ((baby or babies or infan$ or toddler$ or child$ or teen$ or adolescen$) adj5 (violen$ or abus$ or batter$ or assault$)).mp.
3 from 2 keep 1-808

Elder
Database: EBM Reviews – Cochrane Central Register of Controlled Trials
1 ((domestic$ or spous$ or husband$ or wife or wives or cohabitat$ or (intimat$ adj2 partner$)) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
2 ((baby or babies or infan$ or toddler$ or child$ or teen$ or adolescen$) adj5 (violen$ or abus$ or batter$ or assault$)).mp.
3 ((elder$ or parent$ or mother$ or father$) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
4 from 3 keep 1-396

Spouse
Database: EBM Reviews – Cochrane Central Register of Controlled Trials
1 ((domestic$ or family or families or spous$ or husband$ or wife or wives or cohabitat$ or (intimat$ adj2 partner$)) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
2 from 1 keep 1-387

Searches for Systematic Reviews

Children
Database: EBM Reviews – Cochrane Database of Systematic Reviews
1 ((domestic$ or family or families or spous$ or husband$ or wife or wives or cohabitat$ or (intimat$ adj2 partner$)) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
2 ((baby or babies or infan$ or toddler$ or child$ or teen$ or adolescen$) adj5 (violen$ or abus$ or batter$ or assault$)).mp.
3 from 2 keep 1-88

Elder
Database: EBM Reviews – Cochrane Database of Systematic Reviews
1 ((domestic$ or family or families or spous$ or husband$ or wife or wives or cohabitat$ or (intimat$ adj2 partner$)) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or

altercat$)).mp.
2 ((baby or babies or infan$ or toddler$ or child$ or teen$ or adolescen$) adj5 (violen$ or abus$ or batter$ or assault$)).mp.
3 ((elder$ or parent$ or mother$ or father$) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
4 from 3 keep 1-56

Spouse
Database: EBM Reviews – Cochrane Database of Systematic Reviews
1 ((domestic$ or family or families or spous$ or husband$ or wife or wives or cohabitat$ or (intimat$ adj2 partner$)) adj5 (violen$ or abus$ or batter$ or assault$ or attack$ or aggressi$ or altercat$)).mp.
2 from 1 keep 1-59

Searches for Interventions

Domestic
Database: Ovid MEDLINE
1 exp domestic violence/
2 exp battered women/
3 1 or 2
4 exp Family Practice/
5 exp Primary Health Care/
6 exp Physicians, Family/
7 exp Emergency Medicine/
8 exp Emergency Medical Services/
9 4 or 5 or 6
10 7 or 8
11 exp Preventive Health Services/
12 exp Counseling/
13 exp Mental Health Services/
14 exp "Outcome and Process Assessment (Health Care)"/
15 3 and 9
16 3 and 10
17 3 and 11
18 3 and 12
19 3 and 13
20 3 and 14
21 15 or 16 or 17 or 18 or 19 or 20
22 limit 21 to (english language and yr="2002 -Current")
23 from 22 keep 1-1687

Database: PsycINFO
1 exp Domestic Violence/
2 exp pediatrics/

3 (pediatrician$ or paediatrician$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
4 exp gerontology/
5 gerontologist$.mp. [mp=title, abstract, heading word, table of contents, key concepts]
6 exp Family Medicine/
7 exp Primary Health Care/
8 exp General Practitioners/
9 exp Family Physicians/
10 (primary care or family medicine or family practice or general practice or gp).mp. [mp=title, abstract, heading word, table of contents, key concepts]
11 exp Emergency Services/
12 (emergency or emergencies).mp. [mp=title, abstract, heading word, table of contents, key concepts]
13 2 or 3
14 4 or 5
15 6 or 7 or 8 or 9 or 10
16 11 or 12
17 1 and 13
18 1 and 14
19 1 and 15
20 1 and 16
21 17 or 18 or 19 or 20
22 from 21 keep 1-205

Children
Database: Ovid MEDLINE
1 exp Child Abuse/
2 exp Domestic Violence/
3 limit 2 to "all child (0 to 18 years)"
4 1 or 3
5 exp Schools/
6 crime/ or exp crime victims/ or exp homicide/ or exp sex offenses/ or exp violence/
7 5 and 6
8 limit 7 to "all child (0 to 18 years)"
9 4 or 8
10 exp Family Practice/
11 exp Primary Health Care/
12 exp Physicians, Family/
13 pediatrician$.mp.
14 exp Pediatrics/
15 exp Emergency Medicine/
16 exp Emergency Medical Services/
17 10 or 11 or 12
18 9 and 17
19 13 or 14
20 9 and 19

21 15 or 16
22 9 and 21
23 18 or 20 or 22
24 exp Preventive Health Services/
25 exp Counseling/
26 9 and 24
27 9 and 25
28 exp Mental Health Services/
29 9 and 28
30 limit 9 to clinical trial, all
31 exp "Outcome and Process Assessment (Health Care)"/
32 9 and 31
33 23 or 26 or 27 or 30 or 32
34 limit 33 to english language
35 limit 34 to yr="2002 -Current"
36 from 35 keep 1-1317

Database: PsycINFO
1 exp Child Abuse/
2 exp Child Neglect/
3 1 or 2
4 exp Domestic Violence/
5 limit 4 to (100 childhood <birth to age 12 yrs> or 200 adolescence <age 13 to 17 yrs>)
6 exp Physical Abuse/
7 exp Emotional Abuse/
8 exp Sexual Abuse/
9 6 or 7 or 8
10 limit 9 to (100 childhood <birth to age 12 yrs> or 200 adolescence <age 13 to 17 yrs>)
11 3 or 5 or 10
12 exp Pediatrics/
13 (pediatrician$ or paediatrician$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
14 exp Family Medicine/
15 exp Primary Health Care/
16 exp General Practitioners/
17 exp Family Physicians/
18 (primary care or family medicine or family practice or general practice or gp).mp. [mp=title, abstract, heading word, table of contents, key concepts]
19 exp Emergency Services/
20 (emergency or emergencies).mp. [mp=title, abstract, heading word, table of contents, key concepts]
21 12 or 13
22 11 and 21
23 14 or 15 or 16 or 17 or 18
24 11 and 23
25 19 or 20

26 11 and 25
27 22 or 24 or 26
28 limit 27 to yr="2002 -Current"
29 from 28 keep 1-243

Elder
Database: Ovid MEDLINE
1 exp elder abuse/
2 exp Domestic Violence/
3 limit 2 to "all aged (65 and over)"
4 1 or 3
5 exp residential facilities/
6 crime/ or exp crime victims/ or exp homicide/ or exp sex offenses/ or exp violence/
7 5 and 6
8 limit 7 to "all aged (65 and over)"
9 4 or 8
10 exp Family Practice/
11 exp Primary Health Care/
12 exp Physicians, Family/
13 gerontologist$.mp.
14 exp geriatrics/
15 exp Emergency Medicine/
16 exp Emergency Medical Services/
17 10 or 11 or 12
18 9 and 17
19 13 or 14
20 9 and 19
21 15 or 16
22 9 and 21
23 18 or 20 or 22
24 exp Preventive Health Services/
25 exp Counseling/
26 9 and 24
27 9 and 25
28 exp Mental Health Services/
29 9 and 28
30 limit 9 to clinical trial, all
31 exp "Outcome and Process Assessment (Health Care)"/
32 9 and 31
33 23 or 26 or 27 or 29 or 30 or 32
34 limit 33 to (english language and yr="2002 -Current")
35 from 34 keep 1-250

Database: PsycINFO
1 exp elder abuse/
2 exp Domestic Violence/

3 limit 2 to "380 aged <age 65 yrs and older>"
4 exp Physical Abuse/
5 exp patient abuse/
6 exp Emotional Abuse/
7 exp Sexual Abuse/
8 4 or 5 or 6 or 7
9 limit 8 to "380 aged <age 65 yrs and older>"
10 1 or 3 or 9
11 exp gerontology/
12 gerontologist$.mp. [mp=title, abstract, heading word, table of contents, key concepts]
13 exp Family Medicine/
14 exp Primary Health Care/
15 exp General Practitioners/
16 exp Family Physicians/
17 (primary care or family medicine or family practice or general practice or gp).mp. [mp=title, abstract, heading word, table of contents, key concepts]
18 exp Emergency Services/
19 (emergency or emergencies).mp. [mp=title, abstract, heading word, table of contents, key concepts]
20 11 or 12
21 10 and 20
22 13 or 14 or 15 or 16 or 17
23 10 and 22
24 18 or 19
25 10 and 24
26 21 or 23 or 25
27 limit 26 to yr="2002 -Current"
28 from 27 keep 1-63

Spouse
Database: Ovid MEDLINE
1 Spouse Abuse/
2 ((spous$ or wife or husband or boyfriend$ or girlfriend$ or married or marriage$ or intimate partner$ or common law or cohabitat$) adj5 (abus$ or violen$ or attack$ or assault$ or batter$)).mp.
3 exp Family Practice/
4 exp Primary Health Care/
5 exp Physicians, Family/
6 exp Emergency Medicine/
7 exp Emergency Medical Services/
8 3 or 4 or 5
9 6 or 7
10 exp Preventive Health Services/
11 exp Counseling/
12 exp Mental Health Services/
13 exp "Outcome and Process Assessment (Health Care)"/

14 2 and 8
15 2 and 9
16 2 and 10
17 2 and 11
18 2 and 12
19 2 and 13
20 14 or 15 or 16 or 17 or 18 or 19
21 limit 20 to (english language and yr="2002 -Current")
22 from 21 keep 1-611

