

Adverse Childhood Experiences (ACEs) and Community Physicians: What We've Learned

Brian R Stork, MD, FACS¹; Nicholas John Akselberg²; Yongmei Qin, MD, MS¹; David C Miller, MD, MPH¹

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ABSTRACT

Introduction: The prevalence of childhood trauma, as measured by the Adverse Childhood Experiences (ACE) Study questionnaire, has been studied in a wide variety of community settings. However, little is known about physicians' familiarity with and use of the ACE questionnaire or the prevalence of childhood trauma in the physician community.

Objective: To survey a convenience sample of community-based physicians and resident physicians to assess for familiarity with and use of the ACE questionnaire in clinical practice and to measure the prevalence of their own ACEs.

Methods: An electronic survey was created and disseminated that included demographic questions, questions about physician awareness and use of the ACE questionnaire in clinical practice, and the 10-point ACE questionnaire.

Results: Most physicians surveyed (81%) reported they had never heard of the ACE questionnaire. Even fewer (3%) reported using the questionnaire in clinical practice. Most physicians (55.5%) reported no personal history of ACEs. Physicians reporting a history of childhood trauma reported a wide range of ACE scores (1-9). Compared with men, women reported a statistically higher number of ACEs ($p < 0.001$).

Conclusion: In this sample of community physicians, familiarity with and clinical use of the ACE questionnaire was low. Most physicians surveyed reported no personal history of childhood trauma. Of physicians reporting a history of childhood trauma, women were disproportionately affected. Physicians in this study reported a lower prevalence of ACEs than the population they serve. Physicians must become better educated and actively address the effects of ACEs on their patients and on themselves.

INTRODUCTION

The relationship between childhood trauma and behavioral and medical problems in adulthood was the subject of a large, cross-sectional study by Kaiser Permanente and the Centers for Disease Control and Prevention, known as the Adverse Childhood Experiences (ACE) Study.¹ Researchers in this study interviewed more than 17,000 adults in California between 1995 and 1997. Study participants were asked if they had during childhood ever experienced abuse (emotional, physical, or sexual), neglect (physical or emotional), or any of a number of specific household challenges (substance abuse, a family member with mental illness, parental domestic violence, parental separation or divorce, or the incarceration of a family member). Each participant was assigned an ACE score (eg, 0-10) depending on the number of trauma types s/he reported experiencing. In the study, 26% of respondents reported 1 ACE, 16% reported 2 ACEs, 9.5% reported 3 ACEs, and 12.5% reported experiencing

4 or more ACEs. Only 36% of respondents reported no history of ACEs.

Subsequent studies have shown that exposure to childhood trauma is a dose-dependent risk factor for a wide range of learning,² behavioral, and health problems in childhood^{3,4} and adulthood.^{5,6} Patients with a history of ACEs are more likely to engage in unhealthy behaviors such as overeating, physical inactivity, and smoking. These patients have been shown to disproportionately experience alcoholism, substance abuse,⁷ and depression.⁸ Individuals with a history of childhood trauma are also more likely to have sleep disturbances,⁹ obesity, diabetes, ischemic heart disease,¹⁰ chronic obstructive airway disease,¹¹ and cancer as an adult.¹² As a result, these patients are also at increased risk of early mortality.¹³

Little is known, however, about physicians' awareness and use of the ACEs questionnaire or the prevalence of childhood trauma in the physician community. In this study, we surveyed a convenience sample of community-based primary care physicians, specialists, and resident physicians to measure their awareness and use of the ACEs questionnaire in clinical practice. We also sought to determine the prevalence of ACEs among resident and attending physicians providing care for patients in the community, in Muskegon County, MI.

Health of Muskegon County

The ACE Study questionnaire (hereafter called the ACE questionnaire) has been used to study a wide variety of both urban and rural populations.¹⁴ Muskegon County, MI, is a good example of this research. Located along the shores of Lake Michigan,¹⁵ the county has a population of approximately 173,000 residents and a mix of both urban and rural living. The largest industries in the county are manufacturing, health care, and retail services, and its largest employer is Mercy Health.¹⁶ In 2017, the median household income for the county was \$46,077, and the poverty rate was 18.5%. The racial makeup of the county is estimated to be 76.5% white, 13.5% African American, and 5.5% Hispanic.

