

Introduction

The Centers for Disease Control and Prevention's (CDC's) landmark 1998 study on Adverse Childhood Experiences (ACEs) demonstrated that traumatic childhood experiences are a root cause of many social, emotional, physical and cognitive impairments that lead to increased incidence of health risk behaviors, violence or revictimization, disease, disability and premature mortality.¹ The original 1998 study examined 10 aspects of adverse childhood experiences that were categorized as abuse, neglect or household problems.

Since then, the definition of adverse experience has been expanded to emphasize the embodiment of a range of traumatic experiences including, but not limited to, being a victim of extreme discrimination (racism, homophobia), a victim of or witness to community violence or war, being a refugee or experiencing severe social deprivation including poverty, hunger and homelessness; many of the things that are considered social determinants of health. Trauma results from an event, series of events or set of circumstances that is experienced as physically and/or emotionally harmful or threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional and/or spiritual wellbeing.²

ACEs are incredibly common; about two thirds of all adults in the U.S. have experienced at least one ACE of the 10 considered in the 1998 study. Furthermore, a dose-response relationship exists: as the number of adverse experiences increases, so does the risk of problems from childhood through adulthood. Traumatic experiences before age 18 often cause stress that is toxic to the developing brain and body, derailing their optimal functioning. Research also shows that adults living with a personal history of childhood adversity are more likely to transmit ACEs to their children.^{3,4} Additional studies demonstrate that other overwhelming experiences such as extreme discrimination (bullying, racism, homophobia, etc.), extreme poverty or loss of a parent also have a grave impact on development.^{5,6,7} ACE data is most useful at the population level. At the individual level, protective factors can mitigate the effects of adversity.

What are ACEs?

The Centers for Disease Control and Prevention's landmark 1998 study on Adverse Childhood Experiences (ACEs) demonstrated that traumatic childhood experiences are a root cause of many social, emotional and cognitive impairments that lead to an increase in health risk behaviors, increased risk of violence or revictimization, disease, disability and premature mortality. Understanding the impact of ACEs on health and well-being can inform efforts to prevent trauma but can also enable systems and institutions that serve people with a history of ACEs so that the cycle of trauma can be halted.

The Illinois ACEs Response Collaborative

Established in 2011, the Illinois ACEs Response Collaborative (the Collaborative) represents a broad range of organizations and agencies committed to expanding and deepening the understanding of the impact of childhood trauma and adverse childhood experiences (ACEs) on the health and well-being of Illinois children and their communities.

The Collaborative works to develop education, policies and responses to assist those who have experienced a high level of adversity, while simultaneously developing strategies to reduce the frequency and impact of ACEs as well as the reduction of intergenerational transmission of ACEs. Health & Medicine Policy Research Group, a Chicago-based non-profit with a mission to challenge inequities in health and health care, serves as the lead convener for the Collaborative.

Understanding the impact of ACEs and toxic stress on health and well-being can not only inform efforts to prevent ACEs but can also enable the systems and institutions that serve people with a history of ACEs (especially those who are members of communities facing systemic oppression) to become trauma-sensitive, to avoid exacerbating existing problems and to support individuals, families and communities in healing. Not every person who has experienced adversity has been traumatized; a person's level of resilience is a critical protective factor. Most important, the effects of childhood adversity and multigenerational transmission of ACEs can be prevented and/or ameliorated through a variety of methods both within the community and by the health care system.

The Impact of ACEs on Health

ACEs are the root cause of many of society's most pressing health problems that contribute to the astronomical and rising costs of health care as well as tremendous social costs in morbidity, mortality and quality of life. An ACE score greater than or equal to 6 can shorten an individual's lifespan by as much as 20 years. Below are common public health challenges that have some of their roots in childhood adversity.

Chronic Health Conditions:

- As of 2012, about half of all adults—117 million people—had one or more chronic health conditions. Two of these chronic diseases, heart disease and cancer, together accounted for nearly 48% of all deaths.⁸ 25% of the risk of getting heart disease or cancer is attributable to ACEs.⁹
- **Individuals who had faced four or more categories of ACEs were twice as likely to be diagnosed with cancer as individuals who hadn't experienced childhood adversity.** In 2010, cancer care cost \$157 billion. The total costs of heart disease and stroke in 2010 were estimated at \$315.4 billion. Of this amount, \$193.4 billion was for direct medical costs, not including costs of nursing home care.⁸
- The total estimated cost of diagnosed diabetes in 2012 was \$245 billion, including \$176 billion in direct medical costs and \$69 billion in decreased productivity.¹⁰
- In 2014, 8.6 % of children 18 years of age or under and 7.4% of adults had asthma.¹¹ According to the National Survey of Children's Health from 2011-12, 29.2% of children with exposure to at least one ACE reported asthma. This is twice the number of children with zero ACEs who reported having asthma during this period.¹²
- **Each additional ACE score increases the risk of being hospitalized with an autoimmune disease.**¹³
- Eighty-six percent of all health care spending in 2010 was for people with one or more chronic medical conditions.⁸