Database: PsycINFO
1 exp partner abuse/
2 exp battered women/
3 1 or 2
4 exp Domestic Violence/
5 exp marriage/
6 exp marital status/
7 exp cohabitation/
8 exp spouses/
9 exp couples/
10 living arrangements/
11 5 or 6 or 7 or 8 or 9 or 10
12 4 and 11
13 exp Physical Abuse/
14 exp Emotional Abuse/
15 exp Sexual Abuse/
16 13 or 14 or 15
17 11 and 16
18 3 or 12 or 17
19 exp Family Medicine/
20 exp Primary Health Care/
21 exp General Practitioners/
22 exp Family Physicians/
23 (primary care or family medicine or family practice or general practice or gp).mp. [mp=title, abstract, heading word, table of contents, key concepts]
24 exp Emergency Services/
25 (emergency or emergencies).mp. [mp=title, abstract, heading word, table of contents, key concepts]
26 19 or 20 or 21 or 22 or 23
27 18 and 26
28 24 or 25
29 18 and 28
30 27 or 29
31 limit 30 to yr="2002 -Current"
32 from 31 keep 1-148

Searches for Screening

Domestic
Database: Ovid MEDLINE
1 exp domestic violence/
2 exp battered women/
3 1 or 2
4 exp Mass Screening/
5 3 and 4
6 screen$.mp.
7 exp questionnaires/
8 exp risk assessment/
9 exp diagnosis/
10 di.fs.
11 9 or 10
12 7 and 11
13 3 and 6
14 3 and 8
15 3 and 12
16 13 or 14 or 15
17 limit 16 to (english language and yr="2002 -Current")
18 from 17 keep 1-1686

Database: PsycINFO
1 exp Domestic Violence/
2 exp Screening/
3 exp Screening Tests/
4 2 or 3
5 1 and 4
6 screen$.mp.
7 1 and 6
8 exp Measurement/
9 (diagnos$ or assess$ or discover$ or recogni$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
10 8 and 9
11 1 and 10
12 5 or 7 or 11
13 limit 12 to yr="2002 -Current"
14 from 13 keep 1-327

Children
Database: Ovid MEDLINE
1 exp Child Abuse/
2 exp Domestic Violence/
3 limit 2 to "all child (0 to 18 years)"
4 1 or 3

5 exp Schools/
6 crime/ or exp crime victims/ or exp homicide/ or exp sex offenses/ or exp violence/
7 5 and 6
8 limit 7 to "all child (0 to 18 years)"
9 4 or 8
10 exp Mass Screening/
11 9 and 10
12 screen$.mp.
13 9 and 12
14 exp questionnaires/
15 9 and 14
16 exp risk assessment/
17 9 and 16
18 11 or 13
19 exp diagnosis/
20 di.fs.
21 19 or 20
22 15 and 21
23 17 or 18 or 22
24 limit 23 to yr="2002 -Current"
25 limit 24 to english language
26 from 25 keep 1-1094

Database: PsycINFO
1 exp Child Abuse/
2 exp Child Neglect/
3 1 or 2
4 exp Domestic Violence/
5 limit 4 to (100 childhood <birth to age 12 yrs> or 200 adolescence <age 13 to 17 yrs>)
6 exp Physical Abuse/
7 exp Emotional Abuse/
8 exp Sexual Abuse/
9 6 or 7 or 8
10 limit 9 to (100 childhood <birth to age 12 yrs> or 200 adolescence <age 13 to 17 yrs>)
11 3 or 5 or 10
12 exp Screening/
13 exp Screening Tests/
14 12 or 13
15 11 and 14
16 screen$.mp.
17 11 and 16
18 15 or 17
19 exp Measurement/
20 (diagnos$ or assess$ or discover$ or recogni$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
21 19 and 20

22 11 and 21
23 18 or 22
24 limit 23 to yr="2002 -Current"
25 limit 24 to english language
26 from 25 keep 1-512

Elder
Database: Ovid MEDLINE
1 exp elder abuse/
2 exp Domestic Violence/
3 limit 2 to "all aged (65 and over)"
4 1 or 3
5 exp residential facilities/
6 crime/ or exp crime victims/ or exp homicide/ or exp sex offenses/ or exp violence/
7 5 and 6
8 limit 7 to "all aged (65 and over)"
9 4 or 8
10 exp Mass Screening/
11 9 and 10
12 screen$.mp.
13 9 and 12
14 exp questionnaires/
15 9 and 14
16 exp risk assessment/
17 9 and 16
18 11 or 13 or 15 or 17
19 limit 18 to (english language and yr="2002 -Current")
20 from 19 keep 1-412

Database: PsycINFO
1 exp elder abuse/
2 exp Domestic Violence/
3 limit 2 to "380 aged <age 65 yrs and older>"
4 exp Physical Abuse/
5 exp patient abuse/
6 exp Emotional Abuse/
7 exp Sexual Abuse/
8 4 or 5 or 6 or 7
9 limit 8 to "380 aged <age 65 yrs and older>"
10 1 or 3 or 9
11 exp Screening/
12 exp Screening Tests/
13 11 or 12
14 10 and 13
15 screen$.mp.
16 10 and 15

17 14 or 16
18 exp Measurement/
19 (diagnos$ or assess$ or discover$ or recogni$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
20 18 and 19
21 10 and 20
22 17 or 21
23 limit 22 to yr="2002 -Current"
24 limit 23 to english language
25 from 24 keep 1-95

Spouse
Database: Ovid MEDLINE
1 Spouse Abuse/
2 ((spous$ or wife or husband or boyfriend$ or girlfriend$ or married or marriage$ or intimate partner$ or common law or cohabitat$) adj5 (abus$ or violen$ or attack$ or assault$ or batter$)).mp.
3 exp Mass Screening/
4 2 and 3
5 screen$.mp.
6 exp questionnaires/
7 exp risk assessment/
8 exp diagnosis/
9 di.fs.
10 2 and 5
11 2 and 6
12 2 and 7
13 8 or 9
14 11 and 13
15 4 or 10 or 12 or 14
16 limit 15 to (english language and yr="2002 -Current")
17 from 16 keep 1-664

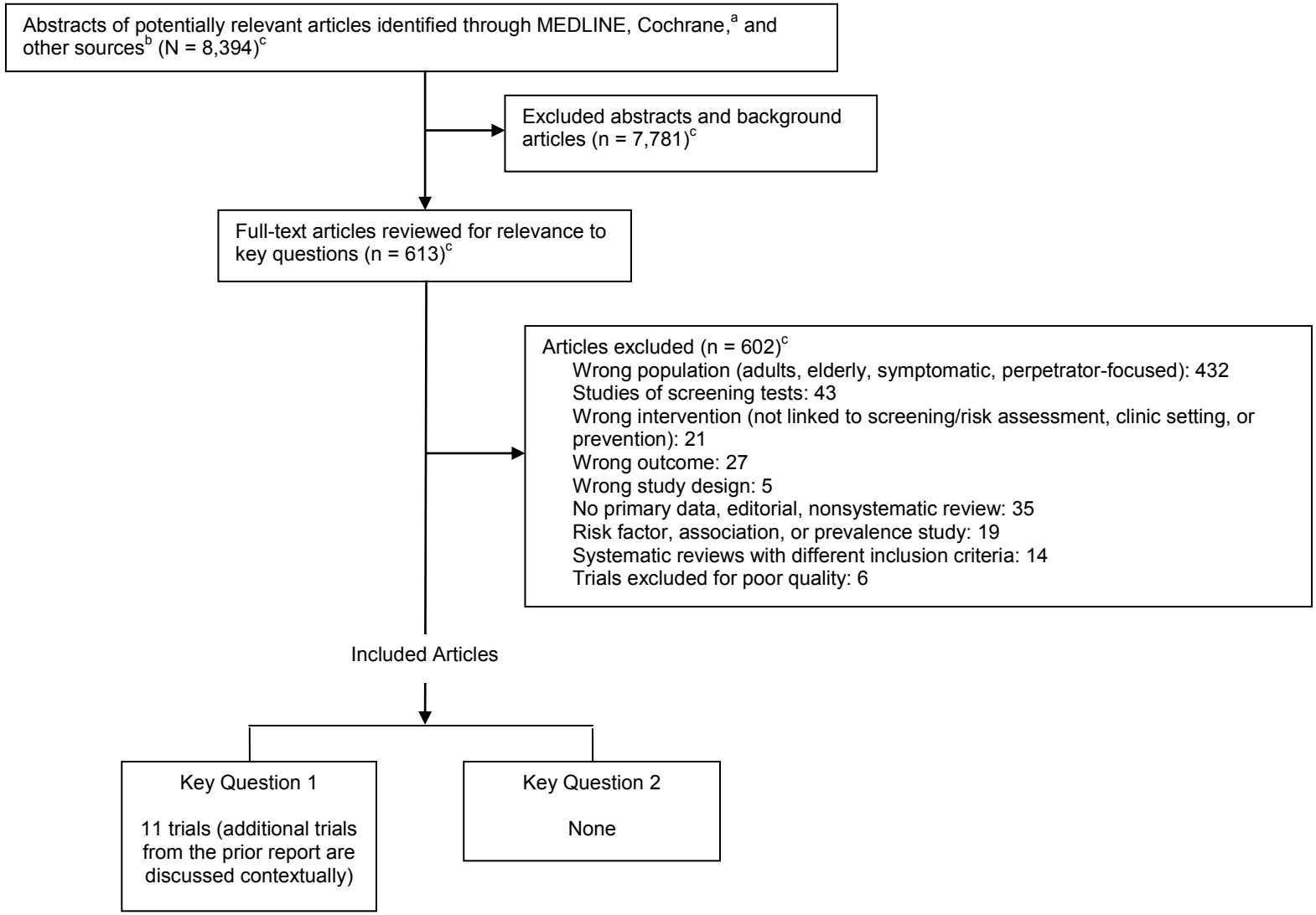
Database: PsycINFO
1 exp partner abuse/
2 exp battered women/
3 1 or 2
4 exp Domestic Violence/
5 exp marriage/
6 exp marital status/
7 exp cohabitation/
8 exp spouses/
9 exp couples/
10 living arrangements/
11 5 or 6 or 7 or 8 or 9 or 10
12 4 and 11

