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Evidence-Based Interventions for Depressed Mothers and Their Young Children

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Depression in mothers is a significant risk factor for the development of maladjustment in children. This article focuses on modifiable risk processes linking depression in mothers and adaptation in their young children (i.e., infancy through preschool age). First, the authors present evidence of the efficacy of interventions for reducing the primary source of risk: maternal depression. Second, they describe a central mechanism—parenting behaviors—underlying the relation between maternal depression and children’s adjustment. Third, the authors recommend two different integrated interventions that successfully treat mothers’ depression and enhance parenting skills with infants and young children. Finally, the authors note the possible need for supplementary interventions to address severity and comorbidity of mothers’ depression, barriers to engaging in treatment, and the sustainability of program benefits.

In this article, we describe key risk processes linking maternal depression to problematic developmental outcomes in young children and review evidence that these risk processes can be changed through behavioral interventions. We focus here on early development (i.e., infancy through preschool age) for several reasons. First, rates of maternal depression during that time are high (Ertel, Rich-Edwards, & Koenen, 2011). Second, mothers and children typically spend a great deal of time together early in life as compared to when children are in school. Third, the rapid changes in emotional and cognitive development make children especially vulnerable to the effects of maternal depression during this time (Bagner, Petit, Lewinsohn, & Seeley, 2010). Fourth, stressors associated with

depression in mothers during children’s early development have been linked with enduring changes that increase risk of psychopathology later in development (Baram et al., 2012). Finally, interventions early in development may alter what otherwise might have been a negative trajectory of child outcomes (Cicchetti & Toth, 2009).

What accounts for the relation between maternal depression and adverse child outcomes, and what interventions can break this link? Two crucial points are implicated in the chain between maternal depression and child maladaptation, and these are our suggested targets of intervention: (a) reduce the risk factor itself—maternal depression, with its various cognitive, affective, and behavioral features that are associated with adverse child development (Goodman & Gotlib, 1999), and (b) modify an especially critical and malleable consequence of that risk: dysfunctional parenting behaviors. Thus, the overall aims are to alleviate the mother’s depression, thereby reducing offspring’s early-life exposure to its symptoms and correlates, and enhance

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parenting qualities that facilitate children's healthy development. We provide evidence to support targeting these two risk processes in integrated interventions and for their feasibility, efficacy, and cost effectiveness, even in the context of poverty and comorbid psychopathology.

Depression in Mothers

Worldwide, the prevalence of depression is more than two times greater in women than in men. Across races and ethnicities, about 10% of U.S. mothers experience a major depressive episode (MDE) per year, resulting in an estimated 1 in 10 children being exposed to maternal depression each year (Ertel et al., 2011); about 13% of women experience an MDE during the 1st postpartum year (O'Hara & Swain, 1996). Rates of major depressive disorder (MDD) are higher for those living in poverty, with almost 50% of low-income mothers of infants and young children having depression (Knitzer, Theberge, & Johnson, 2008). We focus here on mothers because of their high rates of depression, the effects of depression exposure during pregnancy, and the greater amount of time mothers as compared to fathers typically spend with young children. Of note, however, depression in fathers also is associated with problems in children and should be the focus of study as well.

Depression in Mothers and Children's Adjustment

Offspring of depressed mothers score lower on tests of cognitive development and are at increased risk of psychopathology as compared to children of nondepressed mothers. A meta-analytic review of 193 studies reported that depression in mothers was significantly associated with children's internalizing (e.g., depression, anxiety) and externalizing (e.g., behavior disorders) problems ($r_s = .23$ and $.21$, respectively), beginning at the earliest ages at which such problems can be measured reliably and validly (i.e., 18 months). Maternal depression also was associated with children's high negative affect and behavior (e.g., irritability, sadness, fear), and low positive affect and behavior (e.g., smiling, cooing, approach; $r_s = .15$ and $-.10$, respectively; Goodman et al., 2011). Although the latter are small effect sizes, they are known to be predictive of the later emergence of psychopathology (Dougherty, Klein, Durbin, Hayden, & Olino, 2010).

