

# An Evidence-Based Approach to Protect, Support, and Heal the Whole Person

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## ABSTRACT

Traditional health care models lack capacity to address the complex intersections of social, mental, emotional, and physical health and well-being. Adverse childhood experiences (ACEs) are common and can negatively affect lifelong physiology at molecular, cellular, and organ levels. Therefore, it is critical to address ACEs, support positive childhood experiences, and create services that promote holistic well-being. The Center for Resiliency and Wellbeing's (CRW) novel approach to care includes surveilling and screening for adversity, providing integrated and integrative services (I and I model), and changing the culture of health care through education and research. Since 2020, approximately 1,300 unique patients have been cared for by the CRW. The CRW team focuses on the human stress response, integrative care education, and trauma-specific mental health approaches. Early recognition and intervention for ACEs can impart immense personal and population benefits. The I and I model promotes healthy development, stable and nurturing relationships, and skill-building to improve lifelong health and well-being. *[Pediatr Ann. 2025;54(3):e94–e101.]*

**R**ecent advances have shown that positive childhood experiences (PCEs), such as supportive and nurturing adult relationships, safe and

stable environments, experiences that build upon strengths, and skills that promote resiliency, are the antidote to significant adversities in childhood. PCEs

have been shown to improve lifelong mental, emotional, physical, and social health.<sup>1,2</sup> With a deepening youth mental health crisis and growing deficit of health care and educational resources, proactive and effective solutions that promote holistic health and well-being are critical.

The focus of our health care system has traditionally been a model of diagnosing and treating diseases. This approach is often insufficient and ineffective when considering the complex connection between psychological, emotional, and physical health and well-being.<sup>3</sup> Disease-focused strategies frequently fail to address root causes of distress and are too far downstream from presenting symptoms to have maximal impact.<sup>4</sup> Therefore, it is imperative that

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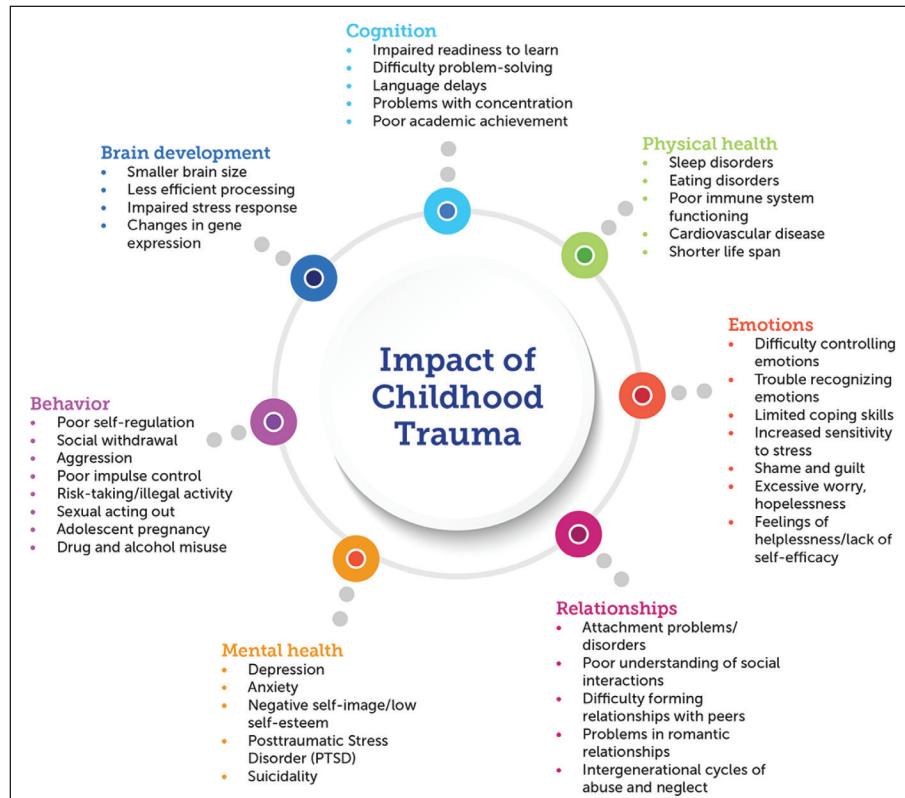
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we adapt our health care model from one that primarily treats diseases to one that also prevents disease and promotes well-being.