13 exp Physical Abuse/
14 exp Emotional Abuse/
15 exp Sexual Abuse/
16 13 or 14 or 15
17 11 and 16
18 3 or 12 or 17
19 exp Screening/
20 exp Screening Tests/
21 19 or 20
22 screen$.mp.
23 exp Measurement/
24 (diagnos$ or assess$ or discover$ or recogni$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
25 23 and 24
26 18 and 21
27 18 and 22
28 18 and 25
29 26 or 27 or 28
30 limit 29 to yr="2002 -Current"
31 from 30 keep 1-366

Appendix A2. Inclusion and Exclusion Criteria

	Inclusion Criteria	Exclusion Criteria
All Key Questions		
Population	Asymptomatic children, newborns through age 18 years.	Symptomatic children undergoing diagnostic evaluations for conditions related to abuse or neglect (e.g., those presenting with a broken bone or other signs of physical abuse or neglect).
Languages	Full text published in English.	NonEnglish language.
Settings	Pediatrician, primary care/family medicine, or other settings where primary care services are offered, such as emergency departments; services that could result from an assessment by a clinician; research conducted in the United States or in populations similar to U.S. populations with services and interventions applicable to U.S. practice.	Nonclinically-based settings or nonapplicable settings; populations or services/interventions not applicable to U.S. practice.
Key Question 1. Interventions		
Interventions	Services that could result from an assessment by a clinician; services may be implemented by nonclinicians (e.g., nurse home visitation).	Public awareness campaigns without specific interventions linked to clinical settings.
Outcomes	Decreasing levels of abuse or neglect; Child Protective Services reports; removal of the child from the home; medical outcomes including emergency department visits, hospitalizations, well-child visits, and immunizations; and self-reported “severe” or “very severe” physical abuse or spanking/slapping of an infant in the first year of life.	
Study Designs	Randomized, controlled trials.	Nonrandomized, controlled trials.
Key Question 2. Harms of Interventions		
Interventions	Services that could result from an assessment by a clinician; services may be implemented by nonclinicians (e.g., nurse home visitation).	Public awareness campaigns without specific interventions linked to clinical settings.
Outcomes	Any harms that result as an effect of interventions.	All considered.
Study Designs	Any.	All considered.

Appendix A3. Literature Flow Diagram



[a]Cochrane databases include the Cochrane Central Register of Controlled Trials and the Cochrane Database of Systematic Reviews.
[b]Identified from reference lists, prior report, or suggested by experts.
[c]Includes search results for child, adult, and elderly populations. Studies of adults and elderly populations are included in a separate report.

Wrong Population (adults, elderly, symptomatic, perpetrator-focused)

Telephone intervention works to stop intimate partner violence. *J Psychosoc Nurs Ment Health Serv*. 2004;42(6):12-3. PMID: 15237787

Acierno R, Lawyer SR, Rheingold A, Kilpatrick DG, Resnick HS, Saunders BE. Current psychopathology in previously assaulted older adults. *J Interpers Violence*. 2007;22(2):250-8. PMID: 17202579

Acierno R, Resnick H, Kilpatrick D, Stark-Riemer W. Assessing elder victimization—demonstration of a methodology. *Soc Psychiatry Psychiatr Epidemiol*. 2003;38(11):644-53. PMID: 14614553

Ahmad F. Computer-assisted screening for intimate partner violence in family practice: University of Toronto, Canada [Dissertation]. *Diss Abstr Int B Sci Eng*. 2007;68(5B):NR27718.

Ahmad F, Hogg-Johnson S, Stewart DE, Skinner HA, Glazier RH, Levinson W. Computer-assisted screening for intimate partner violence and control: a randomized trial. *Ann Intern Med.* 2009;151(2):93-102. PMID: 19487706

Ameh N, Shittu SO, Abdul MA. Risk scoring for domestic violence in pregnancy. *Niger J Clin Pract*. 2008;11(1):18-21. PMID: 18689133

Anderson BA, Marshak HH, Hebbeler DL. Identifying intimate partner violence at entry to prenatal care: clustering routine clinical information. *J Midwifery Womens Health*. 2002;47(5):353-9. PMID: 12361347

Anderst J, Hill TD, Siegel RM. A comparison of domestic violence screening methods in a pediatric office. *Clin Pediatr.* 2004;43(1):103-5. PMID: 14968901

Aneja S, Gottlieb AS, Feller E. Physician intervention for intimate partner violence. *Med Health R I*. 2009;92(9):307-9. PMID: 19842528

Annan S. Sexual violence in rural areas: a review of the literature. *Fam Community Health*. 2006;29(3):164-8. PMID: 16775466

Anthony EK, Lehning AJ, Austin MJ, Peck MD. Assessing elder mistreatment: instrument development and implications for adult protective services. *J Gerontol Soc Work.* 2009;52(8):815-36. PMID: 19830609

Ast E. The Development and Validation of the Ast Physical Discipline Inventory, 2006 (ADPI). Fresno, CA: Alliant International University; 2007.

Auchter B. Interventing with domestic violence offenders: introduction. *Violence Against Women.* 2008;14(2):131-5. PMID: 18335639

Ayranci U, Yenilmez C, Balci Y, Kaptanoglu C. Identification of violence in Turkish health care settings. *J Interpers Violence.* 2006;21(2):276-96. PMID: 16368766

Ayub M, Irfan M, Nasr T, Lutufullah M, Kingdon D, Naeem F. Psychiatric morbidity and domestic violence: a survey of married women in Lahore. *Soc Psychiatry Psychiatr Epidemiol*. 2009;44(11):953-60. PMID: 19277437

Babcock JC, Green CE, Robie C. Does batterers' treatment work? A meta-analytic review of domestic violence treatment. *Clin Psychol Rev.* 2004;23(8):1023-53. PMID: 14729422

Backos AK. Indicators of PTSD in the Draw-a-Person and Kinetic Family Drawing With Mothers and Children Exposed to Domestic Violence. San Francisco: Alliant International University; 2010.

Baird S, Jenkins SR. Vicarious traumatization, secondary traumatic stress, and burnout in sexual assault and domestic violence agency staff. *Violence Vict.* 2003;18(1):71-86. PMID: 12733620

Bair-Merritt MH, Feudtner C, Mollen CJ, Winters S, Blackstone M, Fein JA. Screening for intimate partner violence using an audiotape questionnaire: a randomized clinical trial in a pediatric emergency department. *Arch Pediatr Adolesc Med.* 2006;160(3):311-6. PMID: 16520452

Bair-Merritt MH, Jennings JM, Chen R, Burrell L, McFarlane E, Fuddy L, et al. Reducing maternal intimate partner violence after the birth of a child: a randomized controlled trial of the Hawaii healthy start home visitation program. *Arch Pediatr Adolesc Med.* 2010;164(1):16-23. PMID: 20048237

Baldry AC, Winkel FW. Intimate Partner Violence Prevention and Intervention: The Risk Assessment and Management Approach. Hauppauge, NY: Nova Science Publishers; 2008.

Appendix A4. List of Excluded Studies

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 Syst Rev.* 2006;(3):CD005463. PMID: 16856097

Barth RP, Hacking S, Ash JR. Preventing child abuse: an experimental evaluation of the child parent enrichment project. *J Prim Prev*. 1988;8(41):201-17.

Basile KC, Hertz MF, Back SE. Intimate Partner Violence and Sexual Violence Victimization Assessment Instruments for Use in Healthcare Settings. Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2007.

Begun AL, Brondino MJ, Bolt D, Weinstein B, Strodthoff T, Shelley G. The revised Safe at Home instrument for assessing readiness to change intimate partner violence. In: Murphy CM, Maiuro RD, eds. Motivational Interviewing and Stages of Change in Intimate Partner Violence. New York: Springer; 2009: p. 199-223.

Begun AL, Murphy C, Bolt D, Weinstein B, Strodthoff T, Short L, et al. Characteristics of the Safe at Home instrument for assessing readiness to change intimate partner violence. *Res Soc Work Pract.* 2003;13(1):80-107.

Bennett C, Macdonald G, Dennis JA, Coren E, Patterson J, Astin M, et al. Home-based support for disadvantaged adult mothers. *Cochrane Database Syst Rev.* 2007;(3):CD003759. PMID: 17636732

Bennett L, Riger S, Schewe P, Howard A, Wasco S. Effectiveness of hotline, advocacy, counseling, and shelter services for victims of domestic violence: a statewide evaluation. *J Interpers Violence.* 2004;19(7):815-29. PMID: 15186538

Berk RA, Campbell A, Klap R, Western B. The deterrent effect of arrest in incidents of domestic violence: a Bayesian analysis of four field experiments. *Am Sociol Rev*. 1992;57(5):698-708.

