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Report to the Legislature

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# **Integrating ACE-Informed Practice into the Blueprint for Health**

**In Accordance with Act 144 of 2014, Section 16**

**Submitted to: General Assembly**

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## EXECUTIVE SUMMARY

### Introduction

*“On or before January 15, 2015, the Director of the Blueprint for Health and the Chair of the Green Mountain Care Board or their designees shall review evidence-based materials on the relationship between adverse childhood experiences (ACEs) and population health and recommend to the General Assembly whether, how, and at what expense ACE-informed medical practice should be integrated into Blueprint practices and community health teams. The Director and the Chair or their designees shall also develop a methodology by which the Blueprint will evaluate emerging health care delivery quality initiatives to determine whether, how, and to what extent they should be integrated into the Blueprint for Health.”*

During the 2014 Legislative session, a bill was introduced in the House Committee on Health Care proposing that an Adverse Childhood Experience (ACE) questionnaire be used by Blueprint practices as a tool for assessing health care risks. While this bill was not passed out of Committee, it prompted the inclusion of this report in Act 144.

As a threshold matter, the Director of the Blueprint for Health and the Chair of the Green Mountain Care Board emphasize the importance of improving and maintaining the Blueprint for Health as a foundation of primary care and of a high value health system in Vermont. The options that this report presents for preventing and treating ACEs require building on the Blueprint for Health.

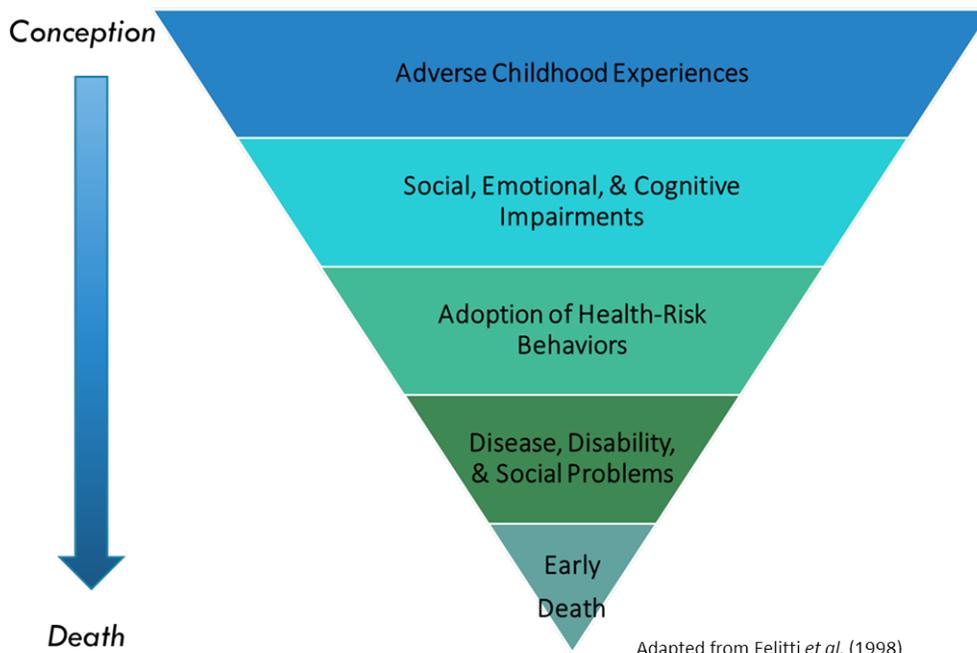
The Blueprint program works with primary care practices, hospitals, health centers, and other stakeholders to implement a statewide health services model in Vermont. The model includes PCMHs, multi-disciplinary support services in the form of community health teams CHTs, a network of self-management support programs, comparative reporting from statewide data systems, and activities focused on continuous improvement (Learning Health System). The close integration of medical and social support services along with cohesive networks of community providers distinguish Vermont’s health care system and are integral to any ACE-informed medical practice initiatives.

### Background

Adverse Childhood Experiences (ACEs) place children at increased risk of injury as well as long-term negative mental, social, behavioral, and physical health outcomes. ACEs encompass traumatic experiences occurring during childhood and adolescence such as child abuse, parental divorce, family violence, parental psychiatric and/or substance abuse issues, absence of basic care, abandonment, deprivation of food or shelter, and lack of encouragement and support.<sup>1</sup> ACEs can damage neurobiological and neuroendocrine functioning, affecting behavioral,

emotional, social, physical, and cognitive development.<sup>2-4</sup> These effects may contribute to the development of psychiatric illness and chronic medical conditions in adulthood.<sup>1,5</sup> ACEs have profound health consequences and, therefore, are a public health issue. Figure 1 illustrates common pathways linking early exposure to trauma and adult health.

Figure 1: Common Pathways Linking Early Exposure to Trauma and Adult Health



In collaboration with the Centers for Disease Control and Prevention, researchers at Kaiser Permanente’s San Diego Health Appraisal Clinic conducted the ACEs study, the sentinel study showing that adverse childhood experiences predispose for poor health and well-being into adulthood.<sup>1</sup> Participants in the ACEs study – nearly 10,000 adults – completed a questionnaire asking them about their exposure to three categories of abuse (psychological, physical abuse, and sexual abuse) and four categories of household dysfunction during childhood (exposure to substance abuse, mental illness, violent treatment of mother or stepmother, and criminal behavior). The study then examined the relationship between the number of childhood exposures to disease risk factors and chronic medical illnesses. Individuals with higher number of ACEs were more likely to smoke, abuse alcohol and illicit substances, be obese, be physically inactive, and exhibit high-risk sexual behaviors. Additionally, compared to individuals who reported no childhood exposures, those who reported 4 or more ACEs were significantly more likely to experience emphysema (OR = 3.9, 95% CI 2.6-5.8), stroke (OR = 2.4, 95% CI 1.4-4.3), hepatitis (OR=2.4, 95% CI 1.8-3.3), ischemic heart disease (OR = 2.2, 95% CI 1.3-27), cancer (OR = 1.9,

95% CI 1.3-2.7), skeletal fracture (OR=1.6, 95% CI 1.3-2.0), and diabetes (OR = 1.6, 95% 1.0-2.5).

In addition to profound health effects, child abuse and neglect is also associated with enormous economic costs.<sup>6</sup> The average lifetime cost per victim of nonfatal child maltreatment is \$210,000 (2010 dollars) including \$33,000 in childhood health care costs, \$11,000 in adult medical costs, \$144,000 in productivity losses, \$8,000 in child welfare costs, \$7,000 in criminal justice costs, and \$8,000 in special education costs. The lifetime costs are even higher for victims who die from child abuse – the estimated cost per death is \$1.3 million dollars.

## Summary of Findings

This report includes a literature review of the evidence-base for the population, community, and individual interventions that help reduce and treat ACEs. The report also relies on key informant interviews to begin to shed light on the current landscape of interventions in Vermont that address ACEs.

Numerous prevention strategies were identified in the literature review, including initiatives across the prevention spectrum – from primary prevention to secondary and tertiary prevention (see Table 1).

Table 1: Levels of Prevention & Intervention

Whole Population	At-Risk Populations	People with Conditions Requiring Treatment
Primary Prevention	Secondary Prevention	Tertiary Prevention
Prevent child maltreatment and promote healthy family functioning	Early Detection and intervention for at risk people	Active treatment for individuals to restore functioning and prevent long-term negative outcomes.

The review found that prevention strategies vary widely in their intended population (universal vs. at-risk vs. symptomatic), delivery setting (community/center-based, home visitation, schools, vs. health care), mode of delivery (individual vs. group), targeted ages, and intensity/duration. The most effective programs – those that increase healthy family relationships, improve parenting behaviors, and decrease rates of child abuse and neglect – share core elements and content. They tend to focus on parents, provide parenting education and skills training, emphasize the importance of developing social support networks, link parents to community resources, and use a standardized curriculum delivered by trained professionals.

## Summary of Recommendations

1. *Focus ACE Interventions* – The literature review for this report points to four over-arching ways to organize efforts within the health care and social support services system to respond to ACEs:

- Provide evidence-based prevention services for families
- Improve screening and case detection to link Vermonters with appropriate services
- Improve care transitions for patients
- Increase availability of trauma-specific treatment

Any new or strengthened approaches to primary, secondary, or tertiary prevention of ACEs should fall under the four broad categories above.

2. *Inventory and Coordinate with Existing Programs* – There are already many working groups and organizations with the singular purpose of reducing and responding to ACEs in Vermont; the first step in a strengthened approach to ACEs is for the Agency of Human Services (AHS) and key stakeholders to conduct a formal inventory of existing ACE work including identification of programs that incorporate evidence based design principles, demonstrate impact, and are extendable as part of a coordinated system of care related to ACEs.

3. *Investigate Options* – This report identifies options for addressing childhood trauma that fall within the four broad categories above. While research supports these options, further exploration of these is required to understand how they fit within Vermont’s current landscape of ACE interventions.

4. *Utilize Existing Structures for Delivery System Reforms* – Three Accountable Care Organizations (ACOs) have formed in Vermont to bring independent entities together to deliver more effective health services and to test multi-payer Shared Savings Programs. As recommended in the October 1, 2014 *Blueprint for Health Report*, Blueprint and ACO leadership should work together to form a unified health system initiative. Unified community health systems that merge overlapping ACO and Blueprint initiatives are intended to support the coordinated introduction and extension of new service models, such as ACE-informed medical practice. By utilizing a unified community health system to improve ACE prevention and treatment, the specific options for ACE interventions outlined in Table 3 can be tailored and scaled according to community need.

5. *Establish a Consistent Framework for Measurement* – *The Blueprint for Health Report* also recommends that payers, Blueprint and ACO leadership co-produce performance dashboards focusing on core ACO measure results and other measures that support care delivery transformation. ACEs interventions and ACE-informed medical practice should be included in such dashboards to allow for a consistent framework for measuring outcomes; the framework

should incorporate input from multiple stakeholders and reflect a unified approach to health care delivery. The same framework can be used to evaluate any new quality initiatives proposed for inclusion in the Blueprint for Health.

## **REVIEW OF LITERATURE ON PREVENTING AND SCREENING FOR ADVERSE CHILDHOOD EXPERIENCES (ACES)**

### **Research Question**

This review addresses the following four questions:

- 1) Are there evidence-based and effective approaches to preventing ACEs in the general population (*primary prevention*)?
- 2) Are there evidence-based and effective interventions for individuals who are at-risk of ACEs (*secondary prevention*)?
- 3) Are there evidence-based and effective treatments for individuals who have experienced ACEs (*tertiary prevention*)?
- 4) Should individuals be screened for a history of ACEs and/or risk factors related to child maltreatment? If so, what screening instrument should be used?

### **Methods**

We searched the following databases in October 2014 for potential studies: Cochrane Central Registration of Controlled Trials (1898-present), MEDLINE (1946-present), and PsycINFO (1597-present). To address our questions related to prevention interventions, the two themes used in our search strategy were *adverse childhood experiences* and *intervention*. To address our question related to screening for ACEs, the two themes we used in our search strategy were *adverse childhood experiences* and *screening*. The search strategies including exploded subject headings and keywords are detailed in Table 2. Additionally, we manually screened the reference lists for all of the previously published review articles and of the studies included in this review. We also searched the websites of several organizations considered to be authorities in the field including the Substance Abuse and Mental Health Services Administration (SAMHSA), The National Child Traumatic Stress Network (NCTSN), The National Center for PTSD, United States Preventive Services Task Force (USPSTF), American Academy of Pediatrics (AAP), and the American Academy of Child and Adolescent Psychiatry (AACAP).

Table 2: Search Strategies

Theme	MeSH terms (exploded)	Key Words	
<b>Adverse Childhood Experiences</b>	Stress, psychological Stress disorders, Post-Traumatic Stress disorders, Traumatic Child Abuse, Sexual Child Abuse Adult Survivors of Child Abuse Incest Violence Domestic Violence Child of Impaired Parents	Stress, psychological Stress disorders, Post-Traumatic Stress disorders, Traumatic Child Abuse, Sexual Child Abuse Adult Survivors of Child Abuse Incest Violence Domestic Violence Spouse Abuse Child of Impaired Parents	Trauma Adverse childhood experience PTSD Child Maltreatment
<b>Intervention</b>	Intervention Studies Primary Prevention Secondary Prevention Tertiary Prevention Accident Prevention Early Medical Intervention Program Evaluation Health Promotion Social Planning Evaluation Studies as Topic Community Psychiatry	Intervention Studies Primary Prevention Secondary Prevention Tertiary Prevention Accident Prevention Early Medical Intervention Program Evaluation Health Promotion Social Planning Evaluation Studies as Topic Community Psychiatry	Program Prevention
<b>Screening</b>	Mass Screening Symptom Assessment Risk Assessment Needs Assessment Questionnaires Early Diagnosis	Mass Screening Symptom Assessment Risk Assessment Needs Assessment Questionnaires Early Diagnosis	Screening Assessment

We included studies that utilized an experimental study design (including randomized controlled trials, case-control studies, cohort studies, and before-after designs). Studies also needed to report on outcomes related to child maltreatment or risk-factors related to child maltreatment (e.g. parental attachment, parental mental health issues, child-rearing attitudes associated with child maltreatment). Only studies published in English were included.

