CENTER FOR
YOUTH
WELLNESS
health begins with hope

ACE-Q

USER GUIDE FOR HEALTH PROFESSIONALS

Center for Youth Wellness ACE-Questionnaire
(CYW ACE-Q Child, Teen, Teen SR)

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CYW ACE-Q User Guide

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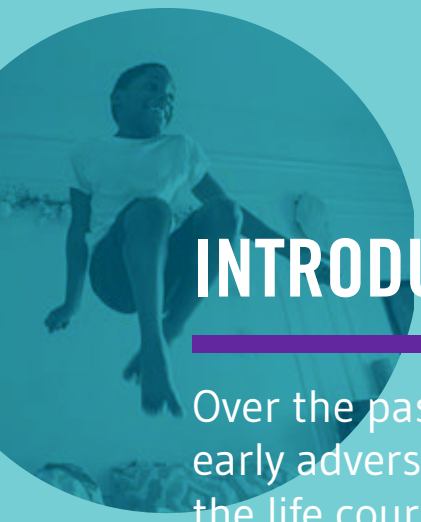


INTRODUCTION

Over the past several decades emerging research has revealed early adversity as a major threat to health and well-being across the life course. Adverse Childhood Experiences, or ACEs, have been linked to poor health outcomes in adulthood, and there is growing literature indicating that toxic stress caused by ACEs can profoundly alter child and adolescent development.

The Center for Youth Wellness (CYW) was created to respond to the new medical understanding of how early life adversity harms the developing brains and bodies of children. In partnership, the Bayview Child Health Center (BCHC), a primary care pediatric home serving children and families in the Bayview Hunters Point neighborhood in San Francisco, and CYW provide an integrated pediatric care model aimed at addressing both the physical and behavioral health needs of families exposed to ACEs.

The CYW Adverse Childhood Experiences Questionnaire (CYW ACE-Q) was developed through the BCHC-CYW partnership with input from community and youth stakeholders. The User Guide provides a brief review of the research literature and outlines how the CYW ACE-Q is used at BCHC-CYW.

The CYW ACE-Q and User Guide have been made available to primary care providers for the purpose of information sharing. The CYW ACE-Q is free and is intended to be used solely for informational or educational purposes. The CYW ACE-Q is not a validated diagnostic tool, and is not intended to be used in the diagnosis or cure of any disease.