Berk RA, He Y, Sorenson SB. Developing a practical forecasting screener for domestic violence incidents. *Eval Rev*. 2005;29(4):358-83. PMID: 15985524

Blackmore ER, Carroll J, Reid A, Biringer A, Glazier RH, Midmer D, et al. The use of the Antenatal Psychosocial Health Assessment (ALPHA) tool in the detection of psychosocial risk factors for postpartum depression: a randomized controlled trial. *J Obstet Gynaecol Can*. 2006;28(10):873-8. PMID: 17140502

Bomba PA. Use of a single page elder abuse assessment and management tool: a practical clinician's approach to identifying elder mistreatment. *J Gerontol Soc Work.* 2006;46(3-4):103-22. PMID: 16803779

Bonds DE, Ellis SD, Weeks E, Lichstein P, Burke K, Posey C. Patient attitudes toward screening. *N C Med J*. 2007;68(1):23-9. PMID: 17500428

Bonomi AE, Thompson RS, Anderson M, Rivara FP, Holt VL, Carrell D, et al. Ascertainment of intimate partner violence using two abuse measurement frameworks. *Inj Prev*. 2006;12(2):121-4. PMID: 16595428

Bowen E, Gilchrist E, Beech AR. Change in treatment has no relationship with subsequent re-offending in U.K. domestic violence sample: a preliminary study. *Int J Offender Ther Comp Criminol*. 2008;52(5):598-614. PMID: 18505816

Bradford K. Screening couples for intimate partner violence. *J Fam Psychother*. 2010;21(1):76-82.

Brown K, Streubert GE, Burgess AW. Effectively detect and manage elder abuse. *Nurse Pract.* 2004;29(8):22-7. PMID: 15553915

Brownell P, Berman J, Salamone A. Mental health and criminal justice issues among perpetrators of elder abuse. *J Elder Abuse Negl.* 1999;11:81-94. PMID: 21877986

Bullock L, Bloom T, Davis J, Kilburn E, Curry MA. Abuse disclosure in privately and Medicaid-funded pregnant women. *J Midwifery Womens Health.* 2006;51(5):361-9. PMID: 16945784

Bullock LF, Browning C, Geden E. Telephone social support for low-income pregnant women. *J Obstet Gynecol Neonatal Nurs*. 2002;31(6):658-64. PMID: 12465861

Burgess AW, Roberts AR, Valentine PV. The stress-crisis continuum: its application to domestic violence. In: Roberts AR, ed. Battered Women and Their Families: Intervention Strategies and Treatment Programs. 3rd ed. New York: Springer; 2007: p. 133-60.

Appendix A4. List of Excluded Studies

Buri HM, Daly JM, Jogerst GJ. Elder abuse telephone screen reliability and validity. *J Elder Abuse Negl.* 2009;21(1):58-73. PMID: 19197621

Calderon SH, Gilbert P, Jackson R, Kohn MA, Gerbert B. Cueing prenatal providers effects on discussions of intimate partner violence. *Am J Prev Med.* 2008;34(2):134-7. PMID: 18201643

Campbell J, Glass N. Safety planning, danger, and lethality assessment. In: Mitchell C, Anglin D, eds. Intimate Partner Violence: A Health-Based Perspective. New York: Oxford University Press; 2009: p. 319-34.

Campbell JC. Health consequences of intimate partner violence. *Lancet*. 2002;359(9314):1331-6. PMID: 11965295

Campbell JC, Coben JH, McLoughlin E, Dearwater S, Nah G, Glass N, et al. An evaluation of a system-change training model to improve emergency department response to battered women. *Acad Emerg Med.* 2001;8(2):131-8. PMID: 11157288

Campbell JC, Webster DW, Glass N. The danger assessment: validation of a lethality risk assessment instrument for intimate partner femicide. *J Interpers Violence.* 2009;24(4):653-74. PMID: 18667689

Carbone-Lopez K, Kruttschnitt C, Macmillan R. Patterns of intimate partner violence and their associations with physical health, psychological distress, and substance use. *Public Health Rep*. 2006;121(4):382-92. PMID: 16827439

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Randomized Controlled Trials (RCTs) and Cohort Studies

Criteria:

- Initial assembly of comparable groups: RCTs—adequate randomization, including concealment and whether potential confounders were distributed equally among groups; cohort studies—consideration of potential confounders with either restriction or measurement for adjustment in the analysis; consideration of inception cohorts
- Maintenance of comparable groups (includes attrition, cross-overs, adherence, contamination)
- Important differential loss to follow-up or overall high loss to follow-up
- Measurements: equal, reliable, and valid (includes masking of outcome assessment)
- Clear definition of interventions
- Important outcomes considered
- Analysis: adjustment for potential confounders for cohort studies, or intention-to-treat analysis for RCTs; for cluster RCTs, correction for correlation coefficient

Definition of ratings based on above criteria:

Good: Meets all criteria: Comparable groups are assembled initially and maintained throughout the study (follow-up at least 80 percent); reliable and valid measurement instruments are used and applied equally to the groups; interventions are spelled out clearly; important outcomes are considered; and appropriate attention to confounders in analysis.

Fair: Studies will be graded "fair" if any or all of the following problems occur, without the important limitations noted in the "poor" category below: Generally comparable groups are assembled initially but some question remains whether some (although not major) differences occurred in follow-up; measurement instruments are acceptable (although not the best) and generally applied equally; some but not all important outcomes are considered; and some but not all potential confounders are accounted for.

Poor: Studies will be graded "poor" if any of the following major limitations exists: Groups assembled initially are not close to being comparable or maintained throughout the study; unreliable or invalid measurement instruments are used or not applied at all equally among groups (including not masking outcome assessment); and key confounders are given little or no attention.

Case Control Studies

Criteria:

- Accurate ascertainment of cases
- Nonbiased selection of cases/controls with exclusion criteria applied equally to both
- Response rate
- Diagnostic testing procedures applied equally to each group
- Measurement of exposure accurate and applied equally to each group
- Appropriate attention to potential confounding variable

Definition of ratings based on criteria above:

Good: Appropriate ascertainment of cases and nonbiased selection of case and control participants; exclusion criteria applied equally to cases and controls; response rate equal to or greater than 80 percent; diagnostic procedures and measurements accurate and applied equally to cases and controls; and appropriate attention to confounding variables.

Fair: Recent, relevant, without major apparent selection or diagnostic work-up bias but with response rate less than 80 percent or attention to some but not all important confounding variables.

Poor: Major selection or diagnostic work-up biases, response rates less than 50 percent, or inattention to confounding variables.

Source: Harris et al, 2001[57]

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Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Study	Study Design	N	Population	Setting	Duration
Clinic-Based Interventions						
Dubowitz et al, 2009[67]	NA	RCT	558 (Intervention [308], Control [250])	93% black 48% female Mothers mean age 25 years Children: 0–5 years	University-based pediatric primary care resident continuity clinic serving a low-income urban population in Baltimore	3 years (duration of sampling); June 2002 to November 2005
Home Visitation Interventions						
Elmira Study*						
Olds, 1986[77]*	Elmira	RCT	400	Pregnant women with no previous live births 47% age <19 years 62% unmarried 89% white and 11% black 61% semi-skilled and unskilled laborers 23% met all of the above risk factors	Prenatal clinics in Elmira, New York (small, semi-rural county of 100,000 residents in Appalachian region of New York)	Pregnancy through age 2 of child
Olds et al, 1994[78]*	Elmira	RCT	Same as above	Same as above	Same as above; however, families dispersed to 14 other states	Pregnancy through age 4 of child
Eckenrode et al, 2000[79]*	Elmira	RCT	324 families	For this analysis, groups 1 and 2 were combined (N=184) and considered the comparison group. Group 4 (N=116) was considered the treatment group. Group 3 (N=24) was not discussed because it did not differ from the control group	Same as above	Pregnancy through age 15 of child
Memphis Study						
Kitzman et al, 1997[80]*	Memphis	RCT	1139: 1) 166 2) 515 3) 230 4) 228	92% black women 64% age <18 years 85% at or below the federal poverty level	Public obstetric clinic in Memphis, Tennessee	Prenatal through 2 years
Olds et al, 2007[68]	Memphis	RCT	Same as above	92% black women 98% unmarried 64% age <18 years at registration 85% from households below the federal poverty line	Public obstetric clinic in Memphis, Tennessee	Prenatal through 9 years
Other Studies						
Barlow et al, 2007[69]	Family Partnership Model	RCT	Enrolled: 131 Analyzed: 121	94% white 17% working 20% age <17 years 30% no higher educational/vocational qualifications 61% poverty 61% history of mental health issues 52% housing concerns 35% unwanted pregnancy 34% current domestic violence	United Kingdom	18 months
Barth et al, 1991[81]*	Child Parent Enrichment Program	RCT	Intervention: 97 Control: 94	Pregnant women 45% white, 31% Latino, 17% black, 7% other Median age 23.5 years 70% family income <$10,000 90% scored above the mean on CAPI	Referrals from various agencies; California, United States	~6 months

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Study	Study Design	N	Population	Setting	Duration
Bugental et al, 2002[82]*	Cognitive Interventions	RCT	96 families (73 completed)	Children born at medical risk 97% Latino 48% no husband or partner 50% of mothers were abused as children Average education 7.8 years (SD, 3.1) Average age of mothers 25.5 years	Referrals from physicians to program; Santa Barbara County, California	1 year
Bugental et al, 2009[39]	Cognitive Interventions	Comparative intervention trial (no control group)	110 families (102 completed)	87% Latino Mean age at intake 9.37 weeks (SD, 5.50) Sample was relatively low risk for child maltreatment, according to scores on Family Stress Checklist (M=19)	Santa Barbara County, California	1 year
Duggan et al, 2004[70] (same as Duggan et al, 1999[83])	Hawaii's Healthy Start Program	RCT	643	Intervention vs. control: Mean age 23.7 vs. 23.3 years 63% vs. 67% household income below poverty level 34% vs. 33% Native Hawaiian or Pacific Islander; 28% vs. 28% Asian or Filipino; 10% vs. 14% white; 27% vs. 26% no primary ethnicity or unknown 43% vs. 50% poor maternal general mental health 19% vs. 23% maternal substance use 43% vs. 52% domestic violence	Hawaii, hospital obstetrical unit	3 years
Duggan et al, 2007[71]	Healthy Families Alaska	RCT	364	Mean age 23.5 years 21% Alaska Native; 55% white; 9% multiracial 58% mother graduated from high school 58% below poverty level 49% partner violence 44% poor psychological resources 57% depressive symptoms 56% maternal substance use	Alaska	2 years
DuMont et al, 2008[72]	Healthy Families New York	RCT	1173: Intervention: 579 Control: 594	34% white, 45% black, 18% Latina 31% age <19 years 54% first-time mothers 53% not completed high school 82% never married	Unversity of Albany, New York	2 years
El-Mohandes et al, 2003[75]	NA	RCT	286: Intervention: 146 Control: 140 Loss to followup at 1 year: 41.6%	Mothers receiving no or inadequate prenatal care 98.6% black 54.9% at least high school education 60.1% below poverty level 93% unwanted pregnancy 28% smoked during pregnancy, 19.9% drank alcohol, 12.9% used illicit substances	Washington, DC area hospitals	1 year
Fergusson et al, 2005[73]	Early Start Program	RCT	4523 families screened 588 families eligible 433 families enrolled	Mean age 24.5 years 26% Maori 70% lacked educational qualifications 30% assaulted by current partner 89% welfare dependent 81% unplanned pregnancy	New Zealand	3 years