When it comes to longevity and health, Muskegon County regularly ranks in the bottom quartile of counties in Michigan. The *Michigan 2019 County Health Rankings Report*¹⁷ ranked

Author Affiliations

¹ Department of Urology, University of Michigan, Ann Arbor

² Department of Psychology, University of Michigan, Ann Arbor

Corresponding Author

Brian R Stork, MD, FACS (bstork@med.umich.edu)

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Muskegon County 63rd for longevity, 75th for health outcomes, and 78th for healthy behaviors, out of 83 counties in the state. This same report, however, ranked Muskegon County 9th in the state for clinical care resources (access to care and quality of care). In addition, an estimated 93.5% of the population of the county has health care coverage.¹⁵

HealthWest ACEs Assessment in Muskegon County

In an effort to understand the disconnect between the health of the county and the clinical care provided, the Resilience Muskegon team was created. This team is led by HealthWest, a community mental health agency in Muskegon, MI, and includes community members and partners from local health and human services agencies, education, and health care. The purpose of this team is to study the many factors driving unhealthy behaviors in the county and to help educate the community about trauma-informed care (TIC). Although a number of definitions for TIC exist, all are centered around creating a sense of control and empowerment for patients who have experienced trauma by addressing their physical, psychological, and emotional safety needs.^{18,19}

The team worked together, as part of a public education campaign, to administer the ACE questionnaire to 2252 Muskegon County adults (1.3% of the county's adult population) between November 2015 and September 2016.²⁰ Muskegon County ACEs were found to be higher than previously published statewide²¹ and national data.²² The most commonly reported ACE was a history of parental separation, reported by approximately 45% of respondents. In this survey group, 18.7% of respondents reported 1 ACE, 13.5% reported 2 ACEs, 10.3% reported 3 ACEs, and 31.4% reported experiencing 4 or more ACEs. Only 26% of respondents reported no history of ACEs. Women reported more than double the rate of childhood sexual abuse compared with men.²⁰

Educating, Implementing, and Coordinating Trauma-Informed Care

The Resilience Muskegon team has engaged in numerous activities to help educate the Muskegon community about ACEs and TIC. Efforts started in the public schools with the development of programs to educate administrators, teachers, paraprofessionals, coaches, and students about ACEs, trauma, mental health, and resilience. Thousands of community educators have been trained. Data from the HealthWest ACE survey were used to write a \$4 million System of Care grant to enhance services for youth with mental health needs and to help the community become more family focused and culturally responsive. This effort, branded MYalliance System of Care,²³ includes youth, family, mental health, child welfare, juvenile justice, educational, faith-based community, and other community-based organizations. MYalliance System of Care is working in the areas of youth and family engagement, development of a countywide mobile crisis unit, intensive care coordination, and interconnected school-based services.

Multiple local agencies and initiatives have since integrated trauma-informed approaches into their work. The Great Start Collaborative, a coalition of parents, educators, health

professionals, business leaders, and community leaders, has incorporated ACEs and resilience training into their programs. Access Health, a Muskegon nonprofit organization that works to create programs and partnerships around community health, began piloting a tool to measure resilience factors in its clients. Muskegon County, through the MYalliance System of Care initiative, is working to implement Handle With Care,²⁴ a partnership between law enforcement, schools, and mental health agencies. Handle With Care makes it possible for law enforcement to notify schools when students experience a traumatic event. As a result, students have the opportunity to receive psychological first aid and TIC in a safe environment and in the familiarity of their own school. Since inception of the MYalliance System of Care's trauma-informed approach in schools, the community has gone from having only 4 community-based mental health clinicians, from HealthWest and Hackley Community Care (a Federally Qualified Health Center in the county), in its schools to 22 (Lauren Meldrum, personal communication, 2019 Sep 9).^a

Over the years, a great deal of time and effort has been invested in educating the Muskegon County community about the effects of ACEs on human and population health. The extent to which this information has become part of the knowledge base and clinical practice of the physicians and resident physicians who provide care for this community, however, has previously not been studied.²⁵

ACEs and Physicians

Rates of screening for ACEs by Muskegon County physicians have previously not been studied. Also, to date, little is known about the prevalence of ACEs in the physician community. These deficits in knowledge are important for the community at large and for physicians. Studies have shown that medical students, residents, primary care physicians, medical specialists, and surgical specialists, during the course of their educational and professional careers, are at increased risk of a number of health and behavioral problems, including poor self-care, burnout,^{26,27} and suicide.^{28,29}

Given the unusually high prevalence of ACEs and reported lower life expectancy of residents of Muskegon County, compared with the rest of Michigan, we hypothesized that physicians providing care for patients in this community were very likely unaware of the ACEs questionnaire and were underusing it in their clinical practice. We also hypothesized, given the educational rigors and social support necessary to become a physician, that the prevalence of ACEs in the physician community would be lower than that of the community in general.