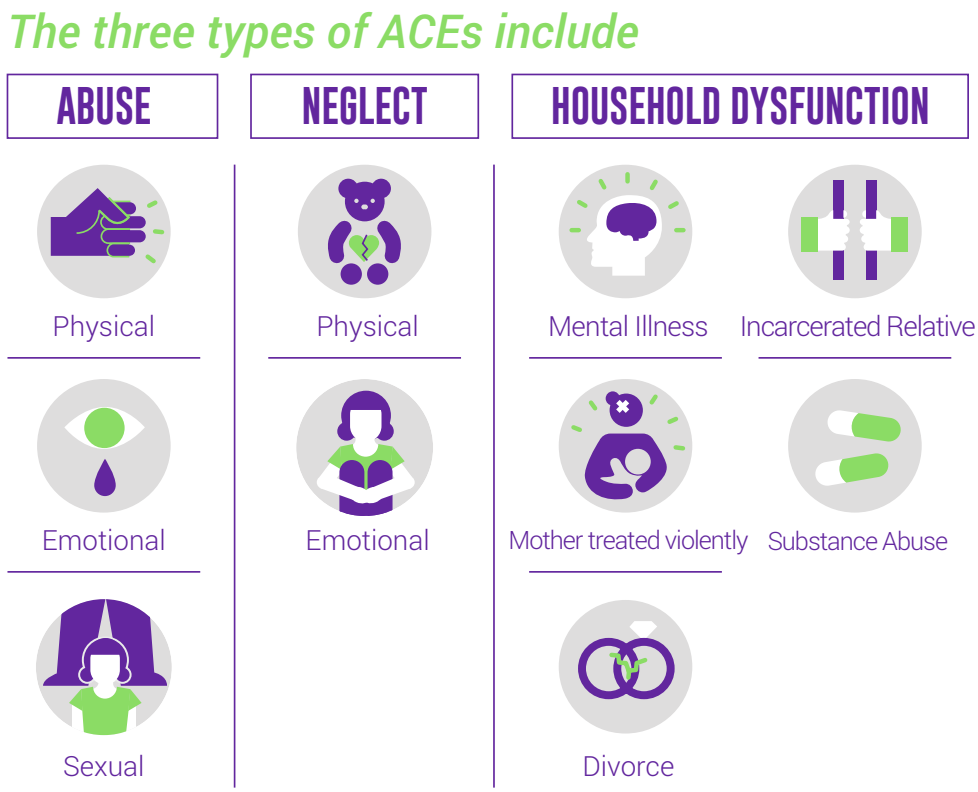
TABLE OF CONTENTS

BACKGROUND

ADVERSE CHILDHOOD EXPERIENCES

Adverse Childhood Experiences *(ACEs)* are stressful or traumatic events experienced before age 18. They are grouped into three categories: abuse, neglect, and household dysfunction[1,2].

FIGURE 1. CATEGORIES OF ADVERSE CHILDHOOD EXPERIENCES (ACEs)



SOURCE: *Robert Wood Johnson Foundation, 2013*

The term, "ACEs," was coined in 1998 following the publication of the Adverse Childhood Experiences Study *(ACE Study)*. The study was groundbreaking in that it found that ACEs were not only common within the population, but were strongly related to the development and prevalence of numerous health problems[1]. The ACE Study was the first to assess physical health outcomes related to these particular adversities in a large study population.

The ACE Study. Over 17,000 California adults who were patients of Kaiser Permanente in San Diego were interviewed about their medical history and exposure to ACEs. Almost two-thirds *(63.5%)* of participants reported having at least one ACE, and 12% reported having four or more [3]. A dose-response relationship was revealed between the number of ACEs experienced by an individual and negative health outcomes, such that with increasing numbers of ACEs, the odds of reporting an illness or health risk behavior also increased [1].

ACEs and Negative Health Outcomes. Subsequent research with diverse populations of adults, and with children and adolescents, continue to support the conclusion that a relationship exists between ACEs and health outcomes. In adults, ACEs have been found to have a strong, dose-response association with cardiovascular disease, chronic lung disease, headaches, autoimmune disease, sleep disturbances, early death, obesity, smoking, general poor health, depression, posttraumatic stress disorder, anxiety, substance abuse, and binge drinking [4]. In children and adolescents, ACEs have been correlated with fair or poor general health [5,6], illness requiring a doctor 6, fair or poor dental health [7], lifetime asthma [5,8], ADHD 5, autism [5], being overweight or obese, [5,9] and learning difficulties [9]. In addition, studies on ACEs during childhood and adolescence have found an association between ACEs and violent behavior *(delinquent behavior, bullying, physical fighting, dating violence, weapon-carrying)* [10].

National Prevalence Rates. A nationally representative study found that approximately two-thirds of adults reported at least one ACE [11]. In children, the prevalence of at least one ACE has ranged from one-third to nearly one-half of the population in nationally representative samples [5,7,8]; among populations at high-risk for maltreatment, the rate reaches as high as 91% [6].

TABLE 1. ACE STUDY FINDINGS

In the ACE Study, in comparisonto those reporting no ACEs, individuals with 4+ ACEs had significantly greater odds of reporting...

Ischemic heart disease	2.2
Any Cancer	1.9
Chronic Bronchitis or emphysema (COPD)	3.9
Stroke	2.4
Diabetes	1.6
Ever attempted suicide	12.2
Severe obesisty	1.6
Two or more weeks of depressed mood in the past year	4.6
Ever used illicit drugs	4.7
Ever injected drugs	10.3
Current smoker	2.2
Ever had a sexually transmitted disease	2.5

SOURCE: *Felitti, 1998*

TOXIC STRESS

Although the causal mechanisms linking childhood adversity to poor health outcomes are still being explored, scientists now understand that a maladaptation of the physiological stress response system plays an important role in negative long-term health outcomes.