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Study	Study Design	N	Population	Setting	Duration
Fraser et al, 2000[84] (same as Armstrong et al, 1999[60])	NA	RCT	181	41.4% married 40.1% single parent 41.1% high school education or more 7.2% self-reported domestic violence 12.2% self-reported abused as child	Royal Womens Hospital, Brisbane, Queensland Australia	1 year
Koniak-Griffin et al, 2003[76]	Early Intervention Program	RCT	101	Mean age 16.7 years Mean gestational age 20.48 weeks 63% Latina, 13% black, 18% nonHispanic white, 4% other 57% history of childhood physical abuse 12% suicide attempt within the previous year	Community Health Services Division of the County Health Department of San Bernadino, California	2 years
Lowell et al, 2011[74]	Child First	RCT	157: Child First Intervention: 78 Usual Care: 79	59% Latina/Hispanic; 30% black 33% married 25% with high school degree/GED 64% unemployed	Connecticut	3 years
Siegel et al, 1980[85]*	NA	RCT	Groups 1) 107 2) 50 3) 53 Control: 111	Pregnant women 25% white; 75% minority Mean age 21 years 33% currently married Mean years of education: 11	Greensboro, North Carolina	3rd trimester of pregnancy through 12 months

Author, Year	Screening Assessment	Recruitment	Inclusion Criteria
Clinic-Based Interventions			
Dubowitz et al, 2009[67]	Parent Screening Questionnaire	Parents approached by residents	Parents who brought their child ages 0–5 years to a health supervision visit, spoke English, did not have another child in the study, or have the child in foster care
Home Visitation Interventions			
Elmira Study*			
Olds, 1986[77]*	Interviews of mothers were made at registration in the project and at 6, 10, 12, 22, and 24 months of the infant's life. Babies were measured and weighed at 6, 12, and 24 months, administered developmental tests (Bayley Scale at 12 months, Cattell Scales at 24 months) and an infant temperament Q-sort procedure at 6 months. The Caldwell Home Observation checklist and interview procedure was completed when the infants were ages 10 and 22 months. Outcomes were determined by review of records for the presence of verified cases of abuse or neglect from the department of social services, emergency room visits, and other medical visits.	Recruited through: - Health department antepartum clinic - Obstetrician's offices - Planned Parenthood - Public schools - Variety of other health and human services agencies	Pregnant women (before 30th week) with no previous live births and one of the below risk factors: - Young age (<19 years) - Single-parent status - Low socioeconomic status However, any woman who asked to participate bearing a first child was enrolled
Olds et al, 1994[78]*	Same as above (Olds 1986a). In addition, interviews and observational assessments were conducted at 34, 36, 46, and 48 months, including the Caldwell and Bradley Home Inventory and a home hazards inventory. CPS and medical records were reviewed across the various states until the child reached the age of 4 years.	Families in the original study were contacted	Same as above

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Screening Assessment	Recruitment	Inclusion Criteria
Eckenrode et al, 2000[79]*	15-year followup data included mother interviews using a life-history calendar, information on life factors, violence subscales of the Conflict Tactics Scales (measure of domestic violence in the home), and reports of major and minor violence. CPS records were examined for New York and for each state where the families resided.	Families in the original study were contacted, if possible; 49 mother-child pairs were ineligible at the 15-year followup due to child death (n=26), mother death (n=2), child adopted (n=15), and refusal to participate (n=6); 81% of the original sample included and 92% of those eligible for followup	Same as above
Memphis Study			
Kitzman et al, 1997[80]*	Medical records were reviewed for pregnancy outcomes, ingestions, children's injuries, and immunizations; mothers' reports of children's behavioral problems; child mental development (Bayley Scales, Child Behavior Checklist); mothers' report of demographic characteristics, beliefs about children associated with child abuse and neglect, physical punishment; and state records of use of welfare. The HOME Scale was used during home visits.	Eligibility determined at the obstetric care clinic	Pregnant women <29 weeks' gestation, no previous live births, no chronic illnesses, at least 2 sociodemographic risk characteristics (unmarried, <12 years of education, unemployment status).
Olds et al, 2007[68]	Same as above	Same as above	Same as above
Other Studies			
Barlow et al, 2007[69]	Mother-infant interaction was assesed at 12 months on the basis of a 3-min video recording and coded for maternal sensitivity and infant cooperativeness using the CARE Index. Maternal psychopathy was assessed at 6 and 12 months. Parenting attitudes and competence were assessed at 6 and 12 months using the Adult Adolescent Parenting Inventory. Parenting competence /confidence and experiences were measured at 12 months using the Parenting Sense of Competence scale and What Being the Parent of a Baby is Like. Infant development was assessed independently at 12 months. Validation unclear.	Community midwives in United Kingdom attached to 40 participating general practitioner practices across 2 counties.	Midwives screened women using a range of demographic and socioeconomic criteria (e.g., mental health problems or housing problems)
Barth et al, 1991[81]*	2-hr initial assessment interview served as pretest for both groups. Posttest given at 6 months or when the child was age 4 months included: self-report of mother's well-being, CAPI, Community Resources Use Scale, prenatal care, birth outcomes, child temperament, child welfare and neglect, review of medical records, and reports of child abuse and removal from home obtained from county social service records.	Pregnant women referred by 19 public health, education, or social service professionals working in 17 different agencies or health offices.	Pregnant or postpartum women at high risk for engaging in child abuse. Two or more positive responses to a list of criteria determined eligibility for the study.
Bugental et al, 2002[82]*	Preliminary Screening Questionnaire and Family Stress Checklist used to identify at-risk families. Child risk of abuse determined by birth records (Apgar scope <9 and premature status of >3 weeks). Postprogram measures included: Conflict Tactics Scale, a self-report measure, to measure harsh parenting (physical abuse and legally nonabusive use of force), and a subset (n=28) were verified against the Social Desirability Scale of the Toddler Behavior Assessment Questionnaire;interview with parents about frequency of child injuries, illness, and feeding problems; a variety of cognitive measures such as the Parent Attribution Test, graphic depiction of perceived power, State-Trait Anxiety Inventory, Beck Depression Inventory, and Social Provisions Scale. All measures were translated to Spanish, some verbally administered.	Families were referred to the program by physicians (obstetricians and pediatricians), social workers, and public health nurses.	Mothers who were identified late during pregnancy or soon after birth to be at moderate risk (scores of 25–40 on Family Stress Checklist) to become abusive were eligible to participate.

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Screening Assessment	Recruitment	Inclusion Criteria
Bugental et al, 2009[39]	Measures were retrospective measures (some translated to Spanish, some verbally administered) over the past year conducted postprogram (baseline measures were not possible due to child's age at intake): Conflict Tactics Scale to measure abuse and corporate punishment (spanking); Framingham Safety Survey (safety neglect, household hazards); Child Injury Survey (safety neglect and frequency of falls, cuts, and burns); and perceived power (size of mother's self-drawings, taken at intake and followup).	Same as above	Same as above. Also, presence of a medical risk factor: preterm status <36 weeks' gestational age (n=48), medical problem (e.g., respiratory or cardiac problems) (n=59), other reason (e.g., Cesarean delivery) (n=40). Parental risk was not considered in the referral. Child included up to age 6 months.
Duggan et al, 2004[70] (same as Duggan et al, 1999[83])	Kempe's Family Stress Checklist for screening; Revised Conflict Tactics Scale for outcome. Validation: Factor analysis of the Conflict Tactics Scale items. Reports to CPS, medical record review, mother self-report.	Referred by prenatal care providers but most families screened and assessed at the hospital when children were born.	HSP staff or hospital staff review the mother's medical record and if it suggests risk (or there is too little information to assess risk), staff conduct a semistructured interview with the mother using Kempe's Family Stress Checklist (postive score ≥25). If HSP home visiting intake is open in the family's community, the family is invited to enroll. If intake is closed, the family is referred to other community resources.
Duggan et al, 2007[71]	Kempe's Family Stress Checklist. Validation: unclear. Reports to CPS for suspected child maltreatment.	DHHS administers HFAK through grants to local agencies and an agreement with Public Health Nursing (1 site). HFAK uses a protocol to identify at-risk families.	HFAK staff identified at-risk families using their usual protocol. Families who screen positive are assessed for risk using Kempe's Family Stress Checklist. Families scoring ≥25 are eligible for HFAK.
DuMont et al, 2008[72]	Kempe Family Stress Checklist used to identify parents at high risk of abuse, who were offered participation in the HFNY program.	Recruited by a Family Assessment Worker.	Women in catchment area, English speaking, have custody of child.
El-Mohandes et al, 2003[75]	Baseline assessment of demographic factors, reproductive history, use of prenatal care, drug and alcohol use, and infant health at delivery.	Enrolled during postpartum hospitalization, using delivery logs to identify eliglbe women.	Mothers residing in Washington, DC, having <5 prenatal care visits or initiating first visit in third trimester, at least age 18 years, English speaking, no history of psychiatric illness, not institutionalized, and not planning to give child up for adoption. Exclude: mothers of infants delivered before 34 weeks' gestation, birth weight <1500 grams, or birth with congenital abnormalities.
Fergusson et al, 2005[73]	11-point screening measure based on Hawaii HSP; once in program then Kempe's Family Stress Checklist given. Validation: at 36 months, parents administered Child Rearing Practices Report and the Adult-Adolescent Parenting Inventory; factor analysis showed adequate reliability for nonpunitive parenting scales (α=0.77). Child health (immunizations, hospital visits), child abuse, parenting skills, parental health, family economic well-being, and partnerships assessed at baseline, 6, 12, 24, and 36 months.	Plunket community nurses in Christchurch urban region screened all new clients using an 11-point measure based on Hawaii HSP.	Nurse population screening: age of parents, social support, pregnancy planning, substance use, family finances, family violence. Refer if 2 or more risk factors present.
Fraser et al, 2000[84] (same as Armstrong et al, 1999[60])	Self-report questionnaire to determine use of health services. Various other outcomes assessed.	By child health nurse at hospital.	Birth of one live-born infant. Excluded those with poor literary skills, as written self-report measures are required. Self-reported vulnerability.