It should be noted that while we tried to be comprehensive in our search for relevant literature, this report is not a systematic review. Due to the large scope of this report, we have not included all of the published prevention studies. Instead, we have chosen to highlight initiatives that have been studied in several contexts and those that have explicitly reported child maltreatment as an outcome. Additionally, we placed greater emphasis on studies using a randomized control study

design. In some instances when there was a recently published, high quality review on a topic, we used the findings of the review rather than independently assessing all of the studies contributing to the review.

## **Primary Prevention of ACEs**

Primary prevention initiatives seek to prevent child maltreatment for all children in a population, independent of their risk status for abuse and/or neglect, and promote healthy family functioning for the entire population (See figure 2, page 36). Historically, child abuse prevention programs have taken a secondary prevention approach by targeting select populations of high-risk individuals and families. Although there is a strong evidence base, secondary prevention approaches greatly limit the number of children and families receiving appropriate interventions, require high levels of participant involvement, are resource intensive, and have limited community-level impact.<sup>7,8</sup> To address these limitations, there is a growing interest in developing primary prevention interventions that focus on families from a population and public health perspective.<sup>8</sup> Primary prevention initiatives often aim to improve parental knowledge of child development, enhance parent-child bonding and communication, promote positive parental coping and life skills, increase parental support, and increase access to social and health-care services for all community members. Primary prevention initiatives can be administered in several settings including in the community, schools, and healthcare settings.

### **Community-Based Primary Prevention Programs**

Community-based programs are rooted in the principle that in order to truly effect change, improve well-being, and decrease the negative outcomes associated with child maltreatment and other adverse childhood experiences, safe and stable environments and relationships much be nurtured.<sup>9</sup> Creating communities that assume responsibility for the welfare all of its' children, normalizing and emphasizing the importance of learning effective parenting skills, and implementing evidenced-based programs to enhance parenting skills are keys to developing population-level interventions to prevent child maltreatment.<sup>9</sup>

We identified six different community-based primary prevention programs that systematically studied the impact of an intervention on child abuse/neglect outcomes. Two programs – Triple P and The Vermont Family Based Approach – combined interventions on the primary, secondary, and tertiary prevention levels and will be discussed in a later section of this report.

#### ***Durham Connects***

Durham Connects is a universal newborn nurse home visiting program specifically designed to prevent child maltreatment and improve child well-being at the population level. To maximize population-level impact and ensure high fidelity, Durham Connects is designed to be short term, inexpensive, community owned, aligned with community service providers, and to engage every family in the community.

In conjunction with Duke University and the Durham County Health Department, Dodge *et al.* (2014) conducted a randomized controlled trial to evaluate the impact of Durham Connects.<sup>10</sup> From July 2009 to December 2010, infants born in one of the two hospitals serving the Durham County, North Carolina area were randomized to either Durham Connects (n=260) or to usual care (n=271). Participants in Durham Connects received 4-7 nurse contacts over the course of 2-4 months. The first contact occurred in the hospital prior to discharge and was followed by 1-3 nurse home visits when the infant was between 3 and 12 weeks old, 1-2 additional contacts to facilitate connection to community resources (if needed), and a final follow-up session 4 weeks later. During the home visits, specially trained nurses followed a structured protocol to provide parent education, brief interventions, and assessment and referral services for those family requiring long-term supports. All enrolled parents were asked to complete measures related to parenting behaviors, parenting knowledge, and parental well-being. In-home interviews and evaluations were conducted to obtain objective ratings of both parenting behavior and the quality of the home environment. Health care utilization was determined by review of the infants' medical chart and by asking mothers to independently report on their infants' number of emergency medical visits and overnight stays in the hospital.

At the 6-month follow-up, Durham Connect infants had 59% fewer emergency room visits and a significant reduction in the number of overnight stays in the hospital. Durham Connect mothers reported more community connections, more positive parenting behaviors, and lower rates of anxiety. Durham Connect families also provided higher quality home environments. There were no group differences in negative parenting behaviors, sense of parenting competence, father-infant relationship quality, or in-home observer ratings of parenting quality.

The estimated cost of delivering Durham Connects (including staff salaries and benefits, travel reimbursement, and office, and supply costs) was estimated to be \$700 per birth. Based solely on the reduction in hospital emergency care at 6 months, the estimated benefit-cost ratio of Durham Connects was 3.02, meaning that for every \$1 spent on Durham Connects, there was a \$3.02 savings in hospital emergency care.

***Adults and Children Together Against Violence Parents Raising Safe Kids (ACT-PRSK)***

Developed by the American Psychological Association (APA), in collaboration with the National Association for the Education of Young Children (NAEYC), The Adults and Children Together Against Violence Parents Raising Safe Kids (ACT-PRSK) takes a universal approach to preventing family violence and child physical abuse.<sup>11</sup> ACT-PRSK is designed as a community-based intervention for parents with young children (from birth to age 8) from all backgrounds, regardless of their level of risk for abuse. ACT-PRSK can be delivered in diverse settings from schools to prisons, churches, community centers, childcare centers, and mental health clinics. ACT-PRSK has been effectively and broadly disseminated to professionals throughout the United States and can be implemented into an existing program delivery infrastructure, thereby decreasing the costs of the program.<sup>12</sup>

Delivered in a group setting by professionally-trained individuals, the ACT-PRSK intervention consists of eight two-hour educational sessions that focus on effective parenting; topics include nonviolent discipline, child development, anger management, social problem-solving skills, effects of media on children, and methods to protect children from exposure to violence. ACT-PRSK emphasizes the critical role that parents and other adults can play in creating a safe, nurturing, healthy, and violence-free environment for young children. Employing a structured curriculum,.

Knox *et al.* (2011) used a non-randomized study design to evaluate the impact of ACT-PRSK.<sup>13</sup> Participants were recruited from a mental health agency for children, an urban community center, and a court setting. Intervention and comparison groups were recruited sequentially with the first 50 participants being assigned to ACT-PRSK and the next 42 to the comparison group. Participants included mothers, fathers, grandparents, and aunts. The intervention and control group were asked to complete pretest and posttest (at 8 weeks) measures. Findings from this study indicate that ACT-PRSK reduced harsh and hostile parenting behaviors and attitudes and improved parents' perceived importance and use of methods to teach children positive, nonviolent social skills. Furthermore, ACT-PRSK parents demonstrated less spanking and lower rates of hitting their children with objects than comparison group parents.

Portwood *et al.* (2011) used a randomized study design to study the impact of the ACT-PRSK program on positive parenting skills, parenting stress, partner conflict management skills, and the use of supportive networks.<sup>14</sup> Participants were recruited from community services agencies in Chicago, IL, Newport News, VA, and Milwaukee, WI. At each site, parents were randomized to continue in current services (n=109) or to participation in ACT-PRSK (n=162). Although all participants were receiving services prior to enrollment in the study, these services were not specifically targeted towards at-risk families. Participants were asked to complete written measures at pretest, posttest, and in follow-up three months later. The measures were designed to assess positive parenting skills, family conflict, social support, and parenting stress. The ACT-PRSK program was found to have a positive effect on parenting – participants reported statistically significant declines in the use of harsh verbal and physical discipline compared to parents in the care-as-usual group. The ACT-PRSK program was also found to increase parental nurturing behavior, improve parental expectations for their children, and increase parental social supports. ACT-PRSK did not impact parental perceived conflict in the family environment. The cost of implementation of the ACT-PRSK across the three different sites ranged from a low of \$178 to a high of \$553, with an average of \$267 per participant.

### ***Family Foundations***

Family Foundations is a universal prevention program that focuses on the co-parenting relationship during the transition to parenthood, a period of time in which expectant new parents are particularly open to change.<sup>15</sup> Family Foundations aims to minimize the strains of the transition to parenthood by helping parents become aware of co-parental disagreements and

learning how to manage these disagreements through productive communication, problem solving, and conflict management techniques. Family Foundations also seeks to enhance parental mental health, the parent-child relationship, and infant emotional and physiological regulation.

Using a randomized controlled study design, Feinberg *et al.* (2008) recruited heterosexual, adult couples who were either married or cohabitating and expecting their 1st child from childbirth education programs, physician offices, newspaper ads, or by word of mouth in two small-to-medium sized cities in Pennsylvania.<sup>16</sup> Following the initial intake interview, couples were randomized to either the control (n=80) or the intervention conditions (n=89). Families in the control condition were mailed a brief brochure about selecting high-quality childcare. Families in the intervention group received the Family Foundations Program in small groups of six to ten couples. Couples attended a series of four prenatal classes during the second or third trimester and four postnatal classes when the baby was five months old. Each class was two hours in duration and followed a manualized curriculum. Using a combination of didactic presentations, exercises, and role playing, the classes focused on emotional self-management, conflict management, problem solving, communication, and mutual support strategies that foster positive joint parenting of an infant. Each class had a female and male leader – each female group leader was a nurse and childbirth educator and each male group leader was a mental health or community service professional experienced in working with families and leading groups. Families in both the control and intervention groups were asked to complete measures on parenting, mental health, parent-child interaction, and child behaviors at study entrance and when the child was 6 months, 12 months, and 36 months of age. Home visits were also conducted at study entrance and when the child was 12 and 36 months of age.

At six months of age, significant program effects were found on co-parental support, maternal depression and anxiety, parent-child dysfunction interactions, and several indicators of infant self-regulation.<sup>16</sup> By twelve months of age, significant program effects were found in couple relationship quality, parental well-being, parenting quality, and child outcomes.<sup>17</sup> By 36 months of age, significant program effects were found on parental stress and depression, couple relationship quality, and co-parenting.<sup>18</sup> In comparison to control parents, intervention parents were more effective parents – they were less harsh, physical, and overreacting while simultaneously being less lax and permissive than control parents. Children in the intervention group exhibited better social competency and lower levels of internalizing and externalizing behaviors.

The cost to implement and administer the Family Foundations program to the 89 families over a five-year period of time was determined to be \$68,700 or \$779 per family. Costs included facility fees, meeting expenses, supplies/equipment, travel, salaries and study-related expenses (including salaries for university personal and university overhead).<sup>19</sup>

### ***STOP, LOOK, and LISTEN***

The Baltimore Mayor's Office for Children and Youth in collaboration with The Baltimore City Commission for Children and Youth created "STOP, LOOK, and LISTEN," an educational campaign that was designed to decrease the spike in child abuse cases following school report card distribution.<sup>20</sup> In 1990, report cards for each academic quarter were sent home with inserts that suggested positive parenting techniques and crisis intervention phone numbers. It was estimated that 110,000 homes in Baltimore received a copy of the insert. Additionally, public service announcements about positive parenting aired on radio and TV one week before report card distribution. Prior to implementation of the "STOP, LOOK, and LISTEN" campaign; there were 90 incidents of known child abuse resulting from a bad report card; this number dropped to 2 within one year of the campaign. Furthermore, the number of calls to parenting support agencies significantly increased each time the cards were distributed in school.

### **School-Based Primary Prevention Programs**

#### ***Child-Parent Centers***

The Child Parent Centers (CPC) program is a state- and federally funded early childhood education intervention for children in the Chicago Public Schools who are at risk of academic underachievement due to poverty and associated factors.<sup>21</sup> Eligibility is primarily based on neighborhood poverty, rather than poverty at the family level. The program emphasizes a child-centered approach to development and requires active parental participation for at least one-half day per week. In addition to the classroom, all of the CPCs have a parent room that is staffed by a full-time parent-resource teacher who leads parent educational activities, initiates interactions among parents, and fosters parent-child interactions. Additionally, each CPC has a full-time non-instructional school-community representative who provides outreach and support to participating families.

Using a quasi-experimental design, the Chicago Longitudinal Study enrolled and followed two cohorts of children graduating from kindergarten in 1986 – graduates from a CPC kindergarten (n=1,150) and graduates from a full-day kindergarten program for low-income students (n=389).<sup>21</sup> Some of the children in the CPC group had also received a CPC-style education in grades 1-3 (CPC extended). All children were followed for 19-years, at which time the children were an average of 23-24 years old. Not only did the children enrolled in the CPCs exhibit higher academic achievement and graduation rates, children in the CPC group had a two-fold decreased risk of child maltreatment (5.0% CPC graduates vs. 10.3% non-CPC graduates).<sup>14,22</sup> A dose-effect was also discovered, as the CPC extended children academically outperformed the non-extendors and had a lower rate of child maltreatment from ages 4-17 (3.6% extendors vs. 6.9% non-extendors).<sup>14,22</sup> A cost-benefit analysis of the CPC program found that the average cost per child was \$6,730 (1998 dollars) but that it generated a total return to society of \$47,759 per child, resulting in \$7.10 dollars returned to society for every dollar invested in the preschool.<sup>22</sup>

### ***School-based Violence Prevention Programs***

The Task Force on Community Preventive Services (an independent, nonfederal, volunteer body of experts in public health, prevention research, practice and policy that is appointed by the Director of the Centers for Disease Control and Prevention) strongly recommends the implementation of universal, school-based programs to prevent youth violence.<sup>23</sup> This recommendation is based off the findings of a systematic review examining the impact of universal school-based violence prevention programs.<sup>24</sup> A total of 53 studies were included in the review, representing a wide variety of types and duration of interventions, as well as student populations. School-based prevention programs were effective at all grade levels, from pre-K to high school. All types of intervention strategies (information, cognitive/affective, social skills building) and all program foci (disruptive or antisocial behaviors, bullying, dating violence) were associated with a reduction in violent behaviors. Interestingly, programs delivered by teachers, researcher, peers, and non-school personnel were effective at reducing violence, whereas programs delivered by school administrators or counselors were not. The efficacy of these programs was not influenced by the frequency or duration of the intervention nor community-specific factors (predominant ethnicity, socioeconomic status, and community crime rates).