Physiological Stress Response. Stress is the physiological and behavioral response elicited by selective pressure from the physical and social environment that challenges and disrupts homeostasis — the self-regulating process biological systems have in place to maintain the internal stability for survival [12,13]. While the experience of stress is influenced by many factors - including the intensity and severity of the stressor, the individual's perception of the stressor, physical and mental health, and genetic makeup - the physiology of the response involves the activation of the neuro-endocrine-immune *(NEI)* network. This NEI network is comprised of the autonomic nervous system *(sympathetic and parasympathetic)*, the hypothalamic-pituitary-adrenal *(HPA)* axis, and the immune system.

In the face of an acute stressor, the neurons in the amygdala— the part of the brain responsible for emotions, especially fear, regulation of attention and modulation of memory—are activated. The amygdala receives and interprets the present situation as a threat and sends signals to the hypothalamus, which in turn activates the HPA axis [14,15]. The hypothalamus activates the sympathetic nervous system response by sending signals through sympathetic nerves to the adrenal medulla and triggering the secretion of catecholamines *(epinephrine and norepinephrine also known as adrenaline and noradrenaline)* into circulation. This results in a constriction of the blood vessels, increase in blood pressure, increase in heart rate and force of cardiac contraction, increased muscle tone, and bronchial dilation with increase in the respiratory rate[16,17]. The circulating adrenaline also triggers the release of stored glucose and fat to be used as an energy source. These changes prepare the body for a "fight" or "flight" response.

The activation of the HPA axis results in a cascade of hormonal release. Once activated, the neurons in the hypothalamus synthesize and release a hormone called the corticotropin-releasing factor *(CRF)*. This hormone travels to the pituitary gland through hypophysial portal vessels. The binding of CRF to its receptors induces the release of the adreno-corticotropic hormone *(ACTH)* in the systemic circulation. ACTH, then, targets the adrenal glands and induces the secretion of glucocorticoids *(cortisol)* from the adrenal cortex[18]. Cortisol release is responsible for many of the changes occurring in the body, a phenomenon that appears to be particularly pronounced during experiences of chronic stress[19]. Some of the effects of cortisol include activation of the natural immune response through the granulocytes *(neutrophils, macrophages, mast cell, and eosinophils)*, the natural killer cells, and the complement proteins. Their actions are inflammation, destruction of the invaders with oxygen radicals, and phagocytosis. The macrophages also produce pro-inflammatory cytokines *(messenger molecules)* such as the interleukin 1 and 6 *(IL-1, IL-6)*, and tumor necrosis factor *(TNF)* that produce inflammation and promote wound healing[20].

Once the exposure to the stressor is discontinued, a negative feedback inhibition shuts down the stress response. The body's continuous actions to maintain homeostasis through these changing conditions, has been termed as allostasis[21].

The American Academy of Pediatrics (AAP) has described three general categories of stress response:

POSITIVE STRESS RESPONSE

A normal and essential part of healthy development. It is characterized by brief increases in heart rate and blood pressure, as well as mild elevations in hormonal levels. When children are exposed to a stressor as part of their development, such as the first day of school or a school test, in the presence of a caring relationship with an adult who provides protective effect to cope with the stressor, after the initial activation, the physiological stress response shuts down through negative feedback, once the child is no longer exposed to the stressor[22].

TOLERABLE STRESS RESPONSE

The body's alert systems are elevated to a greater degree. The activation is time-limited and buffered by a caring adult relationship. This allows the brain and organs to recover[22].

TOXIC STRESS RESPONSE

Occurs with strong, frequent or prolonged adversity. It is characterized by disruption of brain architecture and other organ systems. Toxic stress is associated with increased risk of stress related disease and cognitive impairment[23].