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Screening Assessment	Recruitment	Inclusion Criteria
Koniak-Griffin et al, 2003[76]	Self-report questionnaires assessing background factors, sexual history, past and current substance use, educational goals, and social competence.	Referral by Community Health Services Department.	Adolescents ages 14–19 years, ≤26 weeks' gestation, having their first child, planning to keep the child. Exclude: narcotic or injection drug dependent, having a documented serious medical or obstetric problem.
Lowell et al, 2011[74]	Either child or adult could qualify for inclusion of the family in the trial: Child: Brief Infant-Toddler Social and Emotional Assessment Parent: Parent Risk Questionnaire	Families recruited from 2 sites that served predominantly inner-city families living in poverty: a) Bridgeport Hospital Prediatric Primary Care Center and b) Supplementary Nutrition Program for Women, Infants, and Children	Children ages 6–36 months who screened positive for social-emotional/behavioral problems on the Brief Infant-Toddler Social and Emotional Assessment and/or parent screened high for psychosocial risk on the Parent Risk Questionnaire.
Siegel et al, 1980[85]*	Data was collected by interview during the last trimester of pregnancy, and by interview and observation in the home at 4 and 12 months post delivery. Hospital and health agency records were also reviewed. Measures: 92-item Attachment Inventory, Peabody Picture Vocabulary Test.	Women in their third trimester who received care at the public prenatal clinic and delivered at the community hospital.	Criteria include: uncomplicated pregnancy at the third trimester, no previous delivery of nonviable infant; not expecting twins; intended to say in the area for ≥1 year; did not have a family member in the study.

Author, Year	Intervention	Results	Quality Rating
Clinic-Based Interventions			
Dubowitz et al, 2009[67]	The SEEK Model included: 1) specially trained residents, including handouts for doctors and patients 2) administration of the Parent Screening Questionnaire 3) a social worker	CPS reports: 3.3% vs. 19.2%; p=0.03 Fewer instances of nonadherence to medical care: 4.6% vs. 8.4%; p=0.05 Less delayed immunizations: 3.3% vs. 9.6%; p=0.002 Fewer reported instances of severe or very severe physical assault (average weighted score on Conflict Tactics Scale, Parent-Child version): 0.11 vs. 0.33; p=0.04 Less delayed immunizations (from medical charts): 3.3% vs. 9.6%; p=0.002 Fewer instances of nonadherence to medical care (from medical charts): 4.6% vs. 8.4%; p=0.05	Fair
Home Visitation Interventions			
Elmira Study*			
Olds, 1986[77]*	Random assignment to one of four groups: 1) No services control (n=90) 2) Free transportation to clinic appointments (n=94) 3) Same as group 2, plus nurse home visits every 2 weeks during pregnancy; average of 9 visits during pregnancy lasting 1.5 hours per visit (n=100) 4) Same as group 3, with nurse home visits until child is age 2 years. Visit frequency diminished over time (n=116). Nurse home visitation included parent education, enhancement of informal support systems, and linkage with community services	CPS reports: Higher risk subgroup (poor, unmarried teenagers): 4% vs. 19% confirmed reports of abuse/neglect, p=0.07 Entire sample: No difference Emergency Department visits: Intervention children had fewer visits to the emergency room in first and second year of life (p<0.05 and p<0.01, respectively) and presented with fewer accidents and poisonings at 2 years of age (p<0.05)	Good
Olds et al, 1994[78]*	Same as above	New cases of child abuse/neglect, whole sample: No difference; OR, 0.56 (95% CI, 0.00 to 1.37) Nurse-visited children made 35% fewer visits to the ED than controls (p=0.0008) Mean number of hospitalizations: 0.14 vs. 0.11; p=NS Poisonous substances ingested (p=NS)	Good

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Intervention	Results	Quality Rating
Eckenrode et al, 2000[79]*	Same as above	Incidence rate for substantiated child maltreatment reports involving mother as perpetrator: 0.32 vs. 0.65, p=0.01 Incidence rate for substantiated reports involving the study child as subject: 0.44 vs. 0.73; p=0.04 The intervention group receiving nurse-visited home visitation only during pregnancy (Group 3) did not differ in number of child maltreatment reports from the control group (p=NS). Home visitation had no impact on the incidence of domestic violence (p=NS); however, there were fewer cases of child maltreatment among mothers who reported ≤28 incidents of domestic violence (79% of sample) in the home-visited group (Group 4) versus the control group (p=0.01)	Good
Memphis Study			
Kitzman et al, 1997[80]*	1) Transportation to clinic 2) Same as group 1 plus developmental screening and referral services at 6, 12, and 24 months 3) Same as groups 1 and 2 plus 3 intensive home visitations 4) Same as groups 1, 2, and 3 plus intensive home visitation services through age 2 years	Adjusted incidence of ED visits for injuries/ingestions during first 2 years of life: 0.33 vs. 0.34; p=NS Adjusted incidence of ED visits for injuries/ingestions: 0.33 vs. 0.34; p=NS Adjusted incidence of hospitalizations for injuries/ingestions: 0.01 vs. 0.03; p=NS Days hospitalized for injuries/ingestions: 7 vs. 879 days; p=0.001 Diagnoses for hospitalizations: 1 burn and 2 ingestions vs. 4 burns, 2 head traumas, 2 fractured skulls, 2 bilateral subdural hematomas, 2 other fractures, 1 strangulated hernia, 1 suspected abuse, 1 coin ingestion, 1 finger injury. Nurse-visited children had fewer health care encounters related to injuries/ingestions in the first 2 years compared with comparison groups (p=0.05), with the most effect for outpatient encounters (p=0.02). By the 24th month, nurse-visited women held fewer beliefs about child-rearing associated with child abuse and neglect (p=0.003); Bayley Mental Development Score at 24 months: 94.5, nurse-visited group, 94.3, comparison group (NS). Immunizations: 70% vs. 68%; p=NS Mean number of well-child visits (0–24 months): 4.6 vs. 4.8; p=NS	Fair
Olds et al, 2007[68]	1) Transportation to clinic 2) Same as group 1 plus developmental screening and referral services at 6, 12, and 24 months 3) Same as groups 1 and 2 plus 3 intensive home visitations 4) Same as groups 1, 2, and 3 plus intensive home visitation services through age 2 years	Child mortality: 1 vs. 10 deaths; OR, 0.22 (95% CI, 0.03 to1.74); p=0.08	Fair
Other Studies			
Barlow et al, 2007[69]	1) Control 2) 18 months of weekly visits from a heath visitor trained in understanding the processes of helping, skills of relating to parents effectively, and methods of promoting parent-infant interaction using the Family Partnership Mode	Increased placement on child protection register or care proceedings for those in the intervention group: RR, 2.02 (95% CI, 0.46–2.54); p=NS Child protection issues: 17% vs. 15%; p=NS Removal of child from home: 6% (4/68) vs. 0% (0/63); p=NS Proportion of admissions to hospital (maternal report): 8.1% vs. 14.3%; RR, 1.38 (95% CI, 0.68 to 2.8) One child died in the control group “for whom child protection concerns were raised”	Fair
Barth et al, 1991[81]*	1) Control group received referrals to social and health services 2) Intervention group had home visits; average of 11 visits	CPS reports: Increase in number of unsubstantiated reports: 13 vs. 10 families; p=NS Increase in number of substantiated reports: 10 vs. 13 families; p=NS Increase in number of unsubstantiated reports: 20 vs. 41 total reports; p=NS Increase in number of substantiated reports: 19 vs. 5 total reports; p=NS	Fair