### **Healthcare-Based Primary Prevention Programs**

In contrast to the larger number of community- and school-based primary prevention initiatives, fewer programs have been developed for the healthcare setting. We identified two healthcare-based programs – one conducted on hospital labor and delivery units that focused on shaken infant syndrome and one conducted in pediatric primary care that focused on reducing child maltreatment. Both initiatives were associated with a reduction in physical aggression directed at children.

#### ***Preventing Shaken Infant Syndrome***

The Preventing Shaken Infant Syndrome is a comprehensive, regional, hospital-based initiative that aimed to decrease the incidence of abusive head injuries among infants.<sup>25</sup> Taking a universal approach, parents of all newborns born within an 8-county region in Western New York received a nurse-lead educational program before the infant was discharged from the hospital. Maternity nurses asked all new parents to read a 1-page leaflet and view an 11-minute videotape on Shaken Baby Syndrome. Additionally, education posters were displayed throughout the labor and delivery hospital units. The number of abusive head injuries were tracked prospectively and compared to the number immediately preceding the program. The incidence of abusive head injuries decreased by nearly 50%; from 41.5 per 100,000 births in the control period to 22.2 per 100,000 in the study period. In contrast, the State of Pennsylvania which served as a concurrent control experienced no significant change in the rate of abusive head injuries.

#### ***Safe Environment for Every Child (SEEK)***

The Safe Environment for Every Child (SEEK) is a pediatric primary care intervention to identify and address prevalent psychosocial problems that are risk factors for child maltreatment.

Designed by researchers at the University of Maryland, the SEEK model includes training for healthcare professionals on how to identify, assess, and address targeted psychosocial problems, universal screening of families for specified risk factors, a directory of community resources, parent handouts, and access to an on-site social worker ( $1/2$  to 1 day per week). The SEEK social worker collaborates with the resident and family, provides guidance and support, and facilitates referrals to community agencies.

Dubowitz *et al.* (2009) used a clustered randomized controlled trial to evaluate the effect of SEEK in a university-affiliated, pediatric resident continuity clinic that primarily serves a low-income urban community.<sup>26</sup> Over the course of the course of 3.5 year study period, families with children ages 0-5 years old who brought their child in for a routine health surveillance visit were recruited for participation. Based on the day of the week, families were either assigned to the SEEK intervention (n=308) or the usual care condition (control, n=250). Data were collected from parental self-report measures, the child's medical record, and from child protective services. Parents in the SEEK intervention reported fewer instances of severe or very severe physical assault on their children, while the percentage of families with a child neglect/abuse report was lower for SEEK families compared to control families (13.3% vs. 19.2%, p=0.03).

To determine if SEEK could reduce child maltreatment in low-risk populations, Dubowitz *et al.* (2012) conducted a clustered randomized controlled trial in which 18 private pediatric practices were recruited and randomized to either the SEEK model or standard care.<sup>27</sup> Within each participating practice, eligible participants were mothers who were brought their young child (ages 0-5 years) in for a health surveillance visit. A total of 119 families were enrolled, 595 in the SEEK intervention and 524 in the standard care condition. At recruitment and at 6- and 12-month follow-up periods, participants were asked to complete a self-report measure of parent-child conflict, including the frequency of psychological and physical aggression events directed at the child. Additionally, child maltreatment rates were determined from review of children's medical reports and child protective services reports. In contrast to mothers who received standard care, SEEK mothers reported less psychological aggression and fewer minor physical assaults. The frequencies of severe and very severe physical assaults were so low that they were excluded from the analysis. There were no significant differences in child maltreatment rates between the control and SEEK groups. The authors, however, point out that because the rates of child maltreatment are so infrequent in a low-risk population that it can be challenging to evaluate interventions to prevent maltreatment within this population.

## **Secondary Prevention of ACEs**

Secondary prevention strategies initiatives identify and treat a targeted group of children who are at high risk for being abused and neglected (see Figure 2 page 36). Several factors are associated with an increased risk of child maltreatment including: parental factors (young age, low education achievements, history of child abuse/neglect, and substance abuse), the socio-

economic environment (poverty, parental unemployment, and poor social networks), family environment (single parent, presence of a step-parent, larger families, domestic violence), and child characteristics (prematurity, disability, and child health, behavior, and developmental problems).<sup>28</sup> The majority of secondary prevention interventions have focused on home visitation interventions for pregnant and postpartum women and their infants, although we did identify one community-based intervention.

Home visitation programs generally fall into one of two categories – those conducted by a professional and those conducted by a paraprofessional. The United States Preventive Task Force recently released an updated recommendation on primary care interventions to prevent child maltreatment in the U.S. population ages 0-18 years.<sup>29</sup> Based on a systematic review that included 28 published trials<sup>30,31</sup> – 27 of which utilized a home visiting intervention – the USPTF concluded “that the current evidence is insufficient to assess the balance of benefits and harms of primary care interventions to prevent child maltreatment.”<sup>29</sup> In their analysis, the USPTF did not distinguish between home visiting programs conducted by a professional (nurses and/or social workers) and those conducted by paraprofessionals (trained community members). In contrast, the Task Force on Community Preventive Services did distinguish between the type of home visitor and recommended the use of early childhood professional home visitor programs to prevent child maltreatment among high-risk families.<sup>32,33</sup>

## **Home Based Visitation Programs Conducted by a Professional**

### ***Nurse-Family Partnership***

The Nurse-Family Partnership (NFP) is a maternal and early childhood health initiative that provides pre- and post-natal nurse home visits to at-risk first-time mothers for the first two years of a child’s life. Following a structured curriculum, professionally trained nurses provide parent education regarding fetal and infant development, emphasize the importance of social support, and link parents with other health and human services. Long-term studies of NFP conducted by Olds and colleagues from the University of Rochester show that this program improves parenting skills and dramatically decreases rates of child abuse and neglect.

Olds *et al.* (1986) investigated the impact of NFP on child abuse, child neglect, safety, parental caregiving, mother-child interactions, and use of medical services in Elmira, NY, a semirural community in upstate New York.<sup>34</sup> Pregnant women who had not previously given birth and were considered to be at high-risk (young age, single-parent, or low socioeconomic status) were recruited for the study. Participants were randomized to one of four groups: 1) developmental screening and referral services for the child at 12 and 24 months of age (n=90); 2) developmental screening and referral services for the child at 12 and 24 months of age + free transportation for scheduled prenatal and well-child care (n=94); 3) developmental screening and referral services + free transportation + bimonthly prenatal nurse home-visitation services (n=100); and 4) developmental screening and referral services + free transportation + bimonthly prenatal nurse

home-visitation services + postnatal nurse home visits until the child was 2 years of age (n=116). Postnatal home visits were offered weekly from birth until 6 weeks, every 2 weeks from 6 weeks to 4 months, every 3 weeks from 4 to 14 months, every 4 weeks from 14 to 20 months, and every 6 weeks from 20 to 24 months. Additionally, nurses linked family members to other health and human service agencies as needed. Families in all four groups were followed for four years with parental questionnaires, health and developmental assessments of the child, and in-home objective assessments of parenting behaviors. Children's medical records and child protective services reports were also reviewed. For the purposes of analysis, intervention groups 1 and 2 were combined to form the control group, which was compared to group 4. Mothers who received nurse home visiting were observed to restrict and punish their children less frequently and provide more appropriate play materials than non-visited mothers.<sup>34</sup> Nurse home visiting was also associated with reductions in health-care encounters for injuries and fewer behavioral problems.<sup>35</sup> Long-term follow-up found that by the time children were 15 years of age there was a 48% reduction in state-verified rates of child abuse and neglect.<sup>36,37</sup>

Kitzman *et al.* (1997) conducted a second randomized trial of the Nurse-Family Partnership in Memphis, TN, with the primary goal of determining the extent to which findings from the Elmira study could be replicated in a predominantly African-American sample living in an urban setting.<sup>38</sup> Participants were recruited from an obstetrical clinic and were eligible for enrollment if they had not previously given birth and had two or more risk factors (unmarried, < 12 years of education, or unemployed). Participants were randomized to one of four groups: 1) free transportation for scheduled prenatal care (n=166); 2) free transportation for scheduled prenatal care + developmental screening and referral services for the child at 6, 12, and 24 months of age (n=515); 3) free transportation + developmental screening and referral services + intensive prenatal nurse home-visitation services + two postpartum visits (one in the hospital and one in the home) (n=23); 4) free transportation for scheduled prenatal care + developmental screening and referral services for the child at 6, 12, and 24 months of age + intensive prenatal nurse home-visitation services + nurse home visits until the child was 2 years of age (n=228). Families in all four study arms were followed for 2-years with study home visits, parental observation, parental questionnaires, medical chart review, review of child protective services reports, and health and developmental assessments of the child. Mothers who received nurse visits during the first two years of her child's life reported more empathy, more realistic infant expectations, and less agreement in using physical punishment – all factors associated with a decreased risk for child abuse and neglect.<sup>38</sup> Children in the home-visited group were found to have safer homes and a 28% relative reduction in health care encounters for injuries and ingestions.<sup>38</sup> Long-term follow-up conducted when children were 20 years of age suggested that nurse home visiting reduced preventable-cause mortality.<sup>39</sup>

In both the Elmira and Memphis trials, the impact on injuries was more pronounced among children born to mothers with fewer psychological resources and increased social disadvantage.

### ***Miller Early Childhood Sustained Home-Visiting Program (MECSH)***

Miller Early Childhood Sustained Home-Visiting (MECSH), also known as Maternal Early Childhood Sustained Home Visiting, is a pre- and post-natal nurse-home visiting program specifically for at-risk mothers and their infants for the first two years of a child's life. Like NFP, MECSH nurses conduct routine home visits following a structured curriculum that emphasizes parental education, positive parenting skills, and coping and problem solving skills. Nurses also assist the family in finding community supports and linking families to community services agencies. Unlike the NFP program which is available only to first time mothers, MECSH is available to all mothers, independent of the number of children they have.

Kemp *et al.* (2011) conducted a randomized controlled trial to study the effects of MECSH in at-risk mothers located in a socioeconomically disadvantaged suburb of Sydney, Australia.<sup>40,41</sup> All expectant mothers attending a prenatal midwife clinic at a large teaching hospital in Sydney were screened using a standardized psychosocial assessment. Women were eligible for participation if they endorsed emotional distress, lack of emotional and practical support, recent psychosocial stressors, history of child abuse or domestic violence, or history of mental illness or substance abuse. Women were also considered at-risk, and therefore eligible for study participation if they were under age 19 or if they were late to seeking prenatal care (after 20 weeks gestation). Participants were randomized to either the intervention (n=111) or to the control (n=97). The control group received the local standard of prenatal, obstetric, and postnatal care, including a single home visit by a child health nurse within 2 weeks of delivery. The intervention group received prenatal and postnatal nurse home visits according to the MECSH program in addition to usual care. Prenatal visits were conducted every two weeks and postnatal visits were conducted according to a set schedule (weekly from birth to 6 weeks, every other week till 12 weeks, monthly till 6 months, and bi-monthly till 24 months). Study visits were conducted at time of enrollment and at age 1, 6, 12, 18, and 24 months. During these visits, the quality of the home environment and parent-child interactions were evaluated. Additionally, the child's health and development was assessed and mothers completed self-report survey of their own health and well-being. Compared to controls, mothers who participated in MECSH were more emotionally and verbally responsive to their infants. There were no differences in the quality of the home environment, parent-child interactions, avoidance of punishment, or child development between the intervention and control groups. However, for certain subgroups who were at particularly high risk (prenatally distressed mothers, first time mothers, immigrants, and mothers with more than one risk factor), compared to controls, MECSH mothers provided a more responsive environment and reported more positive experiences of being a mother while children exhibited improved mental development. This study was not designed to explicitly study the impact of MECSH on rates of child maltreatment.

### ***Philadelphia Interdisciplinary Home-Visitation Model***

The Philadelphia Interdisciplinary Home-Visitation Program is a pre- and post-natal home visiting program for pregnant women at risk for out-of-home placement for their newborns. During their pregnancy and through a child's first birthday, this program provides home visits from an interdisciplinary team consisting of a nurse, social worker, and a trained peer home visitor. Nurses are primarily responsible for addressing health care needs, coordinating health care services, conducting developmental assessments, and performing health education. Social workers assess psychosocial needs of the family, refer families to community agencies, and provide individual and family counseling. Home visitors provide support, assist in identifying and accessing community services, engage in home-based health education and parent training, and model positive parenting skills.