RATIONALE FOR SCREENING FOR ACES

EARLY DETECTION CAN PREVENT NEGATIVE HEALTH OUTCOMES

Many of the foundations of health in adulthood are laid during childhood and adolescence. Though there are children who experience multiple ACEs in their first few years of life, most children accumulate ACEs over the course of their childhood. In a multisite study of children exposed to or at risk for maltreatment, it was found that by age 6 children had an average ACE score of 1.94. Between ages 6 and 12, on average they accumulated an additional 1.53 ACE, and then between ages 12 to 16 another 1.15 [24]. The gradual accumulation of ACEs suggests that there is an opportunity to identify children at risk for accumulating ACEs and the negative health outcomes associated with them. By doing so, we can raise awareness of the importance of preventing further exposure to ACEs, identify needed specialized treatment for children who have been exposed, and better tailor health care measures based on an understanding of the child's odds of illness or disease. In addition, while the plasticity in the brain during early childhood and adolescence is a source of vulnerability to ACEs, it is also an opportunity for intervention and treatment [25].

THE PRIMARY CARE SETTING IS AN IDEAL SETTING FOR UNIVERSAL SCREENING, HEALTH PROMOTION AND DISEASE PREVENTION

The primary care medical home is uniquely positioned to be the site for routine universal screening for ACEs. Primary care physicians are trained in disease prevention and to understand the important role of parents and communities in determining a child's well-being [26]. Interacting with children and their families at regular intervals can allow patients and providers to develop a trusting relationship which can facilitate the disclosure of ACEs.

Universal screening for ACEs is critical. For some children the effects of toxic stress are seen in externalizing behaviors, such as poor impulse control and behavioral dysregulation. In these children, externalizing behaviors may be symptoms of the neurodevelopmental impacts of toxic stress. Routine screening offers the opportunity to identify individuals at high risk and offer Anticipatory Guidance before the child becomes symptomatic. In addition, there are also individuals who do not exhibit any externalizing behaviors, and are still at increased risk of developing poor health outcomes.

THE AMERICAN ACADEMY OF PEDIATRICS (AAP) RECOMMENDS ROUTINE SCREENING

The American Academy of Pediatrics *(AAP)* describes the basic science of pediatrics as falling at the intersection of understanding individual biology, ecology, and development. The clinical report *"The Pediatrician's Role in Child Maltreatment Prevention"* published by the AAP provides recommendations for implementing a comprehensive program to identify maltreatment in order to better support positive child development [27]. In the AAP policy statement, *"Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health, "* the AAP explicitly calls on pediatricians to "actively screen for precipitants of toxic stress that are common in their particular practices" [26].

THE CENTER FOR YOUTH WELLNESS

ADVERSE CHILDHOOD EXPERIENCES QUESTIONNAIRE

CYW ACE-Q

INSTRUMENT DESCRIPTION

Based on the instrument created by Vincent Felitti and Robert Anda for use with adults[28], the CYW Adverse Childhood Experiences Questionnaire *(CYW ACE-Q)* is a clinical screening tool that calculates cumulative exposure to Adverse Childhood Experiences *(ACEs)* in patients age 0 to 19. Respondents are asked to report how many experience types (or categories) apply to them or their child, not which experiences apply *(i.e. it is de-identified)*. The CYW ACE-Q is intended for use in pediatric and family practice settings to identify patients at increased risk for chronic health problems, learning difficulties, mental and behavioral health problems and developmental issues due to changes in brain architecture and developing organ systems brought on by exposure to extreme and prolonged stress. The tool is available in three age-specific versions, and in English and Spanish. It takes approximately two to five minutes to complete.

CYW ACE-Q VERSIONS

1. CYW Adverse Childhood Experiences Questionnaire for Children *(CYW ACE-Q Child)*
   17 item instrument completed by the parent/caregiver for children age 0 to 12
2. CYW Adverse Childhood Experiences Questionnaire for Adolescents *(CYW ACE-Q Teen)*
   19 item instrument completed by the parent/caregiver for youth age 13 to 19
3. CYW Adverse Childhood Experiences Questionnaire for Adolescents : Self Report *(CYW ACE-Q Teen SR)*
   19 item instrument completed by youth age 13 to 19

INSTRUMENT STRUCTURE

The instrument is comprised of two sections: Section 1 of the CYW ACE-Q *(i.e. items #1-10)* consists of the traditional ten ACEs for which we have population-level data for disease risk in adults. Section 2 includes seven *(CYW ACE-Q Child)* or nine *(CYW ACE-Q Teen and CYW ACE-Q Teen SR)* items assessing for exposure to additional early life stressors identified by experts and community stakeholders. These items are hypothesized to also lead to disruption of the neuro-endocrine-immune axis, but are not yet correlated with population level data about risk of disease. They include involvement in the Foster Care system, bullying, loss of parent or guardian due to death, deportation or migration, medical trauma, exposure to community violence, and discrimination.