METHODS

Participants and Setting

The sample came from Mercy Health, a Medicare 5-star-rated hospital and health care system³⁰ that provides an estimated 85% of all health care services to the residents of Muskegon County. Mercy Health employs a large group of both primary care and specialty care providers, and a number of independent specialists are affiliated with the institution as well. The physician network also

provides training for residents in 5 different residency programs, including emergency medicine, family medicine, internal medicine, obstetrics and gynecology, and osteopathic manipulative medicine.

Among the Mercy Health medical staff and residents, 70% of physicians identify as men and 30% identify as women. Although official data on the racial makeup and diversity of the medical staff and residents are lacking, the estimated racial composition of the study group is 91% white, 2% African American, and 7% other racial groups (F Remington Sprague,

MD, personal communication, 2019 Feb).^b All Mercy Health physician assistants, nurse practitioners, and other nonphysician providers were excluded from this study.

Study Questions

Demographic Questions:

1. Are you an attending physician or a resident? (Attending/Resident)
2. What is your specialty? (Anesthesia, Emergency Medicine, Family Medicine, General Surgery, Internal Medicine, Internal Medicine Subspecialty, Obstetrics and Gynecology, Other, Pediatrics, Psychiatry, Radiology/Pathology, Surgery Subspecialty, Urology)
3. Are you a man or a woman? (Man/Woman)
4. What is your age? (18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+ y)
5. What is your race/ethnicity? (African Descent/black, white, Hispanic/Latino, Native American/Aboriginal, other)
6. Do you live in Muskegon County, Michigan? (Y/N)

ACE Awareness Questions:

7. Have you previously ever heard of the ACE questionnaire? (Y/N)
8. Have you ever asked the ACE survey questions to a patient in your practice? (Y/N)

ACE Survey Questions:

9. Did a parent or other adult in the household often or very often: Swear at you, insult you, put you down, or humiliate you? Or act in a way that made you afraid that you might be physically hurt? (Y/N)
10. Did a parent or other adult in the household often or very often: Push, grab, slap, or throw something at you? Or ever hit you so hard that you had marks or were injured? (Y/N)
11. Did an adult or person at least 5 years older than you ever: Touch or fondle you or have you touched their body in a sexual way? Or attempt or actually have oral, anal, or vaginal intercourse with you? (Y/N)
12. Did you often or very often feel that: No one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other? (Y/N)
13. Did you often or very often feel that: You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or your parents were too drunk or high to take care of you or take you to the doctor if you needed it? (Y/N)
14. Were your parents ever separated or divorced? (Y/N)
15. Was your mother or stepmother: Often or very often pushed, grabbed, slapped, or had something thrown at her? Or sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? Or ever repeatedly hit over at least a few minutes or threatened with a gun or knife? (Y/N)
16. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs? (Y/N)
17. Was a household member depressed or mentally ill, or did a household member attempt suicide? (Y/N)
18. Did a household member go to prison? (Y/N)

ACE = Adverse Childhood Experiences; N = no; Y = yes.

Study Design and Administration

An anonymous electronic survey was created using online survey software (Qualtrics, Qualtrics, Provo, UT, and Seattle, WA) that included the 10-point ACEs questionnaire, along with 6 basic demographic questions and 2 questions about familiarity with and use of the ACEs questionnaire (see Sidebar: Study Questions). An institutional review board application was made, and a waiver was granted from the University of Michigan.

Before administration of the survey, study questions were presented to the Mercy Health Medical Executive Committee for discussion and review. After the necessary approval was obtained, the Mercy Health Office of Medical Affairs electronically mailed the survey to the 402 active members of the medical staff and residents in training. After the initial invitation to complete the survey, 2 additional reminders were sent to the study group at 2-week intervals. Self-reported familiarity with and clinical use of the ACE questionnaire was ascertained. Similarly, physician responses to each individual ACE question and cumulative ACE scores were abstracted. A yes response to any question on the ACE questionnaire scored 1 point, with a maximum possible ACE score of 10.