Marcenko and Spence (1994) studied the efficacy of this interdisciplinary home-visitation model.<sup>42</sup> Patients attending an inner-city hospital outpatient obstetrics clinic in Philadelphia were recruited for study participation at their 1<sup>st</sup> or 2<sup>nd</sup> prenatal visit. Participants were randomized to either the Interdisciplinary Home-Visitation Program (n=125) or to usual care (n=100). At baseline and when their infant was 6 months old, mothers completed measures on substance abuse, social support, psychological functioning, rates of accessing social services, and history of child protective services involvement. Additionally, families had a home visit to assess the quality of the home environment. At follow-up when the child was six months old, there was no difference in the rate of out-of-home placements between the intervention and control groups. However, compared to the control group, the intervention group reported significantly increased social support, greater access to services, and decreased psychological stress. The study did not specifically examine the rates of child maltreatment.

### ***Early Start***

Developed in New Zealand, the Early Start Program is a nurse home visiting program for high risk families during the first 36-months of a child's life.<sup>43</sup> Based in social learning theory, the critical elements of the program include: assessment of family needs, challenges, and strengths, development of a positive partnership with the family, collaborative problem solving, provision of support and advice, and involvement with the family throughout the child's preschool years.

Fergusson *et al.* (2005) conducted a randomized control trial to evaluate the impact of Early Start.<sup>43</sup> At-risk families were identified by community health nurses and randomized to either the Early Start Program (n=220) or to usual care (n=223). Participants in the Early Start Program received regular home visits by either nurses or social workers for up to 36-months. In-home structured interviews were completed at baseline and at 6, 12, 24, and 36 months. Children's medical records were also reviewed. The Early Start Program resulted in significant benefits including reduced rates of severe parent/child assaults, increased positive and non-punitive parenting, reduced rates of injuries and poisoning, and reduced rates of childhood problem behaviors.

### ***Child FIRST (Child and Family Interagency Resource, Support, and Training)***

Child FIRST is a home-based, early childhood intervention program that seeks to decrease the incidence of serious emotional disturbance, developmental and learning problems, and abuse and neglect among at-risk young children and families.<sup>44</sup> Services are provided for children birth to age five who are exhibiting behavioral, developmental, learning problems or are living within a family experiencing significant psychosocial risk. Each enrolled family is provided a two-member home visiting team, including a master's level mental health/developmental clinician and a bachelor's level care coordinator. Families receive comprehensive assessments, a coordinated and comprehensive treatment plan, home-based parent guidance and psychotherapeutic interventions, and care coordination/care management services.

Lowell *et. al.* (2011) conducted a randomized controlled trial to study the effectiveness of the Child FIRST program.<sup>45</sup> Families were recruited for participation in the study from a primary care center in Bridgeport, CT or from the Connecticut Supplementary Nutrition Program for Women, Infants, and Children. Families were eligible if they had a child between 6 and 36 months and either the child screened positive for social-emotional difficulties or the parent screened high for psychosocial risk. Participating families were randomized to either the Child FIRST intervention (n=78) or to usual care (n=79). At baseline and when the child was 6- and 12- months old measures of child language, child social/emotional/behavioral problems, parenting stress, social service use, and parental-reported involvement with child protective services (CPS) were obtained. Additionally, the State of Connecticut CPS records were reviewed when the child was 36 months old. Relative to usual care, Child FIRST mothers reported less parenting stress at the 6-month follow-up and lower psychopathology symptoms at the 12-month follow-up. Children in the Child FIRST intervention exhibited improved language and fewer externalizing symptoms at 12-months compared to the usual care condition. Although there were no significant between group effects on CPS involvement between baseline and 6, 12, or 24 months, there was a significant effect of Child FIRST on CPS involvement by 36 months.

### **Paraprofessional Home Visits**

#### ***Healthy Families***

Developed in 1992 by Prevent Child Abuse America, Healthy Families is an intensive home visiting service for at-risk families.<sup>46</sup> Home visits are provided by trained paraprofessionals for the first three years of a child's life. Initially, home visits are provided on a weekly basis; once family functioning health and functioning improves, families are promoted within the program and receive less frequent home visits. Home visitors seek to establish a trusting relationship with parents, help families address existing crises, model problem-solving skills, and help families access needed psychosocial services. While home visitors are encouraged to use a parenting curriculum, no specific curriculum is required.

Duggan *et al.* (2004) conducted a randomized trial investigating the impact of Healthy Families Hawaii on child abuse and neglect.<sup>47</sup> Participants were recruited to the study if they were identified as being high risk either by their prenatal providers or through universal screening conducted at birth or within one month of delivery. Mothers were randomized to the HFHI intervention (n=395) or routine care (n=290). On a yearly basis, child abuse and neglect were measured by self-report and observation of parenting behaviors. Additionally, children's medical charts were reviewed for hospitalizations and child protective services reports were queried. After 3 years, the only difference between the intervention and control groups was that HFHI families were less likely to threaten to spank or hit their child. There were no differences between groups in nonviolent discipline, psychological aggression, minor physical assault, severe physical abuse, or very severe physical abuse. Furthermore, there were no differences in rates of substantiated child protective services reports, health care utilization, quality of the home environment, or rates of maternal relinquishment of the primary caregiver role.

Duggan *et al.* (2007) replicated the Healthy Families in Alaska under the program name Healthy Families Alaska (HFAK).<sup>48</sup> At-risk families were identified and randomized to either HFAK (n=179) or to the control (n=185). Maternal interviews were conducted at baseline and when children were two years old. Additional sources of data came from review of child protective services reports, review of children's medical records, and observation of home environments. There were no differences between control and intervention groups on rates of substantiated and unsubstantiated reports of child maltreatment, rates of maternal relinquishment of the primary caregiver role, health care utilization, parent-child interactions, or maternal parenting attitudes about discipline. HFAK mothers reported using mild physical and psychological disciplinary tactics less often than control mothers, although both groups reported similar rates of more severe physical discipline and neglectful behaviors. Compared to control families, HFAK were less likely to provide a poor quality home environment.

DuMont *et al.* (2008) recruited expectant mothers or mothers with an infant under 3 months of age who were at-risk for child abuse and neglect to enroll in Healthy Families New York (HFNY).<sup>49</sup> Participants were randomized to either the HFNY intervention (n=647) or a control condition (n=650). Data were collected through a review of child protective service records and maternal interviews at baseline, 1 year, and 2 years. At both the year one and year two follow-up periods, there were no differences between the intervention and control groups in terms of child protective service reports or prevalence of abuse. However, there were significant differences between groups in self-reported frequencies of abuse. At year one, HFNY mothers reported significantly fewer acts of very serious physical abuse, minor physical aggression, and psychological aggression. At year 2, HFNY mothers reported significantly fewer acts of serious physical abuse.

### ***Child Parent Enrichment Project (CPEP)***

The Child Parent Enrichment Project (CPEP) is a paraprofessional home visitation program for at-risk families.<sup>50</sup> In this model, trained paraprofessionals provide 6 months of home visits during or just after pregnancy. Based on the theory that social support, bonding, and goal setting can ameliorate risk of child abuse, home visitors assist in goal-setting, provide parental education, model positive parenting skills, and refer families to other community resources.

Barth *et al.* (1991) studied the impact of the Child Parent Enrichment Project on rates of child maltreatment in Contra Costa County, California.<sup>50</sup> Expectant or new mothers were referred to the study if they were deemed “at-risk” by public health, educational or social service professional. They were randomized to receive either the CPEP intervention (n=97) or traditional community services (control, n=94). Data were collected at study entry and exit, including maternal self-reports of well-being, parenting behavior, and child temperament. Additionally, child protective service reports were reviewed for initial reports, investigations, and substantiated cases of child abuse. While participants reported that they found the CPEP program to be valuable, there was no impact of the program on rates of child abuse or maternal self-reports of well-being and parenting behaviors.

### ***Family Partnership Model (FPM)***

Developed in the United Kingdom, the Family Partnership Model is a paraprofessional home visiting program for at-risk families.<sup>51</sup> Home visits are provided on a weekly basis for 18 months. Throughout the program, trained home visitors focus on partnering with the parents, building trust, negotiating for change, and assisting with problem solving.

Barlow *et al.* (2007) examined the impact of the Family Partnership Model.<sup>51</sup> Women seeking care from midwives in a primary care setting were screened and referred to the FPM program if they were deemed to be at risk. Participants were randomized to either the FPM intervention (n=67) or standard care (control, n=64). Data were collected at study entrance and at 6 and 12 months. Parent-child interactions, maternal psychopathology, parenting attitudes, social supports, and quality of the home environment were all measured. At the one-year follow-up, the FPM intervention was found to improve the sensitivity and attunement of high-risk mothers to their infants, however, there were no significant differences in child abuse reports, maternal psychopathology and stress, quality of the infant’s home, or infant development.

### ***Pride in Parenting***

Pride in Parenting, a program for at-risk maternal-infant dyads from birth to one year of age, combines home visiting with group based interventions.<sup>52</sup> This program aims to improve health and mothers’ parenting behavior by increasing parenting knowledge, improving parenting attitudes, and promoting healthy life skills. Home visits – provided weekly through the first 4 months of age then biweekly from 5- to 12-months – are conducted by trained paraprofessionals following a standardized curriculum. The group-based intervention is provided bi-monthly for

children ages 5 to 12 months of age. Groups, consisting of a 45-minute parent-infant playgroup and a 45-minute parent group discussion, are co-led by a master's level early intervention specialist and the paraprofessional home visitors. The group sessions follow an established curriculum that expands on the topics presented during the home visits.

Katz *et al.* (2011) examined the efficacy of *Pride in Parenting* for high-risk African American mothers.<sup>52</sup> Women over age 18 with inadequate prenatal care (<5 prenatal care visits, care initiated in the 3<sup>rd</sup> trimester, or no prenatal care) were recruited from Washington, D.C. hospitals at the time of delivery. At one-month postpartum visit, mother-infant dyads were randomized to *Pride in Parenting* (n=146) or to a control group (n=140). At the completion of the study, mothers in the intervention group provided better home environments for their children, exhibited healthier parenting attitudes and expectations compared to control mothers, and were more likely to seek appropriate medical care. Intervention mothers also reported increases in perceived level of social supports, particularly among those women who attended the parent group sessions. There was no appreciable difference in mothers' knowledge of infant development between the intervention and control group.

### ***Home-Start***

The UK Home-Start Program provides trained volunteers to families in need of additional supports.<sup>53</sup> Volunteers and families jointly decided on the frequency, length, and nature of the home visits, as well as how long the support continued. Volunteers may give parenting advice, provide company, assist with childcare or other household tasks, accompanying families on trips in the community, or provide other types of social supports.

Barnes *et al.* (2009) evaluated the Home-Start program on its effect on maternal depressive symptoms in new mothers.<sup>54</sup> Using a clustered randomized control design, socially disadvantaged pregnant women in the United Kingdom were recruited for participation in the study. Of the 527 meeting eligibility, 92 intervention participants who completed the study visits and 92 matched control participants were included in the final analysis. On average, those in the Home-Start program received 15 visits over the course of 5.5 months with visits beginning just after birth (6 days postpartum). Control participants received care as usual, without home visits. Control and intervention mothers received study home visits at 2- and 12-months. A structured clinical interview and other questionnaires evaluating parenting, maternal well-being, and the home environment were administered to mothers during the home visits. Almost one-third of the mothers in participating in the study experienced depression during the first year of their child's life. There were no significant differences in the rates of maternal depression between the control group and the Home-Start intervention.

## **Community-Based Secondary Prevention Programs**

### ***The Incredible Years***

The Incredible Years is a behavioral parent training program that aims to improve parenting skills.<sup>55</sup> Originally designed for the treatment of conduct disorders in young children, several studies have evaluated The Incredible Years as a prevention program to address conduct problems in preschool children and improve parenting behaviors.

Using a modified version of The Incredible Years, Posthumus *et al.* (2012), conducted a case-control study of The Incredible Years on child conduct problems and parenting styles.<sup>56</sup> Parents of 4-year-olds were recruited by mail and were eligible for participation if their child had an elevated score on a standardized parent-report instrument measuring aggressive behavior. Based on their place of residence, parents were selected for the intervention group (n=72) or for the control group (n=110). Parents in the intervention group received the Incredible Years which consisted of 18 two-hour psycho-education and skill-building groups held in community centers with 6-11 other families. Parents were taught how to use child directed play, how to use praise and reward, how to set limits, and how to handle misbehavior. Additionally, parents received training in effective coping, communication skills, and problem solving. The control group received usual care for their children's medical, psychiatric, and behavioral concerns. Families in both groups were assessed pre-intervention and at 5 months, 1 year, and 2 years using parental reports on child behavior, parenting skills, and discipline styles. Additionally, the quality of parent-child interactions was assessed using home observation. Compared to the control group, parents who received The Incredible Years exhibited improvements in parenting skills and were less likely to make critical statements. Additionally, parents in the intervention group reported an increase in appropriate use of discipline and praise and decreased use of harsh and inconsistent discipline. Children in the intervention group exhibited improvements in observed behavior compared to the control group.

## **Tertiary Prevention of ACEs**

Tertiary prevention activities provide active treatment for children who have been abused and/or neglected, attempt to restore children to their highest level of functioning, prevent the negative long-term effects of ACEs on health and well-being, and prevent child abuse and neglect from occurring again (see Figure 2, page 36).