SECTION 1 *Ten items assessing exposure to the original ten ACEs*

SECTION 2 *Seven or nine items assessing for exposure to additional early life stressors relevant to children/youth served in community clinics*

SCORING

As an instrument calculating cumulative exposure to categories of adversity, the respondent is asked to report how many categories apply to them or their child. Respondents tally the number for each section and write the total in the box provided. Each completed CYW ACE-Q generates a two number score, for example, a score of 3+2 *(three categories endorsed in Section 1 and two endorsed in Section 2)* or 4 + 4 *(four categories endorsed in each section).*

PLEASE NOTE: As a clinical tool, BCHC-CYW uses the CYW ACE-Q total score *(Section 1+ Section 2)* to identify which patients are at high risk of health and developmental concerns. The traditional ACEs *(Section 1)* and additional items *(Section 2)* are kept separate in the CYW ACE-Q for purposes of research and evaluation. Specifically, BCHC-CYW is collecting traditional ACE data to assess whether the integrated pediatric care model results in a decreased risk of adverse health and developmental outcomes.

ADMINISTRATION

The CYW ACE-Q is either an informant *(CYW ACE-Q Child and CYW ACE-Q Teen)* or self-report *(CYW ACE-Q Teen SR)* instrument. It is presented to the parent/caregiver and/or youth upon check-in for standard medical appointments. It is administered to all new patients, 9 months and older, prior their first appointment, at the 9- and 24-month Well Child Check, and yearly thereafter *(see Table 2. Administration Schedule)*.

TABLE 2. ADMINISTRATION SCHEDULES

	CYW ACE-Q CHILD	CYW ACE-Q TEEN SR	CYW ACE-Q TEEN
REGISTRATION 1ST APPOINTMENT AT CLINIC	●	●	●
9 MONTH WELL CHILD CHECK	●		
24 MONTH WELL CHILD CHECK	●		
YEARLY FOR AGES 3-12	●		
YEARLY FOR AGES 13-19		●	●

The instrument is introduced by the Medical Assistant. The following steps are taken to administer the CYW ACE-Q Child *(for patients 0-12 years of age)*:

1. Medical Assistant greets and welcomes the caregiver and patient.
2. Medical Assistant informs the caregiver that they will need to fill out several forms prior to the child/youth's appointment. The packet is provided on a clipboard. We recommend that the CYW ACE-Q be included earlier in the packet to increase completion rate and reinforce the clinical model *(screen-counsel-refer)*.
3. The Medical Assistant provides a general description of each form in the packet, providing context. S/he informs the caregiver that the Primary Care Provider will review the results with her/him and the child/youth.
4. The caregiver completes the packet and returns it to the Medical Assistant.
5. The packet is provided to the Primary Care Provider for review prior to the appointment. The Primary Care Provider reviews the information prior to meeting with the patient.

The following steps are taken to administer the CYW ACE-Q Teen and CYW ACE-Q Teen SR *(for patients 13-19 years of age)*:

1. Medical Assistant greets and welcomes the patient and caregiver.
2. Medical Assistant informs them that they will need to fill out several forms prior to the appointment. The patient and caregiver each receive a separate packet on a clipboard. They are asked to complete the forms separately. As with the CYW ACE-Q Child, we recommend that the CYW ACE-Q Teen and CYW ACE-Q Teen SR be included earlier in the packet to increase completion rate and reinforce the clinical model *(screen-counsel-refer)*.
3. The Medical Assistant provides a general description of each form in the packet, providing context. S/he explains that the Primary Care Provider is interested in obtaining information from both their perspectives. S/he also informs them that the Primary Care Provider will review the results with them during the appointment.
4. The packets are returned separately to the Medical Assistant upon completion.
5. Both packets are provided to the Primary Care Provider for review prior to the appointment. The Primary Care Provider reviews the information prior to meeting with the patient.