The relation between maternal depression and child adjustment varies, however. In particular, associations were stronger for younger children, girls (for internalizing problems, specifically), families living in poverty, ethnic minority parents, and unmarried parents (the latter were specific to externalizing problems and negative affect/behavior; Goodman et al., 2011). Therefore, reducing depression, especially in mothers of infants and young children, may be one direct means of improving children's developmental trajectories with regard to internalizing and externalizing problems, negative and positive affects, and cognitive and emotional development.

Depression Can Be Treated

Depression in adults can be treated successfully with cognitive, behavioral, and interpersonal psychotherapies, as well as with antidepressant medications (ADMs). The benefits of ADMs are particularly robust for individuals with severe depression (see Hollon, 2016 for a review). ADMs are the most common treatment for depression in childbearing age women (Ko, Farr, Dietz, & Robbins, 2012). Nevertheless, there are concerns about breastfeeding women taking ADMs. Fortunately, efficacious alternatives to medications are available.

Cognitive behavior therapy (CBT) teaches depressed individuals to recognize the connections among situations, thoughts, feelings, and behaviors, to examine the accuracy of their beliefs, and to consider alternative explanations for stressful events. In the treatment of current major depression, CBT is about equally as effective as ADMs and superior to pill-placebo (Hedges $g = 0.53$, a medium effect size; Cuijpers et al., 2013). Importantly, CBT has enduring effects that last beyond the end of the acute treatment and are about the same as remaining on ADMs. CBT also is about two and a half times more likely to prevent recurrence as compared to stopping ADMs (see Hollon, 2016 for a review). With regard to perinatal depression in particular, a meta-analytic review (Sockol, 2015) showed that interventions based on CBT resulted in significant reductions in depressive symptoms compared to controls, with even greater reductions in depression in studies that included higher proportions of mothers who were non-White, single, and had more than one child.

Interpersonal therapy (IPT) aims to reduce depression associated with interpersonal difficulties and helps patients work through disputes, role

transitions, and grief by targeting communication and relational processes. IPT is effective for treating depression in women, albeit often in combination with ADMs (e.g., Frank et al., 2000), and has been modified to be culturally relevant to women living in urban poverty (Grote et al., 2009). O'Hara, Stuart, Gorman, and Wenzel (2000) found that in women with a postnatal MDE, those randomly assigned to 12 weeks of IPT had significantly greater reductions in depressive symptoms, improvement in social adjustment, and recovery from their episode as compared to women in a waiting list control condition.

In addition to these treatments for current depressive episodes, mindfulness-based cognitive therapy (MBCT) is effective for preventing the recurrence of depression (see Piet & Hougaard, 2011 for a review). This is important because risk of recurrence is high (22% for those who have had one MDE and 67% for those who have had three or more episodes; Keller, Lavori, Lewis, & Klerman, 1983). For mothers of infants, MBCT has been modified for the prevention of depression during the perinatal period (MBCT-PD) in particular and has shown evidence of efficacy (Dimidjian et al., 2015).

Overall, empirical evidence indicates that depression can be treated effectively, evidence-based psychosocial treatments have enduring effects, and the recurrence of depression can be prevented. Moreover, these treatments can be effective with depressed individuals who are low-income, racial or ethnic minorities when additional steps are taken to decrease barriers and increase engagement (Levy & O'Hara, 2010). Thus, it may be possible to diminish the negative consequences of maternal depression on young children by reducing or even eliminating the very source of the risk itself through treatment.

Nevertheless, although effective empirically based interventions for depression exist, many depressed mothers of young children remain untreated or receive inadequate treatment; this is especially true for mothers from racial/ethnic minorities and those with less education (Witt et al., 2011). Practical barriers that interfere with treatment seeking include cost, transportation, and child care; psychological and cultural factors include stigma and distrust of the mental health system. At the systems level, too few mental health professionals are trained in evidence-based practices (Acri & Hoagwood, 2014). Thus, although there is a compelling case for treatment, far too few depressed mothers get any or adequate treatment.