Recent changes, such as embedding behavioral and mental health in primary care practices and recognizing health as an interconnection of psychology, sociology, and biology, have advanced our understanding of the mind–body connection and changed our approaches to care.<sup>5,6</sup> Such innovations counter the traditional biomedical model of Western medicine practices that center on the presence or absence of diseased physiology, ignoring the multifaceted emotional, mental, and social aspects to a person's overall well-being.<sup>5</sup> While initial progress has been made, our current health system often fails to provide comprehensive patient care in a way that prevents illness, delays or minimizes the development of chronic diseases, and increases a sense of well-being during a lifetime.

Despite the United States spending more than \$4.5 trillion on health care,<sup>7</sup> many health outcomes are suboptimal, as evidenced by elevated rates of obesity, heart disease, infant mortality, chronic lung disease, and disability.<sup>8</sup> These statistics indicate a pressing need to prioritize a proactive approach that not only understands the complex interplay between ecology and biology but also utilizes appropriate and evidence-based complementary treatments in addition to traditional care to prioritize health and well-being throughout a lifetime.

During the past 25 years, research from diverse fields, including developmental psychology, epigenetics, neuroscience, and epidemiology, has demonstrated that ACEs can affect molecular, cellular, and organ-level physiology.<sup>9–11</sup> These physiological alterations can result in both acute and long-term negative impacts on physical, emotional, developmental, and behavioral health and well-



**Figure 1.** Potential impacts of childhood trauma. This figure depicts the various domains of health that can be affected by childhood trauma (adversity). Since children who experienced adversity can present in various ways, it is important for pediatricians to be aware of these various presentations to best provide care. Reprinted with permission from Bartlett & Steber.<sup>40</sup>

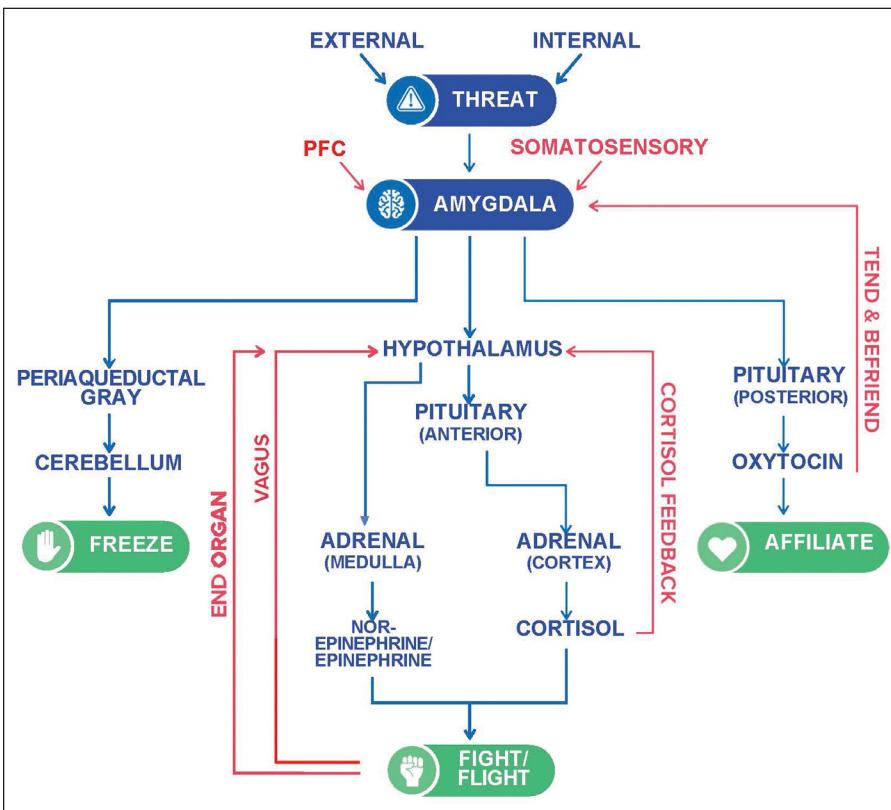
being.<sup>9,12</sup> According to a Centers for Disease Control and Prevention report, 61% of adults have previously experienced at least one ACE, and nearly 1 in 6 adults have experienced  $\geq 4$  ACEs.<sup>9</sup> These statistics likely underestimate the incidence of ACEs, as our understanding has grown to include other factors, such as poverty, housing instability, exposure to community violence, involvement in foster care, racism, discrimination related to personal identity, and bullying.<sup>13</sup> These childhood traumas impact many different domains of health (Figure 1) and can create a profound negative health impact and economic burden.<sup>14</sup>