Obesity:

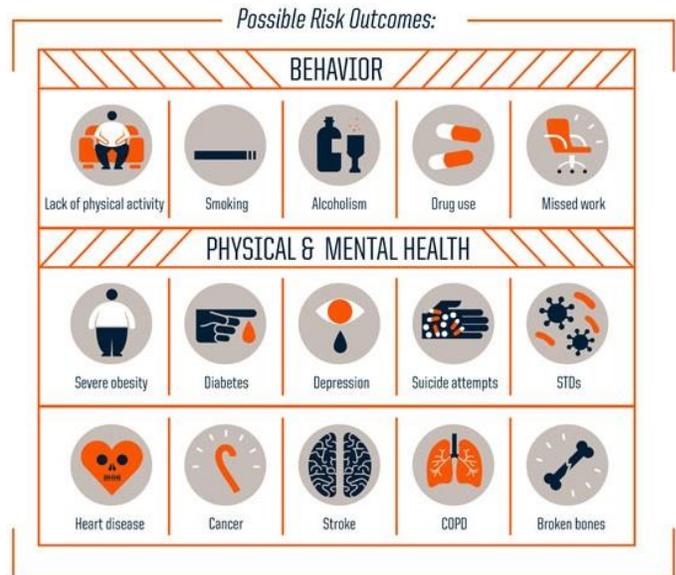
- In 2015, more than 20 % of all U.S. adults, or about 56 million people, were obese (defined as body mass index [BMI] ≥ 30 kg/m²).¹⁴
- In 2014, one in six youths aged 2–19 years, or about 13 million children, was obese (BMI ≥ 95 th percentile).⁸
- **According to David Williamson, PhD, there is a link between childhood adversity and obesity for about 8% of patients, or six million people.**¹⁵
- In 2010, annual health costs related to obesity in the U.S. were nearly \$200 billion; nearly 21% of medical costs in the U.S. can be attributed to obesity.¹⁶

Smoking:

- According to the CDC, in 2014 an estimated 16.8% (40 million) of U.S. adults were cigarette smokers.¹⁷
- Smoking-related illness in the United States costs more than \$300 billion each year, including nearly **\$170 billion** for direct medical care for adults, and more than **\$156 billion** in lost productivity, including \$5.6 billion in lost productivity due to secondhand smoke exposure.¹⁸

Behavioral Health (mental health and substance use):

- Mental illness and drug use causes significant morbidity and disability with staggering costs to society in terms of health, productivity and health care expenditures.
- In 2015, an estimated 16.1 million adults aged 18 or older in the United States had at least one major depressive episode in the past year. This number represented 6.7% of all U.S. adults.¹⁹ **Someone with an ACE score of four is 460 % more likely to suffer from depression than someone with an ACE score of zero.**¹



Source: Robert Wood Johnson Foundation

- According to the National Institute of Mental Health, 16.3 million adults ages 18 and older (6.8% of this age group) had an alcohol use disorder in 2014.²⁰ The economic toll of alcohol use disorder was estimated to be **\$223.5 billion**, or \$1.90 per drink, in 2006. Most of these costs were connected to binge drinking and resulted in losses in workplace productivity, increased health care expenses and crime.²¹
- In 2013, an estimated 24.6 million Americans aged 12 or older—9.4% of the population—had used illegal drugs in the past month.²² An ACE score of three increases the risk of IV drug use by 93%.²³ Health care costs associated with drug dependency are \$11 billion dollars in 2016.²²
- Illegal drug use accounts for \$181 billion in health care, productivity loss, crime, incarceration and drug enforcement, which includes \$11 billion in health care costs alone.²⁴
- **National costs associated with serious mental illness are estimated to be in excess of \$300 billion.**²⁵

Violence:

- Adverse childhood experiences increase risks for first and subsequent incidents of violence as either a victim or the person causing harm.¹ A man with an ACE score of four is 400% more likely to be a perpetrator of domestic violence than a man with an ACE score of zero.¹
- Women who have experienced five or more ACEs are three times more likely than women who have experienced zero ACEs to be victims of domestic violence as adults.¹⁹
- People who have experienced four ACEs or more are eight times more likely than those with no ACEs to be raped later in life.²⁶

ACEs in Illinois

The Collaborative successfully petitioned the Illinois Department of Public Health to include an ACE module in the State’s 2013 Behavioral Risk Factor Surveillance System (BRFSS)—a CDC-developed survey that collects information on health risk behaviors, chronic diseases, use of preventive health practices and health access. The BRFSS contains data from a sample of Illinois adults 18 years old and older. The findings below summarize how the adults who took part in the survey describe themselves and their health. Wherever possible, ACE correlations are shown, but in some cases, the BRFSS sample size was insufficient to draw conclusions, so we present the available health condition data. In Illinois, ACEs are also the root cause of many chronic diseases, health risk behaviors and violence.²⁷

Prevalence of ACEs in Illinois:

- In 2013, 59% of adults in Illinois reported at least one ACE and 14.2% reported four or more, with the highest rates among women, African Americans and Latinos, younger adults, Chicago residents and residents with the lowest levels of education and socioeconomic status.²⁸
- In 2014, 32% of Illinois children birth to age 17 reported one to two ACEs and 9% reported three or more.²⁹
- In 2013, 60.8% of Illinois residents with four or more adverse childhood experiences in youth reported having a chronic health condition in adulthood.²⁸

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Illinois has spent more than \$12.5 billion a year in health care dollars to treat chronic diseases.

Chronic Conditions:

- Chronic diseases account for more than seven in ten deaths and affect more than half of Illinois residents.³⁰
- **The current prevalence of asthma in Illinois adults with four or more ACEs was 11.1%, according to the 2013 BRFSS.** This contrasts with a prevalence of 7.7% of current asthma in those with one to three ACEs and 5.6% in those without any ACEs.
- In 2014, 3.5% of adults had heart disease, and in 2015, there were 64,000 new cases of cancer.³¹

Smoking:

- Adults reporting current smoking in the 2013 BRFSS was 27.5% for people with four or more ACEs as compared with 10.5% for people with zero ACEs.

Overweight and Obesity:

- In 2015, 30.8% of adults were overweight³² and 37.1% of obese adults had an ACE score greater than or equal to four.

Behavioral Health:

- Among Illinois’ adult population, 3% of adults experience “serious psychological distress” and 8.4% suffer from depression.³³

➤ **Violence:**

- Violence is prevalent in the Illinois population. In 2016, Chicago has its highest murder rate in 20 years and one of the highest rates in the country.³⁴

➤ **Individual Health Perception:**

- The average number of days per month Illinois adults reported that their physical health was not good in the 2013 BRFSS was 5.0 days for people with four or more ACEs as compared with 3.4 days for people with zero ACEs.
- **The average number of days per month Illinois adults reported that their mental health was not good in the 2013 BRFSS was 6.9 days for people with four or more ACEs as compared with 2.5 days for those with zero ACEs.**

➤ **The Cost of Doing Nothing:**

- The Illinois Chronic Disease Cost Calculator estimates there will be a 60.3 % increase in medical costs, excluding absenteeism, in Illinois by 2020.³⁵
- Illinois has spent more than **\$12.5 billion** a year in health care dollars to treat chronic diseases.³⁶
- In 2006, Illinois spent \$1,679 per mental health client.³⁷

Notable Programs and Promising Practices

Fortunately, by using the right approaches—ones that harness neuroplasticity, or the brain’s inherent capacity to change—we can support healing of the brain and body as well as build resilience, which can prevent and treat the consequences of adversity. Yet, no one intervention alone can prevent or ameliorate childhood adversity. To address ACEs, we need a strong foundation that includes supportive families and prepared communities and schools, all of which require investment from each of us. Our systems work best when they work together.³⁸ The following are programs and promising practices that can help ameliorate the effects of childhood adversity.