TABLE 4. MEDICAL ASSISTANT SAMPLE SCRIPTS

Point of Contact with Patient/Caregiver	*Sample Script*
INTRODUCTION OF THE PACKET	We have some forms that we'd like for you to complete so that the doctor understands how Child's Name is doing. The doctor will answer any questions you have about the forms, and I'm here if you need clarification on the instructions. There are X forms in this packet and we give these forms to all of our patients. *(Present other forms as routinely done.)* The second piece of paper is the CYW Adverse Childhood Experiences Questionnaire. This is something we give to each patient. This form asks some personal questions and screens for health risks due to exposure to stress. Review the statements and write down the number of statements that apply to your child, not which ones. When you have finished, return the forms to me. I will place everything in a folder and give it to the doctor before you and Child's Name go in for your visit. **PLEASE NOTE:** *If the patient is a teen (age 13-19), the Medical Assistant will ask both the parent/caregiver and the teen to complete their respective forms (i.e. CYW ACE-Q Teen and CYW ACE-Q Teen SR) separately so the doctor can understand both perspectives.*

INTERPRETATION OF RESULTS

The completed CYW ACE-Q will have two scores: one for Section 1 *(original ten ACEs)*, and another for Section 2 *(supplementary items)*. If the patient's CYW ACE-Q score from both Section 1 and Section 2 equals zero to three *(0-3)* and the patient does not present with additional symptomatology *(see Relevant Symptomatology listed below)*, the Primary Care Provider should provide Anticipatory Guidance. If the patient's score is one to three *(1-3)* with symptomatology, or four or higher, an appropriate referral to care should be made.

FIGURE 2. CYW ACE-Q SCORING

REVIEWING THE CYW ACE-Q RESULTS WITH THE PATIENT

The Primary Care Provider should integrate the CYW ACE-Q results with other relevant patient information. Through conversation with the patient and her/his caregiver, the Primary Care Provider may identify relevant symptoms that should be considered in determining whether a referral for services is clinically indicated.

TABLE 4. RELEVANT SYMPTOMATOLOGY

Sleep disturbance	Poor control of chronic disease *(such as asthma or diabetes)*	Restricted affect or numbing
Weight gain or loss	Developmental regression	High risk behavior in adolescents
Failure to thrive	School failure or absenteeism	Unexplained somatic complaints *(such as HA or abdominal pain)*
Enuresis, encopresis	Aggression	Depression
Constipation	Poor impulse control	Anxiety
Hair loss	Frequent crying	Interpersonal conflict

TABLE 6. PRIMARY CARE PROVIDER SAMPLE SCRIPTS

Screening Result	*Sample Script*
GENERAL INTRODUCTION TO THE CYW ACE-Q RESULTS	New research has shown that children's exposure to stressful or traumatic events can lead to increased risk of health and developmental problems, like asthma and learning difficulties. As a result, at this clinic we now screen all of our patients for Adverse Childhood Experiences. Once again, you don't have to tell us which ones your child experienced, only how many. I'd like to take a moment to review your responses.
CYW ACE-Q SCORE OF 0	Based on your responses, I don't see any cause for concern. We now understand that exposure to stressful or traumatic experiences like the ones listed here may increase the amount the stress hormones that a child's body makes and this can increase their risk for health and developmental problems. If, in the future, *[Child's Name]* experiences any of these issues, please let us know because early intervention can lead to better outcomes.
CYW ACE-Q SCORE 1-3 WITHOUT SYMPTOMATOLOGY	I see that *[Child's Name]* has experienced *[CYW ACE-Q Score]* of these items, is that correct? Based on your responses, I want to ask a few more questions about her/his health and development. Has *[Child's Name]* experienced any significant weight gain or loss since these experiences occurred? How is *[Child's Name]* doing in school? Has the teacher or school staff expressed any concerns? How's *[Child's Name]* sleep? Have you noticed any worsening of your *[Child's Name]*asthma/eczema/diabetes since these events occurred? *(Caregiver answers no and that the patient is doing fine)* We now understand that exposure to stressful or traumatic experiences like the ones listed here may increase the amount the stress hormones that a child's body makes and this can increase their risk for health and developmental problems. At this time, it doesn't seem like *[Child's Name]* is experiencing those issues, but if, in the future, s/he does start showing symptoms, please let us know because early intervention can lead to better outcomes.