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Intervention	Results	Quality Rating
Bugental et al, 2002[82]*	Cognitive-based extension of the HSP home visitation program (n=32–35) vs. standard HSP home visitation program (n=31–34) vs. control condition (n=27–35). The additional cognitive appraisal component was designed to enhance parents' perceptions of power and competence, and included reframing in primary and secondary appraisals. Specifically, parents were assisted in acquiring skills in reading children's cues of distress and countering misattributional processes, and provided with problem-solving training in which they define the problem, brainstorm possible solutions, evaluate possible consequences, develop an action plan, and observe and evaluate the success of their efforts. Home visitors were matched to cultural backgrounds of participants. Weekly supervision and monitoring occurred from a licensed clinical psychologist. Over the first year of life of the child, there were 17 home visits.	Frequency of harsh parenting or physical abuse or spanking/slapping (mean): HV plus cognitive, 0.06 vs. HV standard, 0.23 vs. control, 0.25; F(2, 70)=3.20; p=0.05 High-risk infants: HV plus cognitive group, 0.07 (SD, 0.20) vs. HV standard/control, 0.42 (SD, 0.44); p<0.05 Low-risk infants: HV plus cognitive group, 0.06 (SD, 0.14) vs. HV standard/control, 0.17 (SD, 0.28); p=NS	Fair
Bugental et al, 2009[39]	Cognitive-based extension of the HSP home visitation program (n=51) vs. standard HSP home visitation program (n=59). No control group. Details of intervention abstracted in Bugental 2002.	Physical abuse (infants): 4% HV plus cognitive vs. 5% HV standard (not possible to allow a reliable statistical comparision due to low percentages) Mean injury score (infants): 3.29 HV plus cognitive vs. 3.39 HV standard; F(1, 96)=3.94; p=0.05	Fair
Duggan et al, 2004[70] (same as Duggan et al, 1999[83])	Home visits for 3–5 years by trained paraprofessionals to provide assistance, education, and services; model effective parent-child interaction; ensure child has medical home. Level 1: visited weekly; Level 2: biweekly; Level 3: monthly; Level 4: quarterly, with explicit criteria for promotion; intervention was for 1, 2, or 3 years.	CPS reports: no difference; p=0.56 Placement in foster care: 1.8% vs. 0.8%; p=NS Ever used ED, first 2 years of life (Duggan, 1999): 58% vs. 60%; p=0.69 Ever hospitalized for any reason in first 2 years of life (Duggan, 1999): 19% vs. 22%; p=0.44 Trauma admissions among patients with complete hospitalization data: 1.5% vs. 1.7%; p=NS Ambulatory care sensitive conditions among patients with complete hospitalization data: 12% vs. 10%; p=0.39 Immunizations up to date (Duggan, 1999): 87% vs. 85%; p=0.45 Adequate number of well-child visits (Duggan, 1999): 60% vs. 59%; p=0.95 Groups similar in abuse and neglect. 12, 22, and 23 mothers assigned to the HSP group reported both frequent and severe abusive behavior in years 1, 2, and 3, respectively. Of families receiving a high dose of HSP services, 3, 8, and 5 mothers reported both frequent and severe abusive behavior in years 1, 2, and 3, respectively.	Fair
Duggan et al, 2007[71]	Home visiting for 3–5 years, offered weekly for the first 6–9 months; families are promoted to service levels with less frequent visits as family functioning improves. Home visitation includes information, referrals, preparation of parents for developmental milestones, promotion of child environmental safety, and encouragement of positive parent-child interaction.	CPS reports: no difference; p=0.59 ED visits in first 2 years of life: 81% vs. 78%; p=0.42 Child hospitalized for ambulatory care sensitive conditions: 9% vs. 9%; p=0.80 Using CPS reports, pediatric medical records, interviews with primary caregiver, observation of the home environment and interaction with the child: no difference in HV and control groups in rates for substantiated or overall reports of child maltreatment. Intervention and control groups did not differ in frequency of hospitalizations and ED visits. From maternal report: Number of well-child visits (Duggan 1999): 60% vs. 59%; p=0.95 Immunizations up to date (Duggan 1999): 87% vs. 85%; p=0.45	Fair
DuMont et al, 2008[72]	Home visits by trained paraprofessionals to provide assistance, education, and services; model effective parent-child interaction; ensure child has medical home.	CPS reports: no difference; p=NS At year 2, intervention parents reported one fourth as many acts of serious physical abuse as controls (p=0.03). Consistent with other Healthy Family studies, no significant differences were found for prevalence or frequency of substantiated CPS reports.	Fair

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Intervention	Results	Quality Rating
El-Mohandes et al, 2003[75]	One year-long program of home visits, parent-infant dyadic developmental play groups, parent support groups, and monthly support calls from a family resource specialist.	Well-infant care, intervention vs. control: Mean number of visits at 9 months: 3.14 vs. 2.18; p=0.0098 Mean number of visits at 12 months: 3.51 vs. 2.68; p=0.0098 Intensity of well-infant visits (12 months): At least 1 visit: 93.6% vs. 75.3%; p=0.0022 At least 2 visits: 89.4% vs. 63.6%; p=0.0007 At least 3 visits: 78.7% vs. 51.9%; p=0.0018 At least 4 visits: 59.6% vs. 41.6%; p=0.0363 At least 5 visits: 27.7% vs. 23.4%; p=0.3475 Mean immunization visits, intervention vs. control: At 4 months: 1.01 vs. 0.77; p=0.0498 At 6 months: 1.50 vs. 1.13; p=0.0295 At 9 months: 2.20 vs. 1.64; p=0.0125 At 12 months: 2.44 vs. 2.00; p=NS	Fair
Fergusson et al, 2005[73]	Early Start Program assesses needs and resources, encourages positive partnership, provides support and problem solving.	CPS reports: no difference; p=0.39 Intervention vs. control: Proportion seen in hospital for accident/injury or accidental poisoning (0–36 mo): 17.5% vs. 26.3%; p<0.05 Parental report of severe physical punishment: 4.4% vs. 11.7%; p<0.01; OR, 0.35 (95% CI, 0.15 to 0.80) In contact with agencies for child abuse/neglect: 19.6% vs. 21.3%; p=0.39 Up to date with shots: 23.4% vs. 20.7%; p=0.83 Up to date with well-child visits: 41.9% vs. 30.1%; p<0.05 Seen in hospital for accident/injury or accidental poisoning (0–36 months): 17.5% vs. 26.3%; p<0.05; OR, 0.59 (95% CI, 0.36 to 0.98) Enrolled for dental care: 72.3% vs. 62.8%; p<0.05	Fair
Fraser et al, 2000[84] (same as Armstrong et al, 1999[60])	Weekly nurse home visitation (n=90) vs. comparision group receiving standard care (n=91)	Intervention vs. control: Immunizations: no difference; p=NS	Fair
Koniak-Griffin et al, 2003[76]	Care by public health nurses using a case management approach with one nurse providing continuous care from pregnancy through 1 year postpartum. Case management included 4 “preparation for motherhood” classes, counseling, and a maximum of 17 1.5- to 2-hour home visits (2 prenatal and 15 postpartum). Mean number of home visits, intervention vs. control: 2.13 (prenatal) and 10.35 (postpartum) vs. 1.02 (prenatal) and 1.09 (postpartum)	Children with ED visits (total number): 64% vs. 89%; p=NS Never used ED for child health problems: 36% vs. 11%; p<0.05 Children hospitalized: 21% vs. 36%; p=NS Episodes of hospitalizations for all indications: 19 vs. 36; p<0.01 Days infants hospitalized: 143 vs. 211 days; p<0.001 Adequately immunized: 77% vs. 87%; p=NS	Fair
Lowell et al, 2011[74]	Each family assigned a clinical team, consisting of a master's level developmental/mental health clinician and an associate's or bachelor's level care coordinator/case manager. Engagement and building trust were fundamental goals of Child First. Services were delivered predominantly in the home. A family driven plan of broad, integrated supports and services for all family members, which reflected family priorities, strengths, culture, and needs was developed. No set curriculum.	CPS involvement at 36 months: 14% intervention vs. 31% control (estimated); OR, 2.1 (95% CI, 1.1 to 4.4); p<0.05	Fair

Appendix B1. Data Abstraction of Intervention Trials

Author, Year	Intervention	Results	Quality Rating
Siegel et al, 1980[85]*	1) Control group (usual care) 2) Early and extended hospital contact and home visits 3) Early and extended hospital contact only 4) Home visits only	CPS Reports: 14 vs. 9 reports; p=NS No difference in health care utilization, including ED visits; p=NS Number of hospitalizations: no difference; p=NS	Fair

*From prior report.

CAPI = Child Abuse Potential Inventory; CI = confidence interval; CPS = Child Protective Services; DHHS = Department of Health and Human Services; ED = emergency department; HFAK = Healthy Families Alaska; HFNY = Healthy Families New York; HSP = Healthy Start Program; HV = home visitation; NA = not applicable; NS = not significant; OR = odds ratio; RCT = randomized, control trial; RR = relative risk; SD = standard deviation; SEEK = Safe Environment for Every Kid.