- **Kaiser-Permanente Impact on Primary Care Utilization:** An independent organization analyzed the results of 100,000 medical screening evaluations which included ACE questions. A follow-up question was then asked by the primary care provider for each “yes” answer to an ACE question: “Tell me how that has affected you later in life.” **In the year following this screening and conversation, this simple intervention yielded a 35% reduction in doctor office visits, an 11% reduction in ER visits, and a 3% reduction in hospitalizations.**³⁹
- **Trauma-Informed Primary Care:** The National Council for Behavioral Health and the Kaiser Family Foundation convened a group of 14 health centers across the country to participate in the first ever Trauma-Informed Primary Care Initiative in 2015 in order to develop best practices in primary care delivery, mitigate the lasting effects of trauma and facilitate healing.⁴⁰ Data from this initiative will be available in 2017.
- **Health Systems Change—Family-Centered Medical Home:** Dr. Colleen Kraft, at the Cincinnati Children’s Hospital Medical Center, augmented the traditional patient-centered medical home model to ensure that the needs of the whole child are addressed in a comprehensive, developmentally appropriate and relationship-oriented context. She was able to use Medicaid dollars creatively for

services not traditionally considered “medical.” The Family-Centered Medical Home emphasizes addressing all physical and emotional needs as part of the medical relationship—including housing, food stability, benefit acquisition, education, education supports, intervention in domestic violence, mental health supports for the whole family, employment supports and parental re-entry issues. **This program eliminated premature delivery and low birthweight.**⁴¹

- **Home Visiting—The Nurse-Family Partnership:** The Partnership is the program most cited for improving maternal and child outcomes. It provides home visiting services for mothers, infants and families from a mother’s pregnancy through her child’s infancy.⁴² Services help encourage supportive family environments and economic stability, provide health education to reduce prenatal smoking and alcohol use and improve prenatal care access and utilization. Randomized controlled trials of these services showed a **decrease in abuse and injury and improvement in cognitive and socioemotional outcomes in children**⁴³ as well as reduction in mothers’ subsequent births during their late teens and early twenties and reduction in prenatal smoking among mothers who smoked at the start of the evaluation.⁴⁴ Similar home visiting programs, like *Altgeld Gardens Doula/Home Visiting Program*, *HANDS* and *Child First*, have been implemented locally and/or around the U.S. to provide family support as well as to reduce abuse and neglect during early development.

Using BRFSS ACEs data to identify high risk communities throughout Washington, the Family Policy Council created 42 community public health and safety networks encompassing families’ medical, social service and education providers. In total, the communities funded by the Council network saved the state an estimated \$55.9 million every two years.

- **Community Development and Healing Data—The Washington State Family Policy Council:** The Council has played a key role in mitigating and reducing ACEs throughout Washington State. Using BRFSS ACEs data to identify high risk communities throughout Washington, the Family Policy Council created 42 community public health and safety networks encompassing families’ medical, social service and education providers; and leaders within local government, courts, businesses, faith-based organizations and neighborhood organizations, which restructured natural supports and improved services and policies necessary to reduce the negative effects of ACEs. According to a 2010 report from the Washington Family Policy Council, targeted services demonstrated a decrease in:
 - Youth alcohol and drug use
 - Domestic violence and children in out-of-home placement due to abuse or neglect
 - Teen suicide attempts, teen pregnancy, teen violent crime

In total, the communities funded by the Washington Family Policy Council network saved the state an estimated \$55.9 million every two years.

- **Healthy Generations Program- Building Self-Healing Communities (Washington State):** The Building Self-Healing Communities program in Washington State showed remarkable impact on health outcomes with intensive work to build self-healing communities. **Results showed that people with two or more of the following health problems—diabetes, prediabetes, high blood pressure, high cholesterol, overweight or obese and four to eight ACEs—were able to reduce the incidence of these conditions from 60% to 35%.**⁴⁵

- **Helping Women Recover and Beyond Trauma:** These are research-based, manual-based programs for women with co-occurring substance abuse and mental health disorders. These programs have demonstrated **decreased substance use and improved depression and trauma symptomatology** for women who completed them.⁴⁶
- **Emergency Room—John H. Stroger Hospital of Cook County and Comer Children’s Hospital:** Both Chicago hospitals have implemented the **Healing Hurt People (HHP)** program. A program originally developed in Philadelphia, HHP is a trauma informed-approach to caring for patients in the emergency department who are victims of intentional injuries (stabbings or shootings). Needs of youth who have suffered from intentional trauma are addressed through medical follow-up, counseling for post-traumatic stress and other supportive services.⁴⁷ **98% of clients remain re-injury free, and participants are 70% less likely to be arrested within six months of injury than peers.**⁴⁸
- **Advocate Children’s Hospital:** Acknowledging that trauma and resilience must fit within the structure of health care systems, Advocate Children’s Hospital is committed to becoming a trauma-informed health care organization. In 2017, Advocate will be launching several initiatives including an educational platform on the effects of trauma for its associates, continued development of the behavioral health infrastructure, a campaign to begin including the social determinants of health in the patient problem list and school partnerships with districts in the Collaborative’s service area.