## **Evidenced Based Treatments for Trauma in Children**

A recent Cochrane systematic review and meta-analysis examined the effectiveness of psychological therapies in treating children and adolescents with post-traumatic stress disorder (PTSD) – a psychiatric condition that can develop in the wake of childhood trauma.<sup>57</sup> The review included fourteen studies that investigated the use of cognitive behavioral therapy (CBT), exposure-based, psychodynamic, narrative, supportive counselling, or eye movement

desensitization and reprocessing (EMDR) therapies. The review concluded “There is evidence for the effectiveness of psychological therapies, particularly CBT, for treating PTSD in children and adolescents for up to a month following treatment. At this stage, there is no clear evidence for the effectiveness of one psychological therapy compared to others.”

Because childhood maltreatment is associated with a broad range of trauma-related psychopathology and aggressive and violent behaviors, not just PTSD, Leenarts *et al.* (2013) systematically evaluated psychotherapeutic treatments for children exhibiting a broad range of trauma-related symptoms.<sup>58</sup> A total of 33 studies (26 randomized controlled trials and 7 non-randomized controlled trials) were included in the review, 27 of which evaluated cognitive, behavioral, or cognitive-behavioral techniques, 2 of which evaluated trauma-specific treatments for children and adolescents with comorbid aggressive or violent behavior, and 4 of which evaluated psychotherapeutic treatment that focused on mental health problems other than PTSD and used non-trauma focused cognitive, behavioral, or cognitive behavioral interventions. This review concluded that trauma-focused cognitive behavioral therapy (TF-CBT) is the best supported treatment for trauma in children and adolescents.<sup>58</sup> TF-CBT was selected as a “Best Practice” for treatment of child abuse/neglect in the Kaufman Best Practices Task Force Final Report sponsored by the National Child Traumatic Stress Network.<sup>59</sup> TF-CBT is a conjoint child and parent psychotherapy that incorporates trauma-sensitive interventions with traditional CBT principles. It has been shown to positively impact PTSD, depressive, and behavioral symptoms in children with a history of trauma and improve parenting practices in non-offending parents.<sup>60</sup>

Despite the strong evidence for TF-CBT, wide spread adoption has been hampered by the costs associated with implementing and maintaining an evidenced-based treatment model, as well as the lack of appropriately trained providers, particularly in rural locations.<sup>61,62</sup> To better characterize the costs associated with TF-CBT, a recent study compared the annual costs of mental health services for trauma-exposed children referred for TF-CBT to the annual costs of children receiving routine outpatient treatment.<sup>61</sup> While the TF-CBT group had higher costs associated with low-end care (outpatient), the usual care group had greater costs associated with high-end care (crisis intervention, day hospital, inpatient hospital, residential, wraparound, intensive outpatient). This resulted in the total annual cost for providing care being significantly less for the TF-CBT treated group (\$3057 per child receiving TF-CBT vs. \$4208 per child receiving usual care). To address the lack of specialty trained providers offering evidenced-based trauma care within rural South Carolina, Jones *et al.* (2013) began offering TF-CBT delivered by tele-mental health.<sup>62</sup>

### **Evidence Based Treatments for Trauma in Adults**

Another recent Cochrane systematic review and meta-analysis examined the effectiveness of psychological therapies in treating adults with PTSD.<sup>63</sup> This review included randomized controlled trials of individual trauma-focused cognitive behavioral therapy (TF-CBT), eye

movement desensitization and reprocessing (EMDR), non-trauma-focused CBT (non-TFCBT), other therapies (supportive therapy, non-directive counselling, psychodynamic therapy and present-centered therapy), group TF-CBT, or group non-TFCBT, compared to one another or to a waitlist or usual care group for the treatment of chronic PTSD. While all therapies were superior to the waitlist/usual care condition, individual TF-CBT, EMDR, and non-TF-CBT were more effective than the other therapies studied.

As highlighted by the ACEs Study,<sup>1</sup> individuals with a high ACE burden not only suffer from PTSD, they also experience a wide array of behavioral and physical health issues. Ensuring that traumatized individuals receive access to evidence-based care for substance abuse, diabetes, cancer, hepatitis, and other associated medical issues is also a key element of ACE treatment and tertiary prevention.

### **Issues Related to Access to Care**

Despite the high rates of mental health issues in children, youth, and adults, the majority of individuals are undiagnosed and undertreated.<sup>64</sup> Within the primary care setting, only 40% of individuals with mental health issues are appropriately diagnosed.<sup>65</sup> And even when identified, less than half (45%) receive treatments that result in long-term improvements in mental health treatment.<sup>66</sup> Inadequate treatment is particularly distressing as early identification and intervention can significantly improve outcomes.<sup>67</sup> Effective treatments can prevent the negative outcomes associated with mental illness including suicide, school failure, unemployment, disability, criminal behavior, violence, teenage pregnancy, marital instability, higher health care utilization, and persistent reductions in quality of life and functioning.<sup>68-72</sup> Furthermore, inadequate treatment leads to more severe psychiatric symptoms, increased likelihood of treatment resistance, greater costs to treat, and significant co-morbidity and disability.<sup>73,74</sup>

To improve the quality of care, it is essential that barriers to identification and treatment are understood and addressed. Several factors leading to inadequate mental health care have been identified including: stigma, inadequate insurance coverage of mental health, funding and reimbursement issues, complex and fragmented care systems, a nationwide shortage of mental health providers especially in rural areas, and primary care clinicians who lack the time and/or training to effectively address mental health needs.<sup>75-94</sup> Multiple solutions to address the critical shortage of mental health care providers have been proposed and include: recruiting more medical students to enter the field of psychiatry,<sup>77,95-98</sup> addressing the regional maldistribution of mental health providers,<sup>77,78</sup> improving the reimbursement rates,<sup>81</sup> utilizing telemedicine,<sup>87</sup> developing integrated models of mental health care,<sup>86,99</sup> and equipping primary care providers with the skills to provide services for common mental health conditions.<sup>100</sup> This review will expand on the latter three solutions.

### ***Telemental Health***

Telemental health involves the use of real-time video-conferencing over a secure and encrypted connection, allowing the patient and provider to engage in care despite being in different geographic locations. It has been shown to be an effective modality for treating adults and children with a wide variety of psychiatric symptoms.<sup>101</sup> The most significant benefit of telehealth is that it reduces barriers to care; it increases remote communities' access to care, decreases time and costs associated with patient travel, and increases the number of patients who can receive treatment.<sup>101</sup>

### ***Integrated Mental Health Care***

Currently in the United States, the predominant delivery model for behavioral health care takes a coordinated approach. In this model, medical and behavioral health care services are provided in separate clinics. Information regarding mutual patients is shared between providers as needed, but collaboration is generally limited outside of the initial referral process. Newer models of care – involving collaboration and integration of medical and behavioral health care – are being promoted to address the failures of our current behavioral health system. Collaborative care models stress the importance of primary care and behavioral health care clinicians *working together* while integrated care models stress the importance of behavioral health care *working within* the primary care setting. Patients in a collaborative care setting perceive that they are receiving separate primary care and behavioral health specialty services, while patients in an integrated setting perceive that they have a unified team of health care providers attending to all components of physical and mental health.

Both collaborative and integrated mental health care models are viable and efficient ways of providing care. These models increase access to mental health care, decrease stigma and discrimination, increase overall health outcomes, and are cost-effective.<sup>102</sup> While co-location of care (delivery of primary care and behavioral health services within in the same clinic or institution) can represent a positive step in the transformation of health care delivery, it is important to note that simply co-locating services without an emphasis on collaboration does not improve patient outcomes on a population level.<sup>103</sup>

Perhaps the most well-studied and effective model for delivering integrated behavioral health care is the Collaborative Care Model (CCM) which was developed by a multidisciplinary team of researchers at Group Health and the University of Washington.<sup>104,105</sup> In this model, primary care providers, care managers, and psychiatric consultants work together to provide mental health care for patients within the primary care setting. Embedded in primary care, care managers – nurses, clinical social workers, or psychologists – closely follow patients with visits and phone calls, provide brief evidence-based behavioral interventions, and coordinate with the patient, primary care provider, and consulting psychiatrist. Consulting psychiatrists provide advice to the primary care treatment team, with a particular emphasis on patients who present diagnostic challenges or those who are not showing clinical improvements. Consultative services

may be provided in person or through telemedicine. Collaborative care follows the principles of measurement-based care, treatment-to-target, and stepped care – each patient’s progress is followed using validated clinical rating scales and if a patient is not improving as expected, treatment is systematically adjusted or “stepped-up.” This stepped care approach provides initial treatments that are low intensity, low cost care. More intensive, costly, and complex treatments are reserved for those patients who do not respond favorably to initial care.

Initially designed as a mechanism for managing depressed adults within a primary care setting, the Collaborative Care Model increases treatment adherence to evidence-based treatment by two-fold, improves clinically-meaningful patient outcomes, and improves satisfaction with care.<sup>106</sup> These findings hold true across a wide variety of patient populations, health care settings, and institutions.<sup>106</sup> More recently, several studies have found that the effectiveness of collaborative care model extends beyond the treatment of depressed adults in primary care. Collaborative care is effective in treating adults with anxiety disorders<sup>107</sup> and adolescents with depression<sup>108</sup> within the primary care setting. Additionally, the collaborative care model improves outcomes for depressed patients with co-occurring illnesses including cancer,<sup>109-111</sup> pain,<sup>112</sup> coronary heart disease,<sup>113,114</sup> and poorly controlled diabetes.<sup>113-115</sup> For patients with depression and coronary heart disease and/or poorly controlled diabetes, collaborative care improved healthy eating and increased levels of activity.<sup>116</sup> Outside of the primary care setting, the collaborative care model has been successfully implemented in obstetrics and gynecology clinics.<sup>117,118</sup>

A recent systematic review investigated the economic efficiency of collaborative care by comparing the economic costs and economic benefits of collaborative care to usual care.<sup>119</sup> Overall, the review concluded that collaborative care is a good economic value. The median cost of collaborative care per person per year was \$685 (range \$477-\$2160) while the median incremental cost (the incremental cost of collaborative care over the cost of usual care) was \$204 per person per year (range \$104-\$850). Factors included in these cost figures typically included the time of three professionals (a case manager, PCP, and psychiatrist), the cost of screening, and the cost of training staff. Of the five of the studies included in the review that evaluated the cost-benefits of collaborative care, four found that collaborative care was cost beneficial as the averted healthcare costs, productivity losses, and/or or estimates of what patients were “willing to pay” for treatment exceeded the costs of collaborative care. This systematic review also looked at cost-utility, the incremental net cost of collaborative care per quality adjusted life year (QALY). Four of the five studies reported the cost-utility to be less than \$21,000, implying that collaborative care interventions are cost effective according to the conventional threshold for cost effectiveness (\$50,000 per QALY).

Despite the strong evidence for collaborative care, widespread implementation has not been achieved. This is in part due to the limitations associated with traditional fee-for service models of reimbursement, which do not typically support key components of the model including consultative care activities and cross-system coordination of care. New reimbursement models –

capitated, case-rate, pay-for-performance, or hybrid models – have the potential to minimize the financial barriers to implementation of collaborative care.

### ***Increasing primary care provider knowledge, skill, and confidence***

Primary care physicians often lack the time, knowledge, and skill required to provide effective mental health treatment.<sup>120</sup> They often report feeling under-educated and underequipped to handle the complexity of mental health issues. Primary care physicians practicing in rural areas often face additional challenges, including inadequate psychiatric referral resources, limited community resources, and professional isolation. To address these concerns, several methods for providing education and support to primary care providers have been developed. Below, we highlight two such interventions – both of which use video-conferencing technologies.

#### *Project Extension of Community Healthcare Outcomes (ECHO)*

Project ECHO (Extension of Community Healthcare Outcomes) was developed by the University of New Mexico Health Sciences Center to provide complex specialty care to underserved patients using an innovative team-based, interdisciplinary educational model.<sup>121</sup> Via video-conferencing technologies, Project ECHO model brings together specialists and multiple community-based PCPs for regular meetings, trainings, education, and support for co-management of patients. The goal of these sessions is to increase PCPs' knowledge and self-efficacy around illnesses that are not usually considered within their scope of practice. Initially developed to assist PCPs in improving the care they delivered to patients with Hepatitis C, Project ECHO has significantly expanded to include several other disease areas, including psychology and psychiatry. Project ECHO is a disruptive innovation – it is significantly changing the way the medicine is practiced in several areas of the United States, improves access to specialty care, and is helping to disseminate evidenced based practice.

#### *Rural Mental Health Inter-professional Training Program (RMHITP)*

The Rural Mental Health Inter-professional Training Program (RMHITP) is a continuing education initiative aimed at improving mental health care delivery in rural settings, increasing providers' knowledge, attitudes, and clinical practice, and developing collaborative practice skills to facilitate inter-professional practice.<sup>122</sup> Initially implemented in Newfoundland and Labrador, Canada, RMHITP brings together an interdisciplinary team of individuals (primary care physicians and other health care providers, community service workers, and educators) who engage in didactic and experiential sessions. RMHITP participants meet in-person for two sessions with the remaining 18 sessions held via video-conferencing technologies. Using both quantitative and qualitative methods, Heath *et al.* (2014) showed that RMHITP increased positive attitudes towards inter-professional mental health care and self-reported increases in knowledge and understanding about collaborative mental health care delivery.<sup>122</sup>

## Multi-Level Prevention of ACEs

This section of the report highlights two programs that integrate prevention activities at the primary, secondary, and tertiary levels (Figure 2, page 36).