Data Analysis

For statistical analysis, members of the medical staff were divided into 13 different specialty categories (see Sidebar: Study Questions, question 2). The χ^2 test was used to assess for statistical differences in ACEs between resident physicians and attending physicians, male and female physicians, white and nonwhite physicians, and among the different physician specialties. Data and statistical analyses were performed by a statistician in the Department of Urology at the University of Michigan, Ann Arbor. All analyses were performed using statistical analysis software (SAS version 9.4, SAS Institute, Cary, NC).

RESULTS

The survey was sent to the 65 residents in training and to 337 active medical staff at Mercy Health, and 226 physicians responded, for an overall response rate of 56.2%. Nine surveys did not indicate whether the respondent was a resident physician or member of the medical staff. Of the 217 remaining returned surveys, 48 (73.8% of 65) were from residents and 169 from medical staff members (50.1% of 337). Respondents' demographics and specialties are presented in Tables 1 and 2, respectively.

Knowledge and Use of ACEs Questionnaire

Forty-four physicians (19.5%) reported knowledge of the ACE questionnaire, whereas 182 (80.5%) physicians reported having no prior knowledge of the questionnaire. Eight physicians (3.5%) reported having used the ACE questionnaire in their clinical practice, whereas 218 (96.5%) physicians reported they had not. Ten surveys were returned with no response.

Demographic characteristic	Physicians, no. (%)
Age, y	
18-29	25 (11)
30-39	68 (30)
40-49	51 (23)
50-59	39 (17)
60-69	40 (18)
≥ 70	3 (1)
Sex^a	
Women	92 (41)
Men	133 (59)
Race/ethnicity	
White	205 (91)
African American	4 (2)
Hispanic	2 (1)
Native American	1 (0.4)
Other	14 (6.2)

^a One result is missing for sex.

Physician specialty	Physicians, no. (%)	Average no. of ACEs reported
Family medicine	53 (23.5)	1.0
Internal medicine	42 (18.6)	0.8
Other	25 (11.1)	0.8
Emergency medicine	24 (10.6)	1.0
Obstetrics and gynecology	21 (9.3)	1.3
Anesthesia	17 (7.5)	0.8
Surgical subspecialty ^a	16 (7.1)	0.9
Pediatrics	7 (3.1)	2.7
General surgery	5 (2.2)	1.0
Internal medicine subspecialty ^b	5 (2.2)	1.2
Radiology/pathology	5 (2.2)	0.2
Urology	5 (2.2)	1.8
Psychiatry	1 (0.4)	4.0

^a Surgical subspecialty: Cardiothoracic surgery, dentistry, neurosurgery, ophthalmology, oral maxillofacial surgery, otolaryngology, podiatry, or vascular surgery.

^b Internal medicine subspecialty: Cardiology, dermatology, gastrointestinal medicine, geriatrics, hospital medicine, nephrology, osteopathic and manipulative medicine, pain management, physical medicine and rehabilitation, pulmonary medicine, or rheumatology.

Physicians' ACEs

The average ACE score of all physician specialties was 1.0 (Table 2). Among physicians reporting a history of childhood trauma, the most commonly reported ACE was parental separation (20.5%). Reported least commonly were parental domestic violence (2.7%), physical neglect (1.8%), and having a family member who was incarcerated (2.3%). Given the length of each individual ACEs question, survey results are presented by category of childhood trauma (Table 3).

With respect to cumulative ACEs, 55.5% of physicians in this study reported none. Twenty percent of physicians reported an exposure to 1 ACE, 10% to 2 ACEs, 6.4% to 3 ACEs, and 8% to 4 or more ACEs. Two physicians (0.9%) reported exposure to 9 ACEs (Figure 1).

Physicians who identified themselves as women reported more cumulative ACEs than did men ($p < 0.001$). Women in this study were statistically more likely than their male counterparts to have experienced physical abuse (17% vs 8%, $p = 0.0339$) and sexual abuse (19% vs 5%, $p = 0.0006$). There were no significant differences in number of ACEs reported between resident and attending physicians, white and nonwhite physicians, primary care physicians and specialists, or between specialties.

DISCUSSION

Lack of ACE Awareness by Physicians

Most physicians responding to our survey reported they had not previously heard of the ACE questionnaire. Only a tiny percentage of respondents reported having previously administered the survey in their clinical practice.