When creating health care services that promote holistic health and well-being, it is critical to both minimize the negative impacts from ACEs and expand opportu-

nities for PCEs, which have been shown to prevent, mitigate, and treat the effects of adversity.<sup>1,2</sup> Holistic care models, such as pediatric integrative medicine, emphasize strategies where pediatric providers partner with the patient and their family to treat the body and mind and promote supportive therapeutic relationships that build PCEs within families, communities, and patient care teams.<sup>15,16</sup> This article explores the need for integration of holistic care, particularly as it relates to ACEs, and describes the foundation and success of one such center at the largest pediatric hospital in Arizona.

## HUMAN STRESS RESPONSE TO ADVERSITY

When humans are faced with adversity, there is a predictable cascade



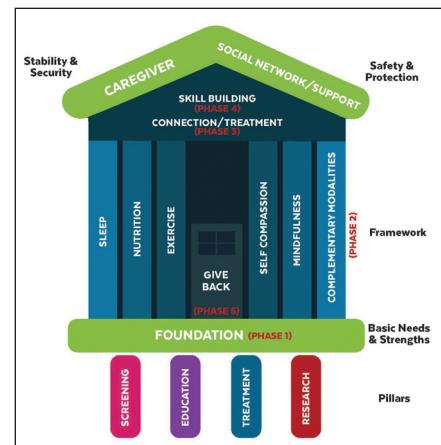
**Figure 2.** The human stress response and stress response regulators. This figure depicts the endocrine and neurobiological mechanisms of the human stress response, as well as their behavioral outcomes. Blue lines represent the stress response pathways, and red lines indicate regulators of this response.

of hormones and chemicals that are released; this reaction, known as our stress response, is an evolved mechanism for protection against potential threats to our survival and well-being (Figure 2).<sup>17</sup> This response shuts down higher-level functions, like thinking, planning, and organizing for the future, to concentrate on quick reactions to improve the chances of surviving.

Initially, there is a release of adrenaline, which is short-acting and allows an instant response. Cortisol is then released, which enables the ability to respond to adversity for a longer period. The body also releases proinflammatory cytokines to inform and prepare the immune system on how to fight the threat and repair injuries. This response in the short-term can be lifesaving in

the setting of a real threat.<sup>18</sup> However, when the stress response system fails to shut off, as can happen in children that experience significant, repetitive, or prolonged adversity in the absence of a supportive and nurturing adult relationship, both the brain and body are flooded with persistent release of adrenaline, cortisol, and cytokines. This persistent exposure ultimately changes pathology and becomes biologically embedded, negatively impacting health and well-being across one's lifetime.<sup>17-19</sup>

Such toxic stress has a profound effect on a child's brain development and their neuroendocrine and immune systems, causing lasting changes at molecular, cellular, organ-system, and behavioral levels.<sup>19-21</sup> Prevention, early recognition, and intervention by promoting



**Figure 3.** The CRW. This figure depicts the CRW's overall strategies and modalities to prevent, mitigate, and minimize the impact of ACEs while maximizing PCEs.