Do the Benefits of Alleviating Depression in Mothers "Trickle Down" to Their Children?

Even if mothers get adequate treatment, do children benefit from successful treatment of their mother's depression? A recent meta-analytic review of nine randomized controlled trials compared the effect of psychotherapy versus controls on mothers' depression, parent functioning, and children's outcomes (Cuijpers, Weitz, Karyotaki, Garber, & Andersson, 2015). Therapy was associated with significantly decreased levels of depression in mothers ($g = 0.66$; a medium effect size), improved mental health in children ($g = 0.40$; a small effect size), better mother-child interactions ($g = 0.35$; a small effect size), and less parenting/marital distress ($g = 0.67$; a medium effect size), with g representing the strength of the association (e.g., $g = 0.66$ indicates that the average person in the therapy group would score lower on depression than about 75% of those in the control condition; Coe, 2002). Thus, psychotherapy can decrease mothers' level of depression and may positively affect their parenting and their children's mental health.

There was considerable variability across studies, however. For example, one investigation found that effective treatment of postpartum depression was not associated with improvements in emotionality, internalizing, and externalizing problems in infants at 18 months (Forman et al., 2007). Thus, treating depression in mothers, especially early, may be an important step toward minimizing its negative effects on children, but treatment alone may not be sufficient. Therefore, we propose an alternative approach: integrated interventions that reduce mothers' depression while also explicitly focusing on a key mechanism in the complex relation between maternal depression and children's adjustment—mothers' parenting behaviors.

Mothers With Depression: Parenting as a Risk Process

Transmission of risk for maladjustment in children of depressed mothers occurs partly via children being exposed to mothers' negative affect, cognitions, and behaviors, and to the stressors that often accompany depression (Goodman & Gotlib, 1999). Heritability of depression is modest (i.e., about 37%), indicating that the environment also plays a role in its transmission (Sullivan, Neale, & Kendler, 2000). We focus here on parenting in particular because of its strong impact on children throughout

development, especially in infants, toddlers, and preschool-aged children; parenting is a central mechanism through which maternal depression affects children and can be modified successfully and cost effectively.

Parenting behaviors that disrupt or fail to promote healthy development are an important mechanism through which maternal depression affects children (Goodman & Gotlib, 1999). Depression is associated with mothers' being less able to provide their children with age-appropriate care and with negative parenting behaviors (e.g., harsh, critical) known to contribute to the development of psychopathology. In a meta-analytic review of observational studies of depressed mothers interacting with their children, Lovejoy, Graczyk, O'Hare, and Neuman (2000) found significant, moderate associations between maternal depression and more hostile (e.g., negative affect, coercive) and disengaged or withdrawn parenting (e.g., ignoring), and less positive parenting behaviors (e.g., affection, positive activities). This is especially concerning for infants, who rely on sensitive, responsive care, and toddlers and preschoolers, who rely on authoritative parenting in the context of positive emotions to promote healthy outcomes (Bornstein, 2006). These parenting issues are the precise targets of the interventions we are recommending here.

Parenting behaviors of mothers with their infants, toddlers, and preschool-aged children have been found to mediate (i.e., at least partially account for) the relation between maternal depression and infant and child development, even over the long term (e.g., Murray, Marwick, & Arteché, 2010), including in low-income, ethnic minority families (Riley et al., 2009). Given that negative parenting sometimes persists even after mothers' depression remits (Forman et al., 2007) and the uncertain benefits to children of focusing only on treating the mother's depression, an integrated model of care that both reduces her depression and enhances her parenting skills is warranted. Such an integrated approach is consistent with the summary recommendation of the Institute of Medicine report on depression in parents (National Research Council and Institute of Medicine, 2009).

Interventions to Improve Parenting by Mothers of Infants and Young Children

Several approaches have been found to effectively enhance the quality of parenting by mothers of infants, toddlers, and preschool-aged children. We

focus here on two programs—Home Visiting and Triple P—both of which have demonstrated feasibility of large-scale dissemination and also have been found to reduce mothers' depressive symptoms.