TABLE 6. PRIMARY CARE PROVIDER SAMPLE SCRIPTS *(continued)*

Screening Result	*Sample Script*
CYW ACE-Q SCORE 1-3 WITH SYMPTOMATOLOGY *or* **CYW ACE-Q SCORE 4** *or* **MORE**	I see that *[Child's Name]* has experienced *[CYW ACE-Q Score]* of these items, is that correct? Based on your responses, I want to ask a few more questions about her health and development. Has *[Child's Name]* experienced any significant weight gain or loss since these experiences occurred? How is *[Child's Name]* doing in school? Has the teacher or school staff expressed any concerns? How's *[Child's Name]* sleep? Have you noticed any worsening of *[Child's Name]* asthma, eczema, diabetes since these events occurred? *(Caregiver responds yes)* We now understand that exposure to stressful or traumatic experiences like the ones listed here may increase the amount the stress hormones that a child's body makes and this can increase their risk for health and developmental problems. Because of what *[Child's Name]* has experienced, I am concerned that this may be contributing to her problems in school/worsening asthma/weight gain. Some of the things that have been shown to help the body recover from adversity and normalize those stress hormones include good nutrition, healthy sleep, regular exercise, therapy, mindfulness- like meditation, and healthy relationships. I'd like to refer *[Child's Name]* to some services that could be helpful. *(Describe referral and resources available at your setting. This may include a "warm hand-off" or formal referral to an internal mental health or behavioral health provider integrated into the clinic, or may be a referral to a partner agency.)* We also know that a healthy caregiver is one of the most important ingredients for healthy children so the same applies to you mom/dad/grandma/auntie. Reducing or managing your stress level is one of the best things that you can do for *[Child's Name]* to improve his/her health and development.

CYW ACE-Q IMPLEMENTATION CONSIDERATIONS

The American Academy of Pediatrics *(AAP)* recommends that clinicians who are preparing to begin screening use the following four questions to guide their process[29]:

- **Why are we looking at this issue?**
- **What are we looking for?**
- **How do we find it?**
- **What do we do once we have found it?**

Given this framework, Primary Care Providers and/or Clinic Managers planning to integrate the CYW ACE-Q into clinical practice may consider the following steps:

1. **Gain an understanding of the background and rationale for screening for ACEs**
    - A. Review additional resources on ACEs and Toxic Stress, for example, literature cited throughout this document to better understand the relationship between exposure to Adverse Childhood Experiences (ACEs) and negative health outcomes.
    - B. Review the benefits of screening for ACEs in your particular setting.
2. **Understand the context and feasibility for integrating the CYW ACE-Q into your practice setting**
    - A. Vision
        - I. *Initiate discussions with supervisors/managers and senior leadership to gauge interest and possible concerns.*
        - II. *Determine how the integration would work within your existing model and how it would connect to the mission and goals of your organization.*
        - III. *Set short, medium and long-term goals for integration.*
        - IV. *Evaluate existing systems and processes to ensure compliance with state and other regulatory bodies.*
        - V. *Develop plans for collecting and evaluating data to assess implementation success.*
    - B. Resources
        - I. *Evaluate what staffing support is needed to integrate the CYW ACE-Q. For example, from an administrative perspective, the CYW ACE-Q will increase workload of staff collecting and managing the health data.*
        - II. *Identify internal or external resources for patients requiring behavioral health services or other supports. Understand what community partnerships exist and/or must be developed to support in planning, implementation and response to the integration of screening for ACEs is essential. Warm handoffs have been known to be effective in linking primary health care and specialized services; a relatively quick turnaround time is preferred for patients to engage in special services.*
        - III. *Understand what training and professional development needs are required for staff. For example, trainings on trauma-informed care, vicarious trauma, conflict resolution, and mandated reporting should be incorporated, along with consistent supervision.*