PCEs can all combat the effects of ACEs and subsequent toxic stress to promote health and well-being.<sup>22</sup>

### NOVEL CARE MODEL

In understanding the critical impact of early childhood experiences, the Center for Resiliency and Wellbeing (CRW) was developed by authors and collaborators using evidence-based approaches to prevent, mitigate, and minimize the impacts of ACEs while maximizing PCEs (Figure 3). The CRW uses a comprehensive lens to understand how the dynamics of the child and family (eg, genetics, relationships, experiences, the environment) affect development, health, and well-being. The CRW is built upon 4 pillars: (1) ACE screening and surveillance; (2) interventions using an integrated and integrative care model (I and I model); (3) education about ACEs, PCEs, and trauma-informed care for health care providers, patients, families, and community organizations; and (4) research in the impact to pediatric residents' and clinicians' awareness and clinical application of trauma-informed principles through formal education and incorporation of ACE screening and interven-

tions in the medical home using quality improvement methodologies (Table 1).

At the center of the CRW is the I and I model, which addresses the interconnectedness of the mind, body, and spirit with biological systems that drive health and disease. This model recognizes the importance of holistically treating physical and mental health conditions (integrated care) while also using evidence-based complementary care to address the mind, body, and spirit to enhance well-being (integrative care). Essential to the I and I model is an understanding of the natural and protective nature of the human stress response to encourage techniques that activate stress regulator pathways and mitigate the deleterious impacts of prolonged release of stress hormones and chemicals (Figure 2). This means that health care team members not only emphasize use of traditional, evidence-based, top-down approaches, such as trauma-informed and trauma-specific therapies, but also utilize bottom-up, integrated, and integrative approaches, such as breathing exercises, mindfulness, recognition of physical sensations, physical movement, sleep hygiene, nutrition, and self-compassion. This dual approach aims to improve executive functioning, strengthen skills of resilience, and calm or buffer a potentially dysregulated stress response due to childhood adversity.

### WHOLE PERSON CARE: INTEGRATIVE EDUCATION

Pediatric integrative care (PIC) is a balanced approach that integrates evidence-based complementary care with conventional therapies to maximize prevention and healing (Figure 4). PIC centers on the therapeutic relationship and the body's innate ability to heal.<sup>15,16</sup> The CRW has a team of registered nurses, referred to as wellness nurses (WNs),

TABLE 1

The Four Pillars of the Center for Resilience and Wellbeing Program at Phoenix Children's<sup>a</sup>