Home Visiting Programs (HVPs), which aim to help mothers' develop sensitive, responsive parenting skills that facilitate infant development, especially among low-income mothers, are feasible and effective in enhancing the quality of parenting of infants but are less effective for mothers with depression (Ammerman, Putnam, Bosse, Teeters, & Van Ginkel, 2010). An adaptation of HVP's, In-Home CBT (IH-CBT), implemented by therapists (typically masters level mental health professionals with prior experience with CBT for depressed adults) concurrently with home visiting, aims to promote new mothers' engagement with the intervention by explicitly addressing her concerns (e.g., social isolation) and supporting her relationship with the home visitor.

The IH-CBT component consists of 15 weekly sessions of about 60 min each plus a booster session about 1-month posttreatment, with all sessions administered in the home, typically with the child present. To reduce the mother's depression, components of CBT are implemented, including behavioral activation, identification of automatic thoughts and schemas, thought restructuring, and cognitive rehearsal, with a focus on relapse prevention in later sessions. Sessions are structured; therapists follow a manual while also individualizing treatment for each mother (e.g., dealing with trauma or addiction, as needed). To ensure coordinated care and to support the home visitor who trains the mother on parenting skills, IH-CBT therapists collaborate and consult with the home visitors by maintaining regular contact throughout the sessions and at a joint closing session. IH-CBT therapists typically are supervised by doctoral level professionals, with a weekly 2-hr meeting of a team of four to six therapists.

In a randomized controlled trial with an ethnically diverse sample of mothers of 5-month-old infants, those in the IH-CBT condition were less likely than mothers receiving the HVP alone to meet diagnostic criteria for major depressive disorder at posttreatment (IH-CBT: 29.3% vs. HVP: 69.8%) and at follow-up (20.5% vs. 52.6%), reported fewer depressive symptoms, and obtained lower clinician ratings of depression severity (Ammerman, Putnam, Altaye, Stevens, et al., 2013). In addition, they reported increased social support, improved functioning in daily activities, and decreased

psychological distress (Ammerman, Putnam, Altaye, Teeters, et al., 2013); these findings were maintained through to the 3-month follow-up (Ammerman et al., 2015). Because IH-CBT and HVP alone did not differ significantly regarding infants' social and emotional functioning and observed parenting, Ammerman et al. (2015) combined data across groups and found that as mothers' depression improved, there were parallel improvements in their parenting (e.g., more nurturing and stimulating).

Home visiting programs in general, and IH-CBT specifically, are cost effective (Karoly, Kilburn, & Cannon, 2005). An economic analysis revealed that IH-CBT was cost effective over 3 years, provided there was a willingness-to-pay threshold of \$25,000/quality adjusted life years. This finding reflects an estimated 8 additional depression-free months in mothers in the 1st year following treatment (personnal communication, December 10, 2015).

Finally, a program called Moving Beyond Depression has been established to facilitate dissemination of IH-CBT (e.g., see <http://www.movingbeyonddepression.org>). It has been implemented in nine states in the United States. Moving Beyond Depression staff members help new sites to implement the program, train staff, and offer ongoing training and support.

For mothers of toddlers and preschool-aged children, Triple P—Positive Parenting Program—has strong evidence for enhancing authoritative parenting in the context of positive emotions, preventing the development of emotional and behavioral problems in toddlers and preschoolers, maintaining gains, being cost effective, and being acceptable to parents from diverse cultures (Morawska et al., 2011; Sanders & Kirby, 2014). Similar to the adaptation of HVPs to address the challenges of parenting by new mothers with depression, Enhanced Triple P was developed for mothers with depression as an adjunctive treatment that teaches CBT skills (e.g., coping, identifying and challenging maladaptive thoughts) for managing their depression and improving parenting (Sanders, Markie-Dadds, Tully, & Bor, 2000). In addition, because depression in mothers often co-occurs with marital conflict, a second adjunctive component targets partner support.