### Triple P (Positive Parenting Program)

Grounded in social learning, cognitive behavioral and developmental theory, the Positive Parenting Program (or Triple P) was developed at the University of Queensland in Australia that aims to prevent severe behavioral, emotional, and developmental problems in children by enhancing the parent knowledge, skills, and confidence.<sup>123</sup> Initially, the program was administered as a home-based, individually administered training program for parents of preschoolers exhibiting disruptive behaviors.<sup>124</sup> Over the course of the past three decades, Triple P has evolved into a comprehensive, population-level public health intervention designed for families with at least one child 0-12 years of age.<sup>124</sup> Widely studied in various settings and across diverse cultural contexts, efficacy and effectiveness trials have consistently shown positive effects on child behavior and parenting practices, and most recently on population indicators of child maltreatment.<sup>124,125</sup>

Triple P takes a multi-leveled approach to match families' needs with the types of services they receive.<sup>124</sup> Five levels of intervention are available, each one with increasing intensity and narrowing population reach.<sup>126</sup> Level 1 (universal Triple P) is a coordinated media and promotional campaign that aims to increase community awareness of parenting resources, normalize and acknowledge the difficulties of parenting, decrease stigma associated with getting help, encourage positive parenting interventions, and increase parental confidence and self-sufficiency. Level 2 (Selected Triple P) is a brief intervention designed to provide early anticipatory guidance to parents of children with mild behavior difficulties. Interventions on this level can include a parenting seminar series and/or a brief consultation with a primary care physician. Level 3 (Primary Care Triple P) provides targeted counseling for parents of children with mild to moderate behavior difficulties. Interventions at this level are focused on active skills training and may include 4-sessions of consultation within primary care and/or parenting groups focused on specific behavioral concerns. Level 4 (Standard and Group Triple P) provides support to parents of children with significant behavioral concerns. Interventions, focused on child management skills, may include intensive parenting support offered individually or in a group supported by phone counseling. Level 5 (Enhanced Triple P) is an optional family intervention program that augments Standard Triple P for parents with additional risk factors or who are experiencing significant family distress. Level 5 offers additional practice sessions addressing parent-child issues as well as educational modules on partner communication, personal coping skills for parents, and mood and anger management.

To evaluate the impact Triple P has on child maltreatment at a population level, Prinz *et al.* (2009) conducted the Triple P Systems Population Trial (TPSPT).<sup>125</sup> Eighteen counties in the

Southeast region of the United States were randomized to either Triple P or to the control condition. In intervention counties, universal Triple P was widely disseminated and service providers were recruited for training in the Triple P model. Service providers came from diverse settings (education, childcare, mental health, social services, and healthcare). In addition to training in delivering specific Triple P interventions, participants were assisted in developing an implementation plan, including discussions on how Triple P could be incorporated into existing care systems without adding additional staff. The intervention was evaluated by measuring the rates of child maltreatment before and two years after implementation in both the intervention and control counties. The Triple P System had significant and positive effects on substantiated child maltreatment cases, hospitalizations and emergency room visits for child maltreatment injuries, and out-of-home placements.<sup>125</sup>

### **The Vermont Family Based Approach (VFBA)**

Taking a strength-based and preventative approach to addressing childhood mental health, Jim Hudziak, MD and colleagues at The Vermont Center for Children, Youth, and Families developed The Vermont Family Based Approach (VFBA).<sup>127</sup> Similar to the Triple P intervention, VFBA uses a multi-tiered system to match intensity of services to the needs of each family. VFBA uses “evidence-based prevention and intervention strategies, to keep the well well, protect those at risk from developing psychopathology, and effectively treat those who are suffering from it.” Families enrolled in the VFBA receive a family-based assessment that is used to triage families and divide them into one of three groups: the well group, the at-risk group, and the ill group. All participants receive a Family Wellness Coach, who is specifically trained in delivering a comprehensive program of health and wellness, including promotion of nutrition, exercise and healthy activities, physical and mental health, and effective parenting. At-risk families also receive support from a Focused Family Coach who provides family-focused, evidence-based psychotherapeutic treatment. The ill group receives services from the Family Wellness Coach, the Focused Family Coach, and a Family-Based Psychiatrist, who provides family-focused evidence-based psychotherapeutic and psychopharmacologic interventions. A pre-post study of the VFBA model was conducted in the Garfield School, an elementary school located in Sioux Falls, South Dakota. An external control, a school that did not receive the VFBA intervention, was also followed. Before and after the intervention, parents completed Child Behavioral Checklists (CBCL), a parent-report questionnaire that rates children on various behavioral and emotional problems. Using the CBCL syndrome scales, after implementation of VFBA, children had a reduction in total problems ( $p < 0.05$ ), externalizing problems ( $p < 0.05$ ), anxious/depressed symptoms ( $p < 0.1$ ), attention problems ( $p < 0.05$ ), and aggressive behaviors ( $p < 0.10$ ). In contrast, the external control, exhibited a reduction externalizing ( $p < 0.10$ ) and aggressive behaviors ( $p < 0.05$ ). Using the DSM scales, after implementation of VFBA, children exhibited a reduction in anxiety problems ( $p < 0.05$ ) and pervasive developmental problems ( $p < 0.05$ ), whereas the external control had a reduction in oppositional defiant problems ( $p < 0.10$ ).

## **Recognizing Trauma and Those At-Risk Through Screening and Assessment**

Trauma screening is a brief, focused inquiry to determine whether an individual is at risk of or has experienced specific traumatic events.<sup>128</sup> If an individual screens positive for trauma, a trauma assessment – a more in-depth exploration of the nature and severity of the trauma, including the sequelae of the trauma and current trauma-related symptoms – is indicated.

The use of validated and standardized instruments is preferred for trauma screening for several reasons.<sup>129</sup> First, because trauma survivors may experience shame, guilt, or other negative emotions associated with their trauma, they may be resistant to disclose these events during a routine clinical encounter. Second, because of the multiple forms of trauma it can be difficult to ensure that patients are adequately screened without using some type of structured instrument. Third, word-choice and phrasing can significantly change disclosure rates.

Standardized screening can be performed through face-to-face structured interviews, paper-and-pencil instruments, or through technology-assisted interviews. Randomized clinical trials comparing the method used for screening have found that computer-assisted self-interviews generally yield the highest rates of disclosure of sensitive information, and that disclosure rates in face-to-face interviews are equal or slightly higher than paper-and-pencil self-reports.<sup>130-133</sup> However, in clinical practice, self-report paper-and-pencil instruments are often favored due to time and financial constraints as well as the lack of qualified professionals trained in administering face-to-face interviews.

### **Screening for Risk Factors**

Several screening instruments have been designed to briefly and systematically screen parents for prevalent psychosocial problems that are risk factors for child maltreatment. These include the Child ACE screening tool,<sup>134</sup> the Antenatal Psychosocial Health Assessment (ALPHA),<sup>135</sup> the Parent Screening Questionnaire (PSQ),<sup>26</sup> and the American Academy of Pediatrics (AAP)-endorsed Bright Futures prevention initiative.<sup>136</sup> The AAP also recommends that clinicians use the Edinburgh Postpartum Depression Scale or a 2-question instrument to regularly screen new mothers for post-partum depression at their child's one-, two-, four-, and six-month well-child visits.<sup>137</sup> It is important to note that these screening instruments are designed to screen for risk factors related to child maltreatment – they are not instruments designed to identify individuals who have already been abused or to assess symptom severity. Case-detection – the process of identifying individuals who have experienced child maltreatment – is discussed in the following section.

### **Screening for a History of Child Maltreatment/Trauma**

The goal of trauma screening is to determine whether an individual has a history of trauma and whether he or she has trauma-related symptoms. As is the case for all screening processes, well-

established and validated measures should be used to screen for trauma and there should be a clear pathway outlining what steps to take after a positive or negative screening.

Below we will discuss published recommendations and guidelines related to universal screening for trauma as well review several of the self-report instruments that can be used in the trauma screening process. Self-report screening instruments generally come in two varieties – those that identify if an individual has a history of trauma exposure and those that measure current trauma/PTSD symptomatology.

### ***Recommendations and Guidelines***

While various professional organizations and expert advisory panels have established recommendations related to universal primary-care screening for trauma, there is no clear consensus. As part of their medical home initiative, the American Academy of Pediatrics (AAP) recommends that clinicians routinely screen pediatric patients for the presence of ACEs and has published a tool kit for pediatricians looking to develop a trauma-informed practice.<sup>138</sup> The American Medical Association (AMA) states that all physicians should be familiar with the detection of violence and abuse and recommends that physicians routinely inquire about physical, sexual, and psychological abuse as part of the medical history.<sup>139</sup> Additionally, the AMA guidelines also state that clinicians should be able to effectively treat patients suffering from symptoms and sequelae of abuse and be familiar with local community resources. The Substance Abuse and Mental Health Services Association (SAMHSA) states that screening is an essential component of providing trauma-informed care, although they note that screening must be done within a system of care – clinicians conducting screening need to have the capacity to provide trauma-specific treatment or refer to appropriate trauma-specific services.<sup>129</sup> The United States Preventive Task Force (USPTF) recommends that clinicians routinely screen women of childbearing age for intimate partner violence and be able to care for or refer women who screen positive.<sup>140,141</sup> The USPTF, however, does not make any specific recommendations related to trauma screening in the pediatric or general adult population.

### ***Self-Report Screening Instruments for Trauma Exposure***

Trauma exposure instruments measure the types of trauma a person has been exposed to, or the degree of severity of the traumatic event. The ACE Tool,<sup>1</sup> Brief Trauma Questionnaire,<sup>142</sup> Trauma History Screen (THS),<sup>143</sup> Traumatic Events Questionnaire<sup>144</sup> are all adult screening instruments designed to be completed in under five minutes. There are several longer instruments that measure trauma exposure, such as the Life Events Checklist for DSM-5 (LEC-5),<sup>145</sup> Stressful Life Events Screening Questionnaire (SLESQ),<sup>146</sup> Trauma Assessment for Adults – Self-Report (TAA),<sup>147</sup> Trauma History Questionnaire (THQ),<sup>148</sup> and Traumatic Life Events Questionnaire (TLEQ),<sup>149</sup> however, these are much more time consuming which limits their utility in a screening environment.

For children, the UCLA Post-traumatic Stress Disorder Reaction Index,<sup>150,151</sup> My Worst Experiences Survey (MWES),<sup>152</sup> and When Bad Things Happen Scale (WBTH)<sup>153</sup> can be used to measure trauma exposure.

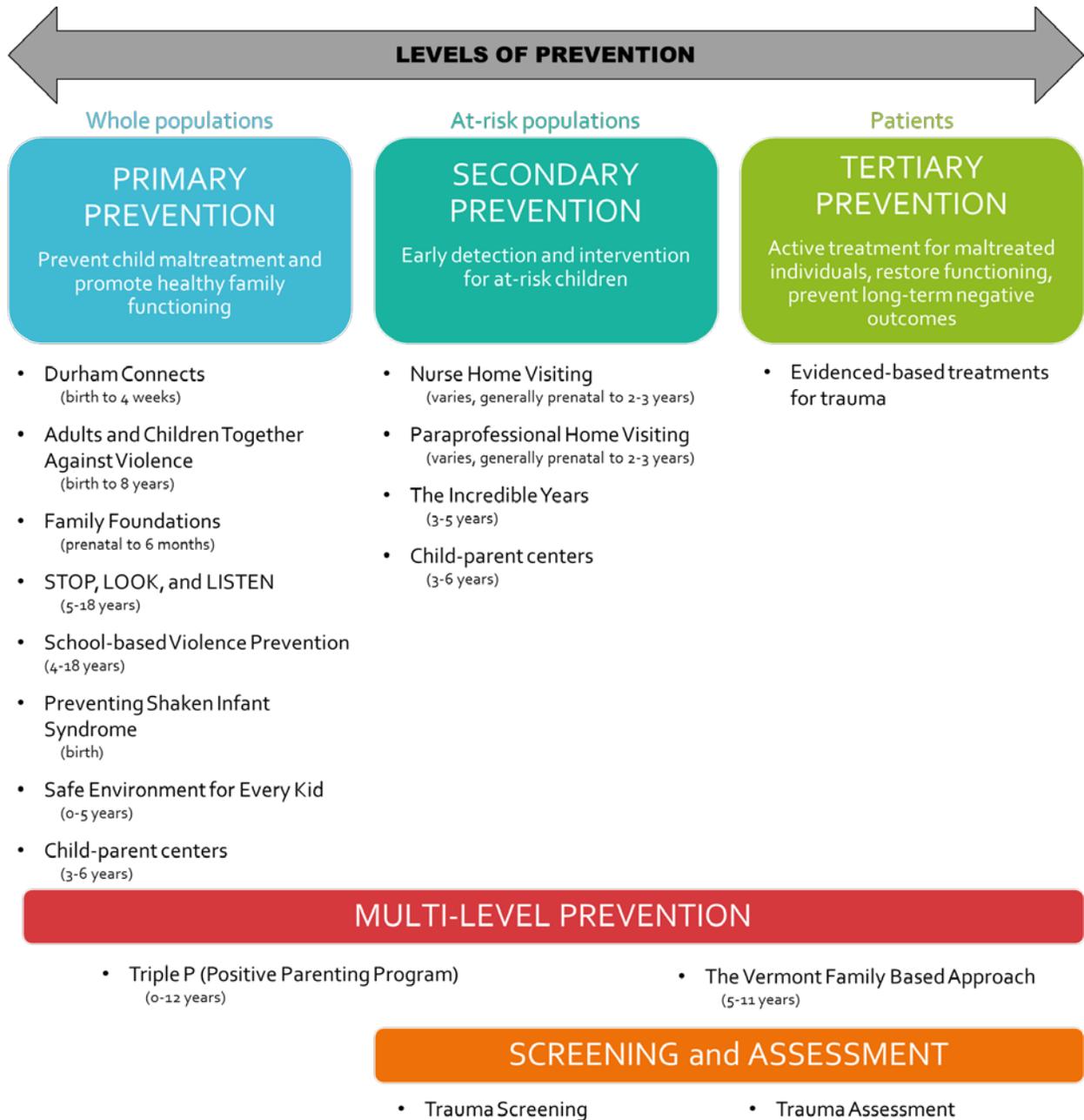
### ***Self-Report Screening Instruments for Trauma Symptoms***