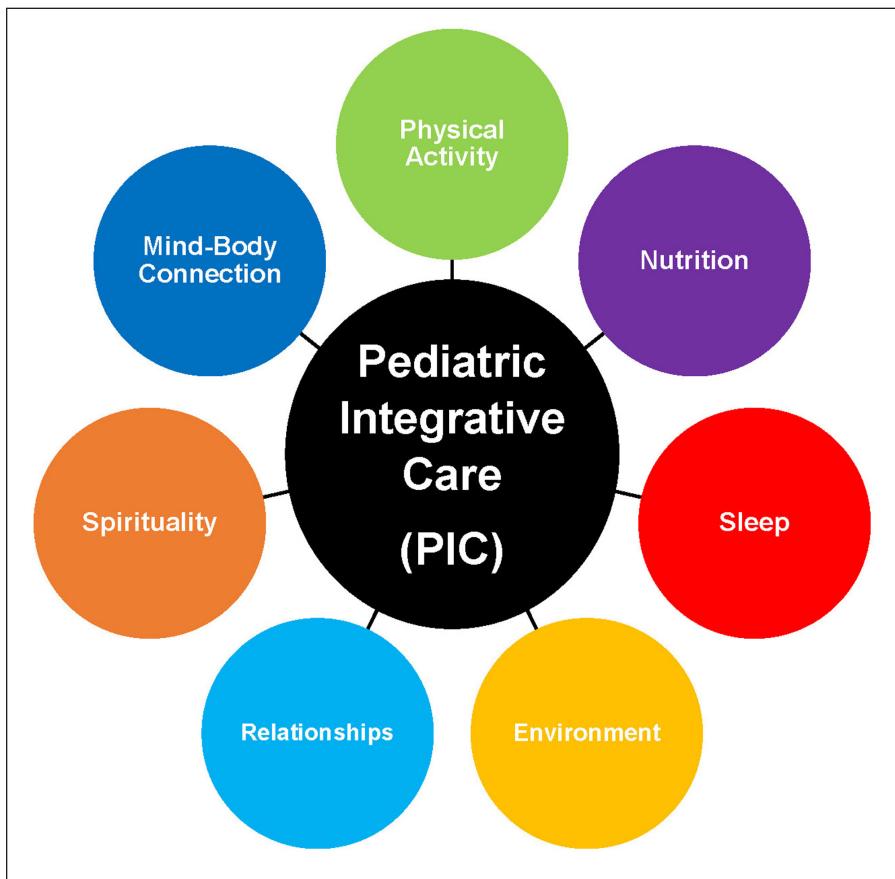
Pillars	Pillar descriptions
Screening and surveillance	Screenings are completed at well-child visits (age 1 to 17 years) ACEs score of 1+; yes to the question, "Has anything significantly bad, sad, or scary happened to your child or family since the last visit?"; yes to experiencing discrimination; accompanied by any physical, emotional, or behavioral symptoms; can be referred to the CRW team Education on signs and symptoms of trauma (adversity) across different age groups
Intervention	Integrated and integrative care Focus to address strengths, needs, and protective factors for each patient WNs provide education on the following topics: stress response, routines, physiology of body (physical) sensations, the breath (mindfulness), self-compassion, physical activity, nutrition, sleep, recreational screen time, hobbies, "3 good things" (gratitude), and "give back" (connections to a community support system) RCs provide any variety of the following interventions: short-term trauma-specific and trauma-informed therapy, case management, resources, connection to community collaborations for ongoing long-term therapy and support
Education	Hospital staff, residents, pediatric physicians, community pediatricians, pediatric providers, and community organizations educated on ACEs, PCEs, trauma-informed care, and resiliency in childhood Pediatric physicians and providers will be educated on the pediatric advantage (pediatricians are uniquely qualified and understand that development and well-being require interventions quite distal to physical health) Pediatric physicians and providers will also be educated on the strength-based approach per Bright Futures (a national health promotion and prevention initiative, led by the American Academy of Pediatrics)
Research	Collect data on ACEs and PCEs across different pediatric health care settings Contribute to the national data on ACEs, toxic stress, resiliency, and evidence-based treatments

Abbreviations: ACE, adverse childhood event; CRW, Center for Resiliency and Wellbeing; PCE, positive childhood experience; RC, resiliency counselor; WN, wellness nurse.

<sup>a</sup>For more information on the CRW, visit <https://www.phoenixchildrens.org/CRW>.

who are educated in the human stress response, as well as PIC techniques and tools. They provide education on the mind and body responses to stress and techniques to decrease stress responsiv-

ity, as well as its mediators (eg, cortisol, epinephrine, cytokines, other inflammatory mechanisms). They partner with the patients and families, providing education to promote daily lifestyle be-



**Figure 4.** This figure represents pediatric integrative care's approach to treatment of the whole person, with an emphasis on prevention and healing. Figure inspired by work from Dr. Hilary McClafferty.

haviors, such as sleep, physical activity/movement, nutrition, and mindfulness, which counteract the inflammatory response caused by unremitting stress. There are 12 individualized WN educational topics, depending on needs and interest (Table 2).