Enhanced Triple P involves up to 15 weekly, 60- to 90-min sessions, with standard parent training procedures (i.e., positive parenting, having reasonable expectations, recognizing and responding to children's emotions) integrated with modules addressing mood management strategies, stress

coping skills, and partner support skills. Alternatively, families may complete the parent training modules and then the Enhanced Triple P training in 3–10 additional individual sessions. Based on the initial assessment, modules are individually selected for a particular family and may include behavioral communication skills training to increase support from family, partners, or friends, or brief cognitive therapy strategies to help mothers manage their depression, anxiety, and stress. Families typically have been recruited through media and community outreach campaigns at child-care centers and community health centers or based on mothers' depression screens conducted at child or mother routine care visits. Sessions are scheduled at hours convenient for the family and occur in the home or in local community health or neighborhood centers.

Dissemination is enhanced by an extensive training program for practitioners, typically master's level counselors, parent educators, or social workers, with training (2 days) and accreditation (a half day) by Triple P offered in several cities in the United States and around the world (<http://www.triplep.net/glo-en/getting-started-with-triple-p/>). The training program itself has been evaluated in at least three studies and was found to be associated with trainees' enhanced skills in parent training and parent consultation (Seng, Prinz, & Sanders, 2006). These studies, however, did not include Enhanced Triple P training, which requires an additional 2-day training and half-day accreditation, also offered by Triple P.

A meta-analytic review of 12 studies encompassing diverse cultures and ethnicities revealed that Enhanced Triple P was significantly associated with short-term increases in mothers' adjustment ($d = .37$), improved parenting practices ($d = .71$), and better social, emotional, and behavioral outcomes in children ($d = .53$). Results from follow-up studies were even stronger ($ds = .73, .81$, and $.79$, respectively); ds of 0.50 and 0.80 are considered medium and large effect sizes, respectively; ds of 0.70 or higher indicate that the average person in the Enhanced Triple P group scored higher than 76% of the people in the control condition (Coe, 2002; Sanders, Kirby, Tellegen, & Day, 2014). Thus, Enhanced Triple P has been shown to reduce maternal depression, improve parenting, and prevent further growth of child behavior problems; it also has been found to be cost effective and can be widely disseminated.

Summarizing across these two programs (i.e., IH-CBT, Enhanced Triple P), the evidence is strong for being able to improve parenting and effectively

reduce depression in mothers of infants, toddlers, and preschool-aged children. Moreover, both approaches can be delivered at relatively low cost by paraprofessionals or master's level clinicians.

Efficacy of these interventions has been assessed using various evidence-based measures. For the depression target, mothers' depression is typically assessed with self-report (e.g., Beck Depression Inventory, 2nd ed.; Beck, Steer, & Brown, 1997) and clinical interviews (SCID; First, Spitzer, Gibbon, & Williams, 2002). A strong and feasible measure of the key, targeted parenting constructs is the HOME Inventory, which is a standardized observational measure of the home environment (Caldwell & Bradley, 1984). To assess the ultimate target—children's social and emotional functioning—the Ages and Stages Questionnaire (Squires, Bricker, & Twombly, 2002) for infants and the Child Behavior Checklist for children ages 1.5–5 (Achenbach & Rescorla, 2000) are feasible measures of the targeted child outcomes, ideally obtained from multiple sources (e.g., a parent and another caregiver).

An Integrated Approach: Recommendations for Practice and Policy

A strength of these two programs is that they efficiently address the two risk processes: depression

in mothers and parenting. Within an integrated intervention, mothers can simultaneously learn to manage their depressive symptoms and enhance their parenting ability. A set of additional steps potentially can improve these approaches and enhance feasibility even further: some at the front end, concerning selection and entry into the intervention, and another at the back end, concerning maintenance or sustainability of the program benefits (see Figure 1). Both involve taking a more personalized approach to matching the treatment to each mother's particular circumstances.