Several screening instruments have been developed to help identify individuals who have experienced trauma and may be at risk of experiencing post-traumatic stress disorder (PTSD). These instruments are designed to be a brief (2-4 minute) questionnaires that can be delivered in a universal screening process. Unlike those that screen for trauma exposure, instruments that screen for trauma symptoms provide insight into the level of an individual's current symptomatology. A positive screen is not diagnostic of PTSD, but suggests that an individual may have trauma-related problems and that further assessment by a mental health professional may be warranted. Conversely, negative screens do not necessarily rule out a trauma history and/or trauma-related symptoms. Examples of trauma screening instruments for adults include: Beck Anxiety Inventory – Primary Care (BAI-PC)<sup>154,155</sup>, The Primary Care PTSD Screen (PC-PTSD),<sup>156,157</sup> Short Form of the PTSD Checklist – Civilian Version<sup>158</sup>, Short Post-Traumatic Stress Disorder Rating Interview (SPRINT)<sup>159,160</sup>, Short Screening Scale for PTSD<sup>161</sup>, and Trauma Screening Questionnaire (TSQ).<sup>162</sup> Within the primary care setting, the best established instrument is the PC-PTSD. The Child Trauma Screening Questionnaire (CTSQ)<sup>163</sup> can be used to screen children ages 7-16 years old.

## **Summary of Literature Review Findings**

Figure 2 below summarizes the programs described in the literature review.

Figure 2: Primary, Secondary, and Tertiary Prevention of ACEs



## **OPTIONS FOR ADDRESSING ADVERSE CHILDHOOD EXPERIENCES**

As highlighted in this review, prevention strategies vary widely in their intended population (universal vs. at-risk vs. symptomatic), delivery setting (community/center-based, home visitation, schools, vs. health care), mode of delivery (individual vs. group), targeted ages, and intensity/duration. Despite these variations, the most effective programs – those that increase healthy family relationships, improve parenting behaviors, and decrease rates of child abuse and neglect – share core elements and key principles:

- Promote safe, stable, nurturing relationships.
- Build resiliency in children, families, and communities. This can be accomplished by emphasizing the importance of and helping to strengthen social support networks, teaching coping and problem solving skills, assisting with goal setting and planning, and promoting healthy life skills.
- Identify, assess, and address psychosocial problems and trauma-specific symptoms.
- Facilitate referrals to community support agencies and to specialized health care services.
- Employ evidenced-based, standardized practices administered by highly-trained professional staff.
- Focus on parents. Effective parenting programs teach positive parenting practices and provide skills training and parent education.
- Promote interdisciplinary, interagency, and cross-systems collaboration.
- Emphasize the importance of early development – prenatally to age three.

### **Evidence-Based Prevention Services for Families**

Although the legislative charge for this report specifically focuses on what the Blueprint patient-centered medical homes and community health teams can do to incorporate ACEs in health systems, the literature review and key informant interviews identified a few key programs that have demonstrated efficacy in preventing ACEs and strengthening families: nurse home visiting and parent child centers. The case for additional investments in these is compelling, and will help lead to a more comprehensive social policy to reduce the occurrence and impact of trauma in the general population. Expansion of nurse home visiting builds on the existing infrastructure of Vermont's home health agencies and provides strong linkages to the healthcare system. Similarly, strengthening the network of parent-child centers builds on the current early childhood and family services system.

#### **Provide Nurse Home Visiting for All Vermont Families**

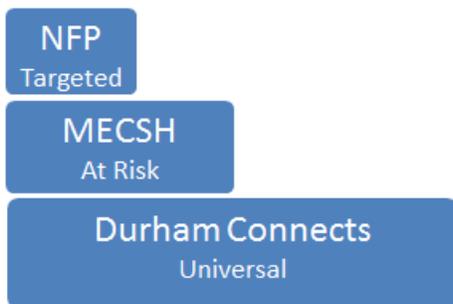
As evident from our literature review, rigorous, longitudinal research shows that Nurse home visiting programs are highly effective in improving parenting, strengthening family support

networks, and reducing child abuse and neglect. The nurse home visiting intervention has proven extremely durable with positive results persisting through adolescence.

There are several programmatic options that would provide all Vermont families with a nurse home visitor (see figure 3 below).

1. ***Durham Connects*** a brief nurse visiting program for the general population. For everyone, not just those families at risk, this program offers a cost-effective, universal prevention program. We recommend that further work be done to model the how this program could be implemented. Initial cost estimates are provided in Appendix B.
2. ***Maternal Early Child Sustained Home Visiting*** (MESCH) provides home visiting for at-risk families. Unlike Nurse Family Partnership, described below, MESCH is provided to families that have more than one child. The Department for Children and Families is beginning implementation of MESCH with funding from the “Race to the Top” grant for training and administration and relying on existing funding streams for the home visits. We recommend that further work be done to model the sustainable funding for this service.
3. ***Nurse Family Partnership*** is an intensive program for at risk, *first time* mothers that offers nurse home visits during pregnancy and throughout a child’s first two years of life. Vermont Department of Health is currently implementing Nurse Family Partnership in selected regions supported by a federal formula grant. However, the program has no funding to operate in Chittenden, Grand Isle, and Addison Counties; and only time-limited grant funding for other regions. The costs to implement Nurse Family Partnership statewide are provided in the potential budget example, Appendix B.

Figure 3: Nurse Home Visiting Programs



Implementing all of these programs would ensure that each child and family has access to a nurse home visiting program titrated to the family needs.

### **Enhance Parent-Child Center Services**

Parent-Child Centers provide barrier-free, family friendly services that improve parenting, reduce child abuse and neglect, provide enriching programming for children, and help connect families to formal and informal networks of support. Vermont's 15 Parent-Child Centers receive funding from a patchwork of sources and have evolved to reflect local funding and priorities. This report offers an option to increase the Parent Child Center grants to support sustainable, consistent, best practice parenting education and support programs. The services could include both center-based family programming and co-located parent education and support in primary care, pediatric, and obstetric practices. An initial estimate of potential cost for this expansion is included in Appendix B.

4. Expand parent-child center play group services to reach more at-risk families built on the welcoming and evidence-based strategies exemplified by the Chittenden VNA family room.
5. Co-locate parenting support and education programs in primary care, pediatric, and obstetric practices. Parent Child Centers are well positioned to provide such support and education programs in health care settings.

### **Improve Screening and Case Detection to Link Vermonters with Appropriate Services**

Systematic screening and case detection for ACEs are pre-requisite for any services or treatment interventions. However, health providers will be reluctant to screen for conditions if treatment resources are not in place. These resources include: Nurse Home Visiting, Parent-Child Centers, Collaborative Care (integrated health and mental health care in primary care settings), Children's Integrated Services (CIS), Integrated Family Services (IFS), and trauma-specific mental health and addictions treatment. As Vermont develops these resources, screening and case detection can be expanded.

### **Support Systematic Screening in Primary Care, Pediatric, and Obstetric Practices**

6. Use the Blueprint infrastructure to disseminate "toolkits" and facilitation support for any willing PCMH provider.
7. Work with the Maternal and Child Health Division of the Department of Health to support screening and referral protocols with willing OB-GYN providers.
8. Ask the Barre Health Promotion Workgroup (See Appendix A) to identify, in consultation with primary care and pediatric providers, best practice screening tools and trauma-informed care protocols and develop these into "toolkits."

## **Improve Care Transitions for Patients**

Integrated services and effective transitions of care, although well supported conceptually, are not well operationalized in local health and human services systems. In part due to funding and program silos, hampered by lack of cross-systems communication tools, and real and perceived barriers to sharing clinical information, few local networks truly function seamlessly for Vermonters. The emerging *unified health systems* of local Accountable Care Organization (ACO) provider networks and the Blueprint integrated health services teams offer an organizational and governance framework to build the next generation of regional health networks. Including local Integrated Family Services (IFS) and Children’s Integrated Services (CIS) in these developing networks is critical to improving care for individuals and families with ACEs or who are at risk of ACEs.

### **Use local Unified Community Health Systems working groups to build out referral protocols between health providers and specialized children and family services**

9. Organize CIS and IFS representation at local *Unified Community Health Systems* meetings to develop referral protocols from primary care and pediatric providers to NFP, MECSH, and other family services.

### **Build Health “Neighborhoods” including Mental Health and Addictions Providers**

Establish functional linkages between health and mental health / addictions providers.

10. Develop local inter-organizational care agreements between interested primary care providers and willing Mental Health and Addictions Treatment providers. These agreements outline roles and responsibilities, referral protocols, time-frames to intake, identify key information to be shared, shared care plans, and coordination of care.
11. Implement a “registry” of mental health and addictions providers to support referral processes. The estimated costs to develop this registry are included in the budget example Appendix B.

## **Enhance Trauma-Specific Treatment**

A comprehensive trauma-informed health system includes both prevention and treatment. Three groupings of treatment strategies emerged from the literature review and key informant interviews:

- Collaborative Care in primary care settings to serve the general population
- Trauma-specific treatments by mental health and addictions treatment specialists for individuals struggling with the impact of trauma on their emotional and physical health

- ECHO, an “extension service-like” approach to improve the standard of care across health and human services

There is strong evidence supporting the effectiveness of these three approaches over care as usual.

### **Enhance PCMH-CHT to Provide Evidence-Based Collaborative MH/SA Care**

12. Support the increase in community health team payments by all payers as proposed in the legislative report submitted October 1, 2014 in accordance with Act 144 Section 17. This will provide Vermonters with greater access to multi-disciplinary services.
13. Add consulting psychiatry to Blueprint Patient Centered Medical Homes and Community Health Teams. The estimated costs to embed psychiatry are included in the budget recommendations.

### **Implement ECHO Tele-health to Improve Multi-Disciplinary Care**

14. Develop ECHO for four related conditions including: treatment of complex psychological trauma, chronic pain, addictions medicine, and hepatitis C. The cost to implement a Vermont ECHO for four conditions is included in the budget recommendations (Appendix B).

### **Enhance Statewide Capacity to Provide Trauma-Specific Mental Health and Substance Abuse Treatment**

Vermont’s network of Designated Mental Health Agencies (DA), Preferred Providers for addictions treatment, and independent clinicians all report significant funding and infrastructure gaps. Most communities have waitlists for care, especially for adults. In addition, evidence-based trauma-specific treatments may not be consistently available.

15. Model targeted services expansion in Designated Agency, Preferred Provider, and independent clinicians to provide evidence-based trauma treatment for adults referred by primary care and who are identified as needing additional treatment by specialized child & family services.

Table 3 below summarizes the options to address ACEs in this report.

Table 3: Options for Addressing ACEs

Whole Population	At-Risk Populations	People with Conditions Requiring Treatment
<b>Primary Prevention</b>	<b>Secondary Prevention</b>	<b>Tertiary Prevention</b>
Prevent child maltreatment and promote healthy family functioning	Early Detection and intervention for at risk people	Active treatment for individuals to restore functioning and prevent long-term negative outcomes
<b>Options</b>	<b>Options</b>	<b>Options</b>
Durham Connects Nurse Home Visiting	Nurse Family Partnership (NFP) Maternal Early Child Sustained Home Visiting (MECSH)	Vermont ECHO for: <ul style="list-style-type: none"> <li>• Addictions Medicine</li> <li>• Chronic Pain</li> <li>• Complex psychological Trauma</li> <li>• Hepatitis C</li> </ul>
Expand Parent Child Center Programming & Co-locate Parenting Skills with Primary Care	Enhance Blueprint CHT Staffing	Model Expanded Mental Health / Addictions Treatment Services
Link CIS & IFS to Emerging Unified Community Health Systems	Build inter-organizational care agreements in health “neighborhoods”	Provide Consulting Psychiatry to Blueprint practices and community health teams.
	Disseminate trauma screening & care guidelines to willing PCPs	
	Mental Health Provider Registry	

## RECOMMENDATIONS

Based on what we learned in the course of this study, Vermont has a tremendous opportunity to build on existing services and dramatically alter the trajectory of costs and suffering described in this report. Acknowledging current budgetary restraints, we recommend the following:

1. *Focus ACE Interventions* – The literature review for this report points to four over-arching ways to organize efforts within the health care and social support services system to respond to ACEs:

- Provide evidence-based prevention services for families
- Improve screening and case detection to link Vermonters with appropriate services
- Improve care transitions for patients
- Increase availability of trauma-specific treatment

Any new or strengthened approaches to primary, secondary, or tertiary prevention of ACEs should fall under the four broad categories above.