To address ACEs, we need a strong foundation that includes supportive families and prepared communities and schools, all of which require investment from all of us. Our systems work best when they work together.
- **Chicago Department of Public Health:** The Chicago Department of Public Health (CDPH) released its citywide policy agenda, *Healthy Chicago 2.0*, in the Spring of 2016. This agenda includes several strategies that directly impact city agencies’ adoption of trauma-informed practices. Since then, CDPH has launched an internal committee that will lead its internal organizational assessment and transformation process to become a trauma-informed department.
- **Triple P Positive Parenting Program:** A suite of interventions of increasing intensity for parents of children, birth to 16 years, Triple P was designed to give parents as much help as they need—but not too much—to prevent over-servicing and encourage self-sufficiency. Communities around the world have received Triple P training and enjoy outcomes such as **lower rates of child abuse, reduced foster care placements and decreased hospitalizations from child abuse injuries, improved parenting skills, well-being and confidence as well as decreased parental stress and depression.**⁴⁹
- **Benson Henry Institute and the Relaxation Response:** The Relaxation Response (RR) was described and taught by Dr. Herbert Benson as an antidote to the stress response (the human response to trauma) and helps reduce systolic hypertension, improve cardiac rehabilitation and relieve medical symptoms. **There is compelling evidence that the RR also elicits specific gene expression changes in people who practice either short-term or long-term.**⁵⁰ The Relaxation Response is one of many mind body modalities that can prevent and treat trauma symptoms and promote healing.
- **Writing About Trauma Improves Asthma:** Extending psychologist James Pennebaker’s research on writing and trauma to medical patients, in 1999, Joshua Smyth, Arthur Stone and colleagues at SUNY at Stony Brook assigned patients with asthma and rheumatoid arthritis either to write about the

most stressful event of their lives or to write about a neutral topic. Four months later, asthma patients in the experimental group showed improvements in lung function and arthritis patients in the experimental group showed a reduction in disease severity. In all, **47% of the patients who disclosed stressful events showed clinically relevant improvement**, whereas only 24% of the control group exhibited such improvement.⁵¹

- **Federal Partners Committee on Women and Trauma:** The Federal Partners Committee on Women and Trauma is chaired by the Department of Labor's Office of Disability Employment Policy (ODEP) and co-chaired by the Substance Abuse and Mental Health Services Administration (SAMHSA), and has more than 100 members representing 39 divisions from 13 federal agencies. Developed by SAMHSA's Center for Mental Health Services as a workgroup within the Federal Partnership on Mental Health Transformation, the Committee was established in 2009 in response to [Executive Order 13263](#) (2002) and the President's New Freedom Initiative Commission on Mental Health. The Committee held two national events, published two reports, hosts regular training events and a webinar series and has fostered numerous interagency collaborative efforts. The Committee has played a significant role in increasing understanding about the impact of trauma and violence across a wide range of sectors and settings. As a high-priority goal, the Committee recognizes that addressing the impact of trauma is growing within the federal government and that new approaches to preventing and responding are springing up across the country.
- **Legal Council for Health Justice:** The Council provides trauma-sensitive legal assistance through the Chicago Medical-Legal Partnership for Children (CMLPC) and the SSI Homeless Outreach Project.
 - **CMLPC** is an established, research-based intervention that joins medical care, social support services and expert legal assistance to improve care, promote better health and lower costs. The Medical-Legal Partnership model includes training medical, social service and education providers to identify health-harming legal needs and refer such patients to the legal partner. The legal team then provides trauma-sensitive legal services and uses the law to mitigate the causes and consequences of trauma. Finally, the program conducts systemic advocacy to reduce health and education disparities for all vulnerable children across Illinois.
 - The **SSI Homeless Outreach Project** provides expert legal representation to adult clients in metropolitan Chicago who are living with mental illness and are chronically homeless or at risk of homelessness. Staff take a trauma-informed approach to representing clients in obtaining Social Security benefits, access to health coverage and care coordination. Addressing a client's background of trauma is central to securing vital health services and income supports.

Policy Recommendations

Policy change at all levels of government and within multiple public agencies, private and public health systems, community organizations, educational systems, social services and philanthropy, can prevent and mitigate the impact of ACEs, trauma and toxic stress to create healthier communities. The following recommendations reflect an understanding of ACEs and trauma which requires multiple levels of policy change. To effectively address ACEs and trauma, we must look at the context in which they occur—within families, communities and society.