At the front end, three sets of initial steps are promising for enhancing benefits over and above the empirical support for IH-CBT and Enhanced Triple P, and also address feasibility of their large-scale dissemination. First, as recommended by the U.S. Preventive Services Task Force, it is essential that all women with depression who are parenting infants be identified via universal screening with any of the several psychometrically sound screening tools (Siu & the U.S. Preventive Services Task Force, 2016) and systems (Loudon, Nentin, & Silverman, 2015). Inextricably linked with screening must be systems for referral and follow-up to ensure entry into one of the empirically supported treatments for women who screen positive for depression. The referral and follow-up might best be facilitated with colocation of mental health personnel within the

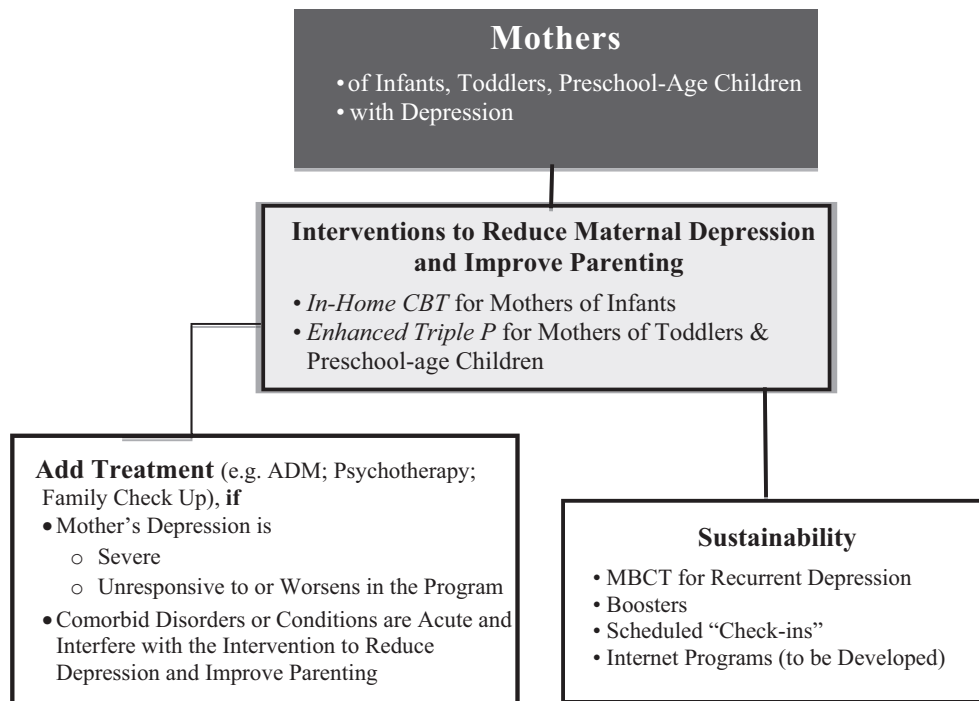


Figure 1. Framework for interventions aimed at reducing mothers' depression and enhancing parenting skills.

medical setting so that they can be immediately available (Reynolds & Frank, 2016) and thereby reduce the burden on the women to seek services in multiple clinics. Viable options include embedding the screening as well as the IH-CBT and Enhanced Triple P into routine obstetrical or pediatric care, such as women's 6-week postpartum check or at well-baby visits during the 1st year postpartum, consistent with a coordinated care model.

Second, mothers' depression severity and common comorbid conditions must be addressed. For some women, their depression may be so severe or they may have co-occurring disorders (e.g., addiction) or life circumstances (e.g., inadequate housing; intimate partner violence) for which they might also benefit from (a) a more intensive evidence-based treatment for depression (reviewed previously), (b) another intervention for an acute or impairing comorbid condition, or (c) assistance with major life stressors.