A wide range of type and cumulative exposure to trauma was reported by physicians with a personal history of ACEs. However, compared with data from the HealthWest survey, physicians in our study reported a dramatically lower prevalence of both individual and cumulative ACEs than the patients they serve. Physicians who identified as women reported significantly greater exposure to physical abuse, sexual abuse, and cumulative ACEs than their male counterparts.

The American Academy of Pediatrics has published a policy statement encouraging its members to take an active role in assessing and educating the greater public about the long-term sequelae of ACEs.³¹ Findings from the present study, however, are consistent with data from other studies, demonstrating that both residents³² and attending physicians³³ are often unaware of the existence and availability of the ACE questionnaire.

Physicians' Interest in Learning More about ACEs

An unexpected outcome of the planning, preparation, and analysis of the study was the engagement and questions we received about the effects of childhood trauma and ACEs. For example, after our initial study proposal to the Mercy Health Medical Executive Committee, several physician leaders on the committee approached us and disclosed that this was the first time they had been introduced to the concepts of ACEs and TIC. Presentations of the findings of this study, both to the Mercy Health Medical Executive Committee and the Mercy Health Department of Surgery, have further served to facilitate discussion around this topic. Whether these discussions and new information about the prevalence and possible effects of ACEs in our patients and physician community will result in higher rates of ACEs screening remains to be seen.

Lack of Routine ACEs Screening

A review of the literature caused us to be concerned that routine screening for ACEs is not taking place, to any large degree, in community-based practices,³⁴ and data obtained from this study add to those concerns. Many of the common barriers to

Table 3. Physician responses by category of childhood trauma^a

Study question	Category of trauma assessed	Physicians, no. (%)
9	Emotional abuse	27 (12.3)
10	Physical abuse	25 (11.4)
11	Sexual abuse	23 (10.5)
12	Emotional neglect	23 (10.5)
13	Physical neglect	4 (1.8)
14	Parental separation or divorce	45 (20.5)
15	Parental domestic violence	6 (2.7)
16	Household substance abuse	27 (12.3)
17	Household mental illness	44 (20.0)
18	Incarcerated family member	5 (2.3)

^a Of 402 surveys sent to physicians, 220 were returned with questions 9-18 fully completed.

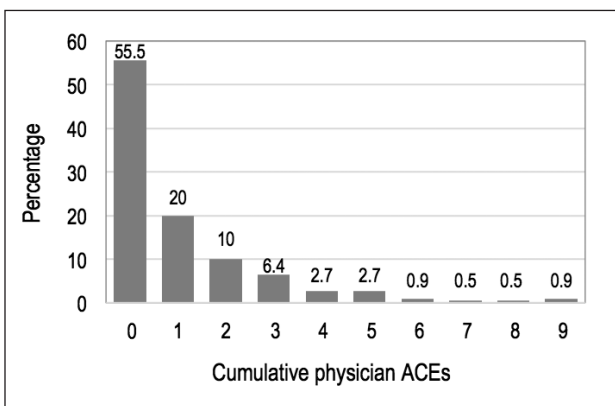


Figure 1. Physicians with adverse childhood experiences (ACEs), cumulative percentage.^a
^a Percentages do not total to 100% because of rounding.

implementing screening for ACEs in physician offices have already been identified and solutions put forward.³⁵ In addition, the American Academy of Pediatrics has published resources to help practices overcome these barriers and successfully implement office-based screening for ACEs.³⁶ At the 2019 Michigan State Medical Society House of Delegates Annual Meeting, Resolution 29-18 calling for “routine screening of ACEs in pediatric appointments” was approved.³⁷ It remains to be seen whether pediatricians and other physicians in our community will change their practice in response to the state medical society’s House of Delegates Resolution or the results of this study.

Effects of ACEs on Physicians

Research on the prevalence of physicians’ personal ACEs is only beginning to be performed. Most physicians in our study did not report any adverse experiences from their childhoods. Physicians who reported ACEs reported a wide range of type and cumulative exposure, including 2 physicians in this study who reported ACE scores of 9. Previous research has shown that women experience childhood trauma more often than men, and data from our study support those findings. Our study is unique in that most respondents were men.