The WNs also work in collaboration with mental health therapists, referred to as resiliency counselors (RC), who are part of the CRW team and specialize in trauma-specific modalities and interventions. The RCs incorporate short-term therapy to support trauma resolution with decrease in trauma-based symptomology, work on child-caregiver attunement and attachments, provide parenting and attachment ses-

sions, and focus on increasing individual strengths and family resiliency. The RCs are also well trained in PIC modalities to address and support the patient's emotional, physical, spiritual, and mental health needs. Working synergistically, the WNs and RCs focus on building skills that encourage innate healing with health-promoting adaptive pathways for handling present and future adversity.<sup>20</sup> Beyond the support of WNs and RCs, a child psychiatrist who specializes in trauma and understands the importance of integrated and integrative health care is also available to patients within CRW for consultation and care.

Finally, the CRW program uses quality improvement strategies and study

outcomes to further improve the I and I model across three tiers of prevention. Primary prevention promotes PCEs and prevents or limits risk of trauma or adversity. Secondary prevention involves early detection of adversity and intervening to mitigate the health effects from the trauma. Tertiary prevention includes treatment of illnesses or diseases caused by childhood adversity (Table 3).

#### SUCCESS/GROWTH OF THE CENTER FOR RESILIENCY AND WELLBEING

The CRW's mission is to transform the lives of Arizona children who have experienced significant adversity by providing evidence-based integrated and integrative health services. During the last 4 years, the CRW WNs have provided 650 sessions and RCs have provided 990 therapy sessions. Together, there have been more than 2,600 contacts with patients and their families for resources and support.

Since its inception in 2019, the CRW medical director has met with both commercial and public health insurance companies to educate on the importance of childhood adversity prevention, mitigation, and early intervention. There have been encouraging advancements in support for holistic and preventative care through recognition and reimbursement of procedure codes, attendance at educational seminars, donor support for the program, and continued communication on future advancements and improvements. The CRW has become a leader in supporting children, youth, families, and caregivers impacted by ACEs and continues to focus on care that helps to foster supportive and nurturing relationships, build skills that promote resilience, provide mental health therapy that helps in the healing process, and encourage each patient's unique strengths.

## CONCLUSION

A meta-analysis of more than 500,000 adults performed at Alberta Children's Hospital Research Institute showed an estimated 16.9% of adults have encountered 4 or more ACEs.<sup>23</sup> Early recognition, screening, and intervention of childhood adversity can impart immense long-term benefits to overall health and well-being, as well as decrease the economic burden of many chronic mental and physical health problems. However, critical shifts in the perspective and delivery of care are needed within our current health system. The proposed I and I model acknowledges the importance of key factors for healthy development, including strengthening stable and nurturing relationships, reducing sources of stress, and building skills of resiliency.<sup>22</sup> The I and I model's multifaceted approach, which has been implemented within the CRW, provides children and teens exposed to adversity with the skill sets needed to promote well-being throughout their lives.

With the education we provide to pediatric health care providers and the community, we hope to recognize early signs and symptoms of childhood adversity to be able to intervene in meaningful ways. We aspire to prevent future ACEs to promote long-term health and well-being for individuals and our greater community.