Small “p” policy changes within local systems and agencies can have an important impact on the people served, but large “P” policy at the federal, state and local levels will build the foundation for preventing and addressing ACEs in a systematic, lasting, comprehensive and upstream approach so that we may ultimately be less reliant on programs which focus on individuals and families who are already experiencing problems (“downstream”) because there will be fewer of them.

Governmental Policy

- **Equip policy makers with information about ACEs, trauma and the impact of toxic stress** so that governmental policy is responsive to our current understanding of how we can improve the health and well-being of our communities.
- **Support federal and state social policy** that supports families and communities, e.g., paid sick time and universal day care.
- **Provide universal health insurance** so that everyone has access to health care providers that can provide health promotion, early intervention, treatment and appropriate referral.
- **Expand workforce laws and coverage in Illinois to support community health workers** embedded in communities most affected by toxic stress.

Systems Level Changes

- **Strengthen the safety net** to better meet needs for food, shelter, literacy, employment, training and health care as supports to help prevent and mitigate ACEs/trauma and optimize the health and well-being of individuals, families and communities.
- **Increase awareness of ACEs/trauma and the importance of building resilience** across physical and behavioral health disciplines at every level of health care organizations, from top to bottom.
- **Equip providers and the systems they work in with the tools** to screen for and address social determinants of health *and* adverse experiences.
- **Develop trauma-sensitive health care systems** that prevent, recognize, mitigate and treat adversity/trauma in patients and staff in ways that promote healing and optimize well-being.
- **Encourage the use of hospital charity care dollars to be directed toward meeting social resource needs** that directly affect the ability of individuals and families to heal and flourish.

Program Changes

- **Use BRFSS data and proxies for high ACE scores to focus services and programs** designed to prevent and mitigate the results of high ACE scores (such as parenting programs, education and training, home visiting and substance use programs) in high-need geographic areas.
- **Utilize an ACE and trauma-informed framework in planning, funding and implementing services** for substance use and mental health disorders to assure that the etiology of these damaging conditions is addressed.
- **Increase funding for home visiting/parenting programs** which have demonstrated effectiveness in reducing occurrence and impact of ACEs.
- **Increase funding for evidence-based abuse, violence, and injury prevention and recovery programs**, noting the enormous return on investment based on program evaluation.

Payment and Reimbursement Changes

- **Develop innovative plans for use of health care expenditures by institutions and government** for trauma-informed practices such as **universal coverage for services and programs** that help to prevent and treat the consequences of ACEs/trauma by strengthening the dyad (parent-child) relationship through active coaching of parenting skills and healing/strengthening the brain and body through teaching self-regulation skills to patients and health care workers.
- **Build incentives into healthcare quality measures and reimbursement systems** including Medicare and Medicaid to encourage or mandate training, development of trauma-sensitive health care systems and, ultimately, universal screening and implementation of comprehensive treatment plans.
- **Explore federal waiver and state options** to reduce healthcare costs and integrate behavioral health, housing support and community based services in Illinois (similar to the Washington State 1115 Medicaid waiver submitted in October 2016) to address social determinants of health.

Self-Care Resources

These self-care resources are particularly relevant for healthcare professionals who may have their own trauma histories and are regularly exposed to the suffering of others. Public health professionals and other direct service providers may also find these resources relevant to their work.

[Secondary Traumatic Stress - National Child Traumatic Stress Network](#)

This fact sheet provides self-care strategies for child-serving professionals, outlining how individuals experience secondary traumatic stress and how to recognize symptoms, as well as strategies for prevention and intervention.

[Health Care Toolbox - Center for Pediatric Traumatic Stress](#)

This online toolkit provides self-care strategies for providers to use at work, at home, and beyond and also offers links to additional resources.

[Handbook on Sensitive Practice for Health Care Practitioners - Ottawa: Public Health Agency of Canada](#)

“This handbook presents information that can help health care practitioners practice in a manner that is sensitive to the needs of adult survivors of childhood sexual abuse and other types of interpersonal violence. It is intended for health care practitioners and students of all health disciplines who have no specialized training in mental health, psychiatry or psychotherapy and have limited experience working with adult survivors of childhood sexual abuse.”

[Raising Resiliency - Central Iowa ACEs 360 Steering Committee](#)

This online resource page attempts to consolidate existing resources that might benefit a community in responding to ACEs. It offers resources for professionals working in physical and mental health as well as those in the business community, faith-based groups and the criminal justice and education sectors.

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