Appendix B2. Quality Ratings of Intervention Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Maintain comparable groups?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?
Barlow et al, 2007[69]	Unclear	Unclear	Yes	Yes; women in intervention group slightly more likely to be high risk	Yes	Yes	Unclear	No
Barth et al, 1991[81]	Unclear	Unclear	Yes	Yes	Yes	Unclear	Unclear	No
Bugental et al, 2002[82]	Yes	Unclear	No	Yes; difference between completers and noncompleters (social support scale)	Yes	Unclear	Not applicable	No
Bugental et al, 2009[39]	No	Unclear	No; however, adjusted in analysis to correct for lower education level and more immigrant families in intervention group	Yes; difference between completers and noncompleters (immigrant status and twins)	Yes	Unclear	Not applicable	No
Dubowitz et al, 2009[67]	Yes (cluster randomized by day of the week)	Unclear	Yes	Yes	Yes	Unclear	No	No
Duggan et al, 2004[70] (same as Duggan et al, 1999[83])	Yes, random numbers table	Unclear	No; significantly more mothers worked in the year prior to delivery in the intervention groups (52% vs. 44%). Also, mothers in the control group had significantly worse general mental health (50% vs. 43%); adjustments made	Yes; slightly higher followup rates for Hawaiians and slightly lower for other Pacific Islanders	Yes	Yes	No	No
Duggan et al, 2007[71]	Yes; random numbers table, blocks of 10	Unclear	No; poorer psychological resources in control group (37% vs. 50%) and more control women enrolled prenatally (41% vs. 53%)	Yes	Yes	Yes	Unclear	No
DuMont et al, 2008[72]	Yes	Unclear	Yes	Yes	Yes	Yes; interviewers blind to group assignment	No	No
Eckenrode et al, 2000[79]	Yes	Yes	Yes; stratified by marital status, race, and 7 geographic regions within the county	Yes	Yes	Yes	Unclear	No
El-Mohandes et al, 2003[75]	Yes	Yes	Yes	Yes	Yes	No	No	No
Fergusson et al, 2005[73]	Yes	Unclear	Yes	Yes	Yes	Unclear	Unclear	No
Fraser et al, 2000[84] (same as Armstrong et al, 1999[60])	Yes	Unclear	No	No	Yes	Yes; blinded for the first 6 weeks	Unclear	No
Kitzman et al, 1997[80]	Yes	Yes	Yes; women in treatment 4 times more likely to have lived in households in which the head was unemployed and with less discretionary income	Yes	Yes	Yes; a few cases were revealed by the participants	No	No

Appendix B2. Quality Ratings of Intervention Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Maintain comparable groups?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?
Koniak-Griffin et al, 2003[76]	Yes	Unclear	Yes	Yes	Yes	Yes	No	No
Lowell et al, 2011[74]	Yes	Unclear	No; differences in maternal education between intervention and usual care groups; maternal education was then used as a covariate in models	Yes; dropouts from the two groups were similar on all baseline characteristics	Yes	Yes; but frequently learned of group status as families divulged their participation in Child First	Unclear	No
Olds et al, 2007[68]	Yes; computer-generated	Yes	Yes; nurse-visited participants lived in households with greater poverty and worse scores on childrearing attitudes associated with maltreatment	Yes	Yes	Yes	No	No
Olds et al, 1994[78]	Yes	Yes	Yes	Yes; except for social support and sense of control (adjusted for in analyses)	Yes	Yes	Unclear	No
Olds et al, 1986[77]	Yes	Yes	Yes	Yes; except for social support and sense of control (adjusted for in analyses)	Yes	Yes	Unclear	No
Siegel et al, 1980[85]	Unclear; randomized but without explanation	Unclear	Yes	Yes	Yes	Yes	Unclear	No

Author, Year	Reporting of attrition, crossovers, adherence, and contamination	Loss to followup differential or high	Intention-to-treat analysis	Postrandomization exclusions	Outcomes prespecified	Funding source	Quality rating
Barlow et al, 2007[69]	Yes	No	No	7.6% (10/131)	Yes	Nuffield Foundation, Department of Health	Fair
Barth et al, 1991[81]	Yes	No	Yes	No	Yes	Bio-medical research support grant from the Division of Research, National Institutes of Health; California Office of Child Abuse Prevention grant; Department of Health and Human Services Administration on Children, Youth, and Families grants	Fair
Bugental et al, 2002[82]	Yes	No; 73/96 completed (76%)	Unclear	No	Yes	National Institutes of Mental Health; National Science Foundation	Fair
Bugental et al, 2009[39]	Yes	No	No	No	Yes	National Institutes of Health; National Science Foundation	Fair
Dubowitz et al, 2009[67]	Yes	Yes; 76% completed protocol	Yes	No	Yes	Department of Health and Human Services Office on Child Abuse and Neglect	Fair

Appendix B2. Quality Ratings of Intervention Trials

Author, Year	Reporting of attrition, crossovers, adherence, and contamination	Loss to followup differential or high	Intention-to-treat analysis	Postrandomization exclusions	Outcomes prespecified	Funding source	Quality rating
Duggan et al, 2004[70] (same as Duggan et al, 1999[83])	Yes	No;13% year 1; 15% year 2; 16% year 3; no differential loss to followup	Unclear	684 (94%) of those randomized were interviewed at baseline (373 in intervention group, 270 in main control group, and 41 in testing control group for 643 in the main study)	Yes	Federal Maternal and Child Health Bureau; Robert Wood Johnson Foundation; Annie E. Casey Foundation; David and Lucile Packard Foundation; National Institute of Mental Health Epidemiological Center for Early Risk Behaviors	Fair
Duggan et al, 2007[71]	Unclear	No; 5% year 1; 8% year 2; not differential	No	High attrition: nearly half the families left the program by the child's first birthday, two thirds by child's second birthday	Yes	Alaska Mental Health Trust Authority and Alaska State Department of Health and Social Services	Fair
DuMont et al, 2008[72]	Yes	No; 10% of those who began study lost to followup at year 1; 15% lost to followup by end of year 2; not differential	No	No	Yes	Department of Health and Human Services Office on Child Abuse and Neglect	Fair
Eckenrode et al, 2000[79]	Yes	Not differential; included 81% of original sample after 15 years followup	No	Yes	Yes	Above, plus Department of Health and Human Services Children's Bureau	Good
El-Mohandes et al, 2003[75]	Yes	High (42% at 1 year); differential quitting the program (more in the control group) but no difference at 12 months	No	No	Yes	National Institute of Child Health and Human Development and the National Institutes of Health	Fair
Fergusson et al, 2005[73]	Unclear	No	No, but did estimate missing data	Intervention: 6.4% (14/220) Control: 0.9% (2/223)	Parental report of abuse, parental report of contact with Child Protective Services	Health Research Council of New Zealand; National Child Health Research Foundation; Canterbury Medical Research Foundation; New Zealand Lottery Grants Board	Fair
Fraser et al, 2000[84] (same as Armstrong et al, 1999[60])	Yes	Differential: no High: yes (23.76% loss at 12 months)	Yes	No	Yes	Community Child Health; Royal Children's Hospital and District Health Service; Abused Child Trust; Creswick Foundation; National Health and Medical Research Council	Fair
Kitzman et al, 1997[80]	No	No	No	No	Yes	National Institute of Nursing Research; Bureau of Maternal and Child Health; Administration for Children and Families; Office of the Assistant Secretary for Planning and Evaluation; National Center for Child Abuse and Neglect	Fair

Appendix B2. Quality Ratings of Intervention Trials

Author, Year	Reporting of attrition, crossovers, adherence, and contamination	Loss to followup differential or high	Intention-to-treat analysis	Postrandomization exclusions	Outcomes prespecified	Funding source	Quality rating
Koniak-Griffin et al, 2003[76]	Yes	Differential: no High: yes (30% attrition at 24 months)	No	No	Yes	National Institute of Nursing Research and Office of Research on Women's Health	Fair
Lowell et al, 2011[74]	Yes	Differential: no High: yes (25% vs. 26%)	Yes	No	Yes	Starting Early Starting Smart Prototype (Substance Abuse and Mental Health Services Administration, 9886); Robert Wood Johnson Foundation (60068)	Fair
Olds et al, 2007[68]	No	Unclear	No	No	Yes	National Institute of Mental Health; National Institute of Child Health and Human Development; Department of Justice	Fair
Olds et al, 1994[78]	Yes	Not differential; 15% to 21% loss to followup	No	Yes	Yes	Above, plus the National Center for Nursing Research	Good
Olds et al, 1986[77]	Yes	Not differential; 15% to 21% loss to followup	No	Yes	Yes	Bureau of Community Health Services; Robert Wood Johnson Foundation; William T. Grant Foundation	Good
Siegel et al, 1980[85]	Yes	No	Yes; for Child Protective Services data	No	Yes	National Institute of Child Health and Human Development, William T. Grant Foundation	Fair

Appendix C1. Parent Screening Questionnaire

Parent Screening Questionnaire

A Safe Environment for Every Kid ***(SEEK)***

Dear parent or caregiver: Being a parent is not easy. We want to help families have a safe environment for kids. We are asking everyone these questions. Please answer the questions about your child being seen today for a check-up. They are about issues that affect many families. If there's a problem, we'll try to help.

Today's Date: ____/____/200_
Child's Date of Birth: ____/____/____
Sex of Child: □ Male □ Female

PLEASE CHECK

□ Yes	□ No	Do you need the telephone number for Poison Control?
□ Yes	□ No	Do you need a smoke alarm for your home?
□ Yes	□ No	Does anyone smoke tobacco at home?
□ Yes	□ No	Is there a gun in your home?
□ Yes	□ No	In the last year, did you worry that your food would run out before you got money or food stamps to buy more?
□ Yes	□ No	Do you worry that your child may have been physically abused?
□ Yes	□ No	Do you worry that your child may have been sexually abused?
□ Yes	□ No	Lately, do you often feel down, depressed, or hopeless?
□ Yes	□ No	Do you often feel lonely?
□ Yes	□ No	During the past month, have you felt little interest or pleasure in the things you used to enjoy?
□ Yes	□ No	Do you often feel your child is difficult to take care of?
□ Yes	□ No	Do you wish you had more help with your child?
□ Yes	□ No	Do you feel so stressed you can't take another day?
□ Yes	□ No	Do you sometimes find you need to hit/spank your child?
□ Yes	□ No	In the past year, have you or your partner had a problem with drugs or alcohol?
□ Yes	□ No	In the past year, have you or your partner felt the need to cut back on alcohol?
□ Yes	□ No	Have you ever been in a relationship in which you were physically hurt or threatened by a partner?
□ Yes	□ No	In the past year, have you been afraid of a partner?
□ Yes	□ No	In the past year have you thought of getting a court order for protection?
□ Yes	□ No	Are there any problems you'd like help with today?

Please give this form to the doctor or nurse you're seeing today. Thank you.