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TABLE 2

Interactive Educational Sessions Inspired by Pediatric Integrative Care

Wellness nurse educational topics	Description of educational topics
Human stress response system	An overview of the nervous system and its response to adversity. Education provided on the well-known "flight-or-fight" response, as well as the less-familiar but very important affiliate responses.
Physiology of body/physical sensations	An overview of how all humans have physical sensations based on what is experienced internally and externally, and these have physical manifestations in the mind and body. Explanation of how emotion-based body sensations help to shape the way children perceive, label, and interpret emotions. Emotional awareness has been shown to be associated with resilience. <sup>24-26</sup>
Mindfulness (awareness)	An overview of what mindfulness is, how it works, and a guide for children and caregivers in learning and implementing mindfulness techniques (eg, breath techniques) to manage stress responses and increase a sense of calm and ability to be present within their bodies. Mindfulness has been shown to decrease amygdala activity, increase cortical function connectivity, and increase parasympathetic nervous system activation. <sup>27,28</sup>
Routines	An overview of what routines are and how they calm the mind and body through predictability, help to develop self-regulation skills, and support healthy social-emotional development.
Sleep	Education on the importance of sleep hygiene and how sleep promotes healing and health. Age-appropriate sleep quality, duration, and timing promote health and well-being by strengthening the immune system, managing cortisol levels, decreasing inflammation, and improving memory. <sup>29</sup>
Physical activity	An overview of how physical activity promotes health in all its various forms. Physical activity helps to regulate stress responding, <sup>30</sup> modulate inflammation, <sup>31</sup> improve executive function, <sup>32</sup> and increase endorphins. <sup>33</sup>
Nutrition	An overview of how foods provide important nutrients that are the building blocks for physical, emotional, and psychological well-being. <sup>34</sup> Stress or adversity impacts what foods are desired or craved; education is provided on how nutrition that is health-promoting improves the capacity to handle stressful events and build skills to strengthen resilience.
Hobbies (eg, creative writing, art, journaling, music, theater, reading, sports)	An overview of how hobbies can help calm the stress response by bringing a sense of gratification, purpose, and pleasure; strengthen resilience; provide opportunities to learn new skills; elicit curiosity and creativity; and build relationships. <sup>35</sup>

**TABLE 2 (CONTINUED)**

Interactive Educational Sessions Inspired by Pediatric Integrative Care

Wellness nurse educational topics	Description of educational topics
Recreational screentime	An overview of how screentime can promote well-being through social interaction and strengthening skills but can also negatively impact health and well-being through mechanisms, such as overstimulation of the stress response and interference with sleep, physical activity, and prosocial behavior. <sup>36</sup>
"Three good things" (gratitude)	An overview of the physiology of gratitude and its ability to improve physical, mental, and emotional health. <sup>37</sup>
"Give back" (kindness and connection)	An overview of "give back" and its ability to lower stress hormones, release oxytocin, and develop positive interpersonal relationships. <sup>38</sup>
Self-compassion	An overview of what self-compassion is, as well as how it triggers the release of oxytocin and shuts down the stress response. <sup>39</sup>

**TABLE 3**The Three-Tiered Prevention Strategy of the Integrated and Integrative Care Model<sup>a</sup>

Primary prevention	Secondary prevention	Tertiary prevention
Promote relational health	Educate pediatric health care providers to recognize trauma-related signs and symptoms (surveillance)	Refer to evidence-based community therapist for long-term therapy
Educate pediatric health care clinicians about ACEs, PCEs, and trauma-informed care	Educate pediatric health care providers to identify risk through screening	Short-term trauma-specific mental health therapy for containment and healing adversities and traumas
Educate caregivers about relational and attachment-focused positive parenting	Partner with pediatric health care providers to implement trauma-informed care principles in the clinic	Refer to trauma-specialized child psychiatrist if medication is indicated
Recognize patient and caregiver strengths	Educate pediatric health care providers in practical ways they can intervene in the clinic	Collaborate with suicide prevention team
Promote PCEs	Short-term trauma-specific mental health therapy for potential trauma symptomatology	
Partner with the patient and family in strengthening skills that promote resiliency	WNs provide integrative education to decrease mind and body inflammation	
Provide resources when needed		
Educate patient and family about the stress response and how to mitigate stress and establish adaptive skills that are health-promoting		

Abbreviations: ACE, adverse childhood event; PCE, positive childhood experience; WN, wellness nurse.

<sup>a</sup>For more information on integrated and integrative care, see <https://phoenixchildrens.org/sites/default/files/2024-07/integrated-and-integrative-care-model-white-paper.pdf>.

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