Research on the effects of ACEs on physician health and well-being is also still in its infancy. However, a study from a Colorado treatment facility found that 78% of its clients with an ACE score of 4 or higher had a substance abuse problem, a mental health problem, or both.³⁸ Reports like this serve as an important reminder that, as humans, physicians have the propensity to experience the same kinds of neurobiologic responses to childhood trauma as their patients do.³⁹

Implications for Hospital Leadership, Patients, and Physicians

The results of this study have important implications for health care and hospital administrators, patients, and physicians. Health care leaders and hospital administrators can benefit from a better understanding of the potential cost-saving benefits of screening for ACEs. For example, Felitti⁴⁰ reported that patients at his institution who completed a trauma-related survey at home, and follow-up questions in the office, went on to experience a 35% reduction in outpatient visits and an 11% reduction in visits to the Emergency Department.

For the first time in history, reports indicate that most physicians in the US are employed, rather than being in private practice.⁴¹ As a result, health care and hospital administrators have an unprecedented opportunity to help educate physicians about the evidence-based effects of childhood trauma and the importance of screening for it. They are also in a unique position of being able to help foster the relationships and create the infrastructure needed to implement the TIC model in the community.

Patients who are educated about the relationship between childhood trauma and human health might be more willing to bring any personal history of trauma to their practitioner’s attention. In addition, patients with a history of ACEs may find information and programs that help with resiliency training to be useful.

Physicians stand to benefit from these findings, because a greater understanding of the biological and behavioral basis of disease might translate into improved clinical outcomes. This improved understanding might provide an opportunity for physicians to take better care of not only their patients but also themselves. In our experience, partnering with trauma-centered agencies and organizations has been energizing. It has given new meaning and a greater sense of purpose to our practice. A better understanding of this link could also provide clues, and possibly new treatment options, for physicians with a history of exposure to childhood trauma who display signs of disruptive professional behavior, burnout, depression, or suicidal ideations.

Helpful Resources

In addition to the references already cited, there are a number of more mainstream resources physicians can use to learn about the effects of ACEs and the fundamentals of TIC. Nadine Harris’ TEDMED talk, “How Childhood Trauma Affects Health Across a Lifetime,”⁴² provides a succinct and informative overview of the topic. The movies *Paper Tigers*⁴³ and *Resilience*⁴⁴ tell the stories of how other communities across America are embracing a TIC model of care. For more in-depth reading, there is Nadine Harris’ *The Deepest Well: Healing the Long-term Effects of Childhood*

*Adversity*⁴⁵ and Bessel van der Klok's book *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*.⁴⁶

Limitations

Our study has several limitations. Accurate administration of the survey was dependent upon the Mercy Health Office of Medical Affairs having up-to-date and working physician and resident email addresses. Overall, the physician response rate to the survey was 56%. Familiarity with ACEs, use of screening for ACEs, and prevalence of ACEs in the 46% of physicians and resident physicians who did not complete the survey remains unknown. An attempt was made to minimize response bias by allowing study participants to respond anonymously.

Among the respondents, resident physicians, men, and white physicians are overrepresented, compared with attending physicians, women, and physicians in nonwhite racial groups. This study, notably, has a lack of racial diversity among respondents.

CONCLUSION: THE FUTURE

Collectively, the findings from this study indicate a need to better educate our physician community about the health and behavioral sequelae of childhood trauma. Discussions about the benefits of, barriers to, and best practices for routine screening for ACEs need to take place. Conversations also should take place about how, once patients with a history of childhood trauma are identified, medical care can be optimally coordinated with the behavioral, health, and social services resources that are already available and currently being developed in our community.

Data from this study demonstrate that childhood trauma, as assessed by the ACE survey, occurs not only in patients but also—albeit to a lesser extent—in the physicians who care for them. Explanations for the differences in the prevalence of ACEs between nonphysician members of the Muskegon County community and the physicians who care for them remain to be explored. Further research into the physical and behavioral effects of ACEs on physicians has the potential to improve physician health and well-being and, by extension, clinical performance.

It is our hope that physicians in our community will make a serious effort to educate themselves about the effects of ACEs on human health and work to implement universal screening and a TIC approach in their clinical practices. We understand that most physicians do not have the time or resources to provide the specialized care that many of these patients need. However, by developing relationships, listening, making referrals, and coordinating care with existing community-based agencies and resources, physicians have the opportunity to improve the health of their patients. Additionally, they may also enjoy the benefit of professional and personal satisfaction that comes with being part of a TIC team. ❖

^a Lauren Meldrum, MPH, MYalliance System of Care Project Director, HealthWest, Muskegon, MI.

^b F Remington Sprague, MD, Chief Medical Officer, Mercy Health Partners, Muskegon, MI.

Disclosure Statement

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