2. *Inventory and Coordinate with Existing Programs* – There are already many working groups and organizations with the singular purpose of reducing and responding to ACEs in Vermont; the first step in a strengthened approach to ACEs is for the Agency of Human Services (AHS) and key stakeholders to conduct a formal inventory of existing ACE work including identification of programs that incorporate evidence based design principles, demonstrate impact, and are extendable as part of a coordinated system of care related to ACEs.

3. *Investigate Options* – This report identifies options for addressing childhood trauma that fall within the four broad categories above. While research supports these options, further exploration of these is required to understand how they fit within Vermont’s current landscape of ACE interventions.

4. *Utilize Existing Structures for Delivery System Reforms* – Three Accountable Care Organizations (ACOs) have formed in Vermont to bring independent entities together to deliver more effective health services and to test multi-payer Shared Savings Programs. As recommended in the October 1, 2014 *Blueprint for Health Report*, Blueprint and ACO leadership should work together to form a unified health system initiative. Unified community health systems that merge overlapping ACO and Blueprint initiatives are intended to support the coordinated introduction and extension of new service models, such as ACE-informed medical practice. By utilizing a unified community health system to improve ACE prevention and treatment, the specific options for ACE interventions outlined in Table 3 can be tailored and scaled according to community need.

5. *Establish a Consistent Framework for Measurement--The Blueprint for Health Report* also recommends that payers, Blueprint and ACO leadership co-produce performance dashboards focusing on core ACO measure results and other measures that support care delivery transformation. ACEs interventions and ACE-informed medical practice should be included in such dashboards to allow for a consistent framework for measuring outcomes; the framework should incorporate input from multiple stakeholders and reflect a unified approach to health care delivery. The same framework can be used to evaluate any new quality initiatives proposed for inclusion in the Blueprint for Health.

## WORKS CITED

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## APPENDIX A: KEY INFORMANT INTERVIEWS AND ADVISORY GROUPS CONSULTED

### Key Informant Interviews

Name	Organization
<b>Kathy Hentcy</b>	Department of Mental Health
<b>Priscilla White</b>	Department for Children and Families
<b>Michael Schirling</b>	Burlington Police Department
<b>Annie Ramniceanu</b>	Past Clinical Director, Spectrum Youth & Family Services
<b>Mary Alice McKenzie</b>	Boys & Girls Club of Burlington
<b>Rep. George Till</b>	House Health Care Committee
<b>Lisa Goetz</b>	Winooski Elementary School
<b>Beverly Boget</b>	VNA of Chittenden County
<b>Samantha Stevens</b>	Family Room, VNA
<b>Laurel Omland</b>	Department of Mental Health
<b>Margaret Joyal</b>	Washington County Mental Health
<b>David Fassler</b>	Otter Creek Associates
<b>Melissa Bailey</b>	Integrated Family Services & Otter Creek Associates
<b>Kim Akerly</b>	Pediatrician, Mt Ascutney Health Systems
<b>Mark Redmond</b>	Spectrum Youth & Family Services
<b>Gina D'Ambrosio</b>	JOBS : Spectrum Youth & Family Services
<b>Jeff Nowlan</b>	Counseling Supervisor: Spectrum Youth & Family Services
<b>Greg LaMoy</b>	Youth Development, DCF
<b>Sarah Shaughnessy</b>	Shelter Coordinator, Spectrum Youth & Family Services
<b>Breana Holmes</b>	Maternal & Child Health Division, VDH
<b>Karen Garbarino</b>	Children's Integrated Services, DCF
<b>Chris Mason</b>	School Resource Officer, Vergennes
<b>Andrea Grimm</b>	DCF, Middlebury District Office
<b>Maura Cook</b>	VDH District Director
<b>Donna Bailey</b>	Addison County Parent Child Center
<b>Cheryl Huntley</b>	Youth and Family MH Director, Counseling Services of Addison County
<b>Alana Snyder</b>	Mary Johnson Children's Center

## Vermont Child & Family Trauma Workgroup

<b>Name</b>	<b>Organization</b>
<b>Laura Bernard</b>	Maternal Child Health, VDH
<b>Ellie Breitmaier</b>	Family Services, DCF
<b>Laurie Brown</b>	VT FACTS, UVM
<b>Cara Capparelli</b>	Northeastern Family Institute
<b>Amy Danielson</b>	Alcohol and Drug Abuse Programs, VDH
<b>Jill Evans</b>	Department of Corrections
<b>Courtney Fleisher</b>	FAHC/UVM
<b>Karen Fondacaro</b>	Behavior Therapy and Psychotherapy Center, UVM
<b>Tracy Harris</b>	Agency of Education
<b>Kathleen Hentcy</b>	Health Integration, DMH
<b>Breena Holmes</b>	Maternal Child Health, VDH
<b>Danielle Howes</b>	Child Development Division, DCF
<b>Linda Johnson</b>	Prevent Child Abuse VT
<b>Barbara Joyal</b>	Family Services, DCF
<b>Margaret Joyal</b>	Washington Co. Mental Health
<b>Tammy Leombruno</b>	Vermont Counseling & Trauma Services
<b>Donna McAllister</b>	Agency of Education
<b>Laurel Omland</b>	Child, Adolescent & Family Unit, DMH
<b>Amy Torchia</b>	Vermont Network Against Domestic & Sexual Violence
<b>Priscilla White</b>	FSD Center for Prevention & Treatment of Sexual Abuse

## Blueprint Mental Health and Substance Abuse Advisory Committee

Name	Organization
<b>Peter Albert, LICSW</b>	Senior VP Government Relations & PrimariLink, Retreat Health Care
<b>Mark Ames</b>	Network Coordinator, Vermont Recovery Network
<b>Ena Backus</b>	Deputy Director of Policy & Evaluation, Green Mountain Care Board
<b>Rick Barnett, Psy.D, LADC</b>	President, Vermont Psychological Association
<b>Wendy Beinler</b>	Executive Director, NAMI-VT
<b>Bob Bick</b>	Director of Mental Health & Substance Abuse Services, Howard Center for Human Services
<b>Steve Broer</b>	Director of Behavioral Health Services, Northwestern Counseling & Support Services
<b>Barbara Cimaglio</b>	Deputy Commissioner, Alcohol & Drug Abuse Programs, VDH
<b>Candace Collins</b>	Project Manager, Northwestern Medical Center
<b>Jackie Corbally, M.S.W.</b>	Chief of Treatment, Alcohol & Drug Abuse Programs, VDH
<b>Linda Corey</b>	Executive Director, Vermont Psychiatric Survivors
<b>Anne de la Blanchetai Donahue</b>	Vermont Legislative Rep., Co-Chair, Mental Health Oversight Committee
<b>Paul Dupre</b>	Commissioner, Vermont Dept. of Mental Health
<b>Peter Espenshade</b>	Executive Director, Vermont Association for Mental Health and Addictions Recovery (VAMHAR)
<b>Will Eberle</b>	Executive Director, Another Way
<b>Pam Farnham</b>	CHT Team Leader, FAHC/UVM
<b>David Fassler, MD</b>	President, Vermont Association of Child & Adolescent Psychiatry; Council of Mental Health & Substance Abuse Professionals
<b>Caryn Feinberg</b>	Caryn Feinberg, M.S.
<b>Betsy Fowler, LICSW, LADC</b>	Lead Behavioral Health Specialist, Northeastern Vermont Regional Hospital
<b>Gordon Frankle, MD</b>	Rutland Regional Medical Center
<b>Susan Hall, MA, LCMHC</b>	Clinical Care Manager, Integrated Health Management, BCBS
<b>Kathy Holsopple</b>	Executive Director, Vermont Federation of Families for Children's Mental Health

<b>Name</b>	<b>Organization</b>
<b>Penrose Jackson</b>	Director, Community Health Improvement
<b>Rodger Kessler, <i>Ph.D, ABPP</i></b>	Coordinator, Primary Care Behavioral Health Fletcher Allen Patient Centered Medical Home
<b>Marcia La Plante</b>	Substance Abuse Prevention, Alcohol and Drug Abuse Programs, VDH
<b>Dr. John H. Meyer, <i>Ed.D, LCMHC</i></b>	Shelburne Psychological Counseling Services
<b>Gail Middlebrook</b>	Director, SA Treatment Services, Northeastern Kingdom Human Services
<b>Melissa Miles</b>	MPH – Project Manager, Bi-State Primary Care Association
<b>Clare Munat</b>	Alternating Co-Chair, State Program Standing Committee for Adult Mental Health
<b>Sarah Narkewicz, <i>RN, MS, CDE</i></b>	Director, Bowse Health Trust, Rutland Regional Medical Ctr.
<b>Nick Nichols, <i>MSW</i></b>	Director of Policy, DMH
<b>Dana Noble, <i>RN, MBA</i></b>	Project Manager, United Health Alliance
<b>Eilis O’Herlihy</b>	Executive Director, National Association of Social Workers, VT Chapter
<b>Ralph Provenza</b>	Executive Director, United Counseling Services
<b>Simone Rueschemeyer</b>	Director, Behavioral Health Network of Vermont
<b>Alice Hershey Silverman, <i>M.D.</i></b>	President, Vermont Psychiatric Association
<b>Sarah Squirrell, <i>M.S.</i></b>	Executive Director, Vermont Cooperative for Practice Improvement & Innovation
<b>Eoana Sturges</b>	PH Program Admin AC: General, Health Promotion & Disease Prevention
<b>Julie Tessler</b>	Executive Director, Vermont Council Developmental & Mental Health Services
<b>Diane Tetrault, <i>MA, LCMHC</i></b>	Legislative Chair, Vermont Mental Health Counselors Association
<b>Gloria van Den Berg</b>	Executive Director, Alyssum, Inc.
<b>Susan Walker</b>	President, Vermont Recovery Network, Turning Point of Windham County
<b>Jim Walsh, <i>PMH-NP, BC</i></b>	Co-Director, Windham Center Psychiatric Services, Health Center of Bellows Falls
<b>Kurt White, <i>LADC, LICSW</i></b>	Clinical Manager, Brattleboro Retreat

## Barre Health Promotion Team

Name	Organization
<b>Laura Bernard</b>	Maternal Child Health, UVM; Project LAUNCH
<b>Beth Ann Maier</b>	Pediatrician, Retired
<b>Gwen Shelton</b>	Pediatrician, Associates in Pediatrics, CVMC
<b>Catherine Harris</b>	DCF Family Services District Director
<b>Kathleen Hentcy</b>	MH & HC Integration Director, DMH
<b>Kimberly Pierce</b>	Physician's Assistant, The Plainfield Health Center
<b>Lorna Corbett</b>	Nurse, Central Vermont Home Health & Hospice
<b>Margaret Joyal</b>	Psychologist, Director - Center for Counseling & Psychological Services, Washington County Mental Health Services
<b>Monika Morse</b>	Practice Facilitator, CVMC
<b>Jennifer Pelletier</b>	Hub & Spoke, CVMC
<b>Sasha Bianchi</b>	Barre Office District Director, VDH
<b>Ilisa Stalberg</b>	Deputy Director, MCH, VDH
<b>Priscilla White</b>	Director, FSD Center for Prevention & Treatment of Sexual Abuse

## POTENTIAL BUDGET EXAMPLE

### Appendix B: Potential Budget Example

Intervention	Notes	Total
<b>1. Nurse Home Visiting</b>		
a. Expand Nurse Family Partnership (NFP) to “Region 6” (Addison, Chittenden, Grand Isle)		\$ 750,000
b. Replace Grant Funding for NFP in “Regions 4 & 5”		\$ 540,000
c. Implement Durham Connects for Families not touched by other programs		\$3,750,000
d. Sustain funding for MESCH training & administration		TBD
<b>2. Expand Parent Child Center Programming</b>		
Initial estimate \$250,000 per program	15 programs	\$3,750,000
<b>3. Screening, Case Detection, &amp; Transitions of Care</b>		
In-kind		
<b>4. Develop Mental Health &amp; Addictions Provider Registry</b>		
Practitioner Registry		\$ 150,000
<b>5. Integrated Behavioral Health Care in Blueprint PCMH</b>		
a. Support CHT payment increases (all payers)	Medicaid Portion	\$3,279,268
b. Add Consulting Psychiatry to PCMH-CHT Network (all payers) 6.5 FTE @ \$220,000 FTE.	Total cost	\$1,430,000
<b>6. Enhance Trauma Specific Treatment</b>		
a. Implement Project Echo for 4 conditions		\$ 996,700
b. Model Investments in MH/SA treatment systems to provide evidence-based trauma treatment		TBD