A third addition at the front end would be to address barriers to entering a program and to reduce dropout rates. Programs are likely to be more successful to the extent that they are affordable, offer flexible scheduling or alternatives to face-to-face meetings (e.g., telephone), locate services within the primary care setting to make them more accessible (if not in-home), assist women in prioritizing care for their own well-being and for their parenting, resolve misunderstandings or skepticism about the relevance and potential benefit of the interventions being offered, enhance motivation, work toward realistic expectations, and facilitate trust (Levy & O'Hara, 2010). For these various issues, we recommend an initial assessment and feedback/engagement session, similar to the Family Check-Up (FCU) approach (Shaw, Connell, Dishion, Wilson, & Gardner, 2009), during which a service provider respectfully addresses the mother's particular concerns and barriers, provides assessment feedback, and collaboratively develops a plan for subsequent sessions to work on the agreed upon issues. We further recommend that progress in reducing mothers' depression and enhancing parenting be monitored with routinely scheduled assessments over the course of the intervention to determine when providing additional treatment modules is warranted to address new or persisting barriers, comorbidities, or conditions interfering with the treatment plan.

At the back end, we recommend steps for enhancing maintenance and sustainability of the program benefits. Most importantly, we advocate a

health maintenance model, whereby program staff contact families periodically (e.g., annually) and also at specified developmental transitions (see below). To prevent depression relapse, mothers with multiple prior episodes would be guided to MBCT, either in a group, if available, or, alternatively, self-guided through a workbook (Williams, Teasdale, Segal, & Kabat-Zinn, 2007) or an online program that has shown promising evidence of effectiveness (Felder, Dimidjian, Beck, Boggs, & Segal, 2014). Another recommendation for enhancing maintenance of intervention gains is for pediatricians or family physicians to screen new mothers at routine well-child and vaccination visits and to make referrals as needed.

In terms of maintaining improvements in parenting behaviors, there is mixed evidence for booster sessions relative to a control condition, involving a follow-up assessment and referral to a local provider, if needed (Kolko, Lindhiem, Hart, & Bukstein, 2014). The most promising approaches to maintenance involve the original intervention teaching skills that will generalize over time and across situations (e.g., problem solving, stress management, anger management, communication), and after the intervention facilitating the use of Internet-relevant resources for information and contact (Eyberg, Edwards, Boggs, & Foote, 1998; Witkiewitz & Marlatt, 2011).

To maintain parent training effects, the intervention should teach parenting skills relevant not only for the age of the child at the time but also for children as they mature. Although many of the parenting principles are appropriate across ages, others change as children develop; therefore, the parenting skills should be revisited and updated across time. This could be accomplished by annual check-in calls or visits and by providing mothers with access to materials relevant to later ages, either on paper or via online parenting programs. Many of the latter are currently under construction and include essential training elements such as opportunities for questions-and-answer exchanges, assessments with feedback, and practice assignments; these programs have shown promising evidence of efficacy (e.g., Breitenstein, Shane, Julion, & Gross, 2015).

A broader issue is the workforce that is required to implement these recommendations (Acri & Hoagwood, 2014). Well-trained and supervised paraprofessionals and master's level clinicians are perfectly suited for coordinating referrals based on the screening tools as well as for administering the intervention. In addition to program-specific

training, providers will need to learn about infant development, maternal mental health, parenting of infants, engaging depressed mothers in treatment, building and maintaining a therapeutic relationship, and screening and referral for associated problems. Feasibility would be enhanced with active recruitment of talented eligible students, public funding for these training programs, and the use of online resources for training. Training itself must be evidence based.

Overall, the main take-home message from this review is that efficacious interventions exist for reducing maternal depression and improving parenting, with good evidence for integrated programs that address both risk processes simultaneously. At the policy level, our conclusion is consistent with the National Research Council and Institute of Medicine (2009) recommendation of a coordinated approach that combines (a) treating the mother's depression and (b) training mothers on parenting skills. Given the number of years that have passed without those recommendations having been put into routine practice, and in light of the evidence that effective interventions exist, however, it is clear that these issues have not yet received adequate attention from policymakers, healthcare managers, and directors of training programs. We hope that the recommendations proposed here provide a clear path forward. Dissemination of these two programs into routine care, with the suggested modifications, will result in the reduction of risk (depression in mothers and adverse parenting) and, subsequently, better child adaptation.

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