BCHC-CYW INTEGRATED PEDIATRIC CARE MODEL

The BCHC-CYW model was created to recognize the impact of Adverse Childhood Experiences (ACEs) on health and seeks to treat toxic stress in children. We do this by routine screening, which allows for early detection and intervention, paired with a multidisciplinary approach focused on addressing the neuro-endocrine-immune dysregulation of toxic stress.

Our model integrates primary health care, mental health and wellness, research, policy, education, and community and family support services to meet children and families where they are to support them in leading healthier lives.

Children/youth are screened for exposure to ACEs during routine visits to the Bayview Child Health Center (BCHC). Based on the CYW Adverse Childhood Experiences Questionnaire (CYW ACE-Q) results and information collected during the appointment, pediatricians determine whether a referral to the Center for Youth Wellness (CYW) for integrated care is indicated.

TABLE 6. PROMISING INTERVENTIONS

Research indicates that the following interventions may mitigate dysregulation of the neuro-endocrine-immune network associated with exposure to ACEs. [30–35]

Regular Exercise
Good Nutrition
Sleep
Mental Health
Mindfulness Practices *(e.g., meditation)*
Supportive Relationships

FIGURE 3. CYW ACEs SCREENING PROCESS

CYW CLINICAL MODEL

CYW treats children/youth *(referred by BCHC pediatricians)* who exhibit signs and symptoms of neuro-endocrine-immune dysregulation and their caregivers.

Care Coordination is at the heart of the CYW clinical model. Our approach is distinct from traditional case management in that each of our Care Coordinators is trained to interact and respond to patients using an ACEs-informed lens. This means educating families and other providers about the impacts of ACEs and toxic stress on health, engaging families at home and school, providing consistent guidance, modeling self-care, and making referrals as needed. Care Coordinators are responsible for the families' care and they coordinate care within BCHC-CYW programs and with outside resources.

We provide a variety of carefully coordinated mental health and wellness interventions to address the impact of ACEs and toxic stress. These interventions are guided by a multidisciplinary, two-generation approach and include:

ASSESSMENT — We screen children for exposure to adversity and assess symptoms of toxic stress in the pediatric setting.

HOME VISITS — We engage families at home and school, as many families lack access to child-care and transportation.

EDUCATION — We offer targeted education that helps families better understand the causes and symptoms of chronic stress and provide ways to mitigate the kind of stress that can hurt children's health and well-being.

PSYCHOTHERAPY — We provide a variety of evidence-supported treatments and promising practices that share core principles of culturally competent, trauma-informed therapy that are appropriate for children and families from diverse cultural backgrounds, including Child Parent Psychotherapy and Cue-Centered Therapy. We do this in partnership with the Child Trauma Research Program at the University of California San Francisco, led by Dr. Alicia Lieberman, and the Early Life Stress and Pediatric Anxiety Program at Lucile Packard Children's Hospital, led by Dr. Victor Carrion.

WELLNESS NURSING — Nurses provide education to families about the impacts of ACEs and toxic stress on health and wellness. They coordinate Specialty Care appointments, often accompanying patients/families to see specialists. Provide consultation on strategies for attaining, maintaining, or recovering optimal health.

PSYCHIATRY — Psychiatrists are provided through a partnership with Department of Psychiatry at University of California San Francisco. They provide medication evaluations of children and caregivers and offer consultation to BCHC physicians and CYW staff.

BIOFEEDBACK — We provide biofeedback services to build awareness and control over body processes such as muscle tension, blood pressure, and heart rate to help patients recognize and better regulate their fight or flight response.

REFERRALS — In addition to making appropriate referrals for our clinical services, we also coordinate referrals to high-quality institutional partners who also use an ACEs-informed lens in their work.

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