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Addressing Perceived Barriers to Screening for Adverse Childhood Experiences in Primary Care

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Abstract

Problem: Inconsistent screening for Adverse Childhood Experiences (ACEs) in primary care settings leads to fewer appropriate behavioral health (BH) referrals and may increase risk for and incidence of chronic health conditions.

Methods: This quality improvement (QI) project used a descriptive observational design with prospective and retrospective data collection. The CDC's ACE screening tool was administered to patients 18 years and older presenting to primary care. Data collection included number of ACE screenings completed and the number of BH referrals made following the screening. In additional, information was collected from medical assistants (MAs) and providers about the ACE screening process.

Results: A total of 310 ACE screenings were completed by MAs. Of those screened, 21.61% (n = 67) scored two or greater making them eligible for a BH referral. Of the 67 eligible patients, 5.97% (n = 4) were referred to BH by the provider. In 61.69% (n = 41) of encounters eligible for a BH referral, providers did not address the patient's ACE score. Post-study surveys of staff revealed that 100% (n = 3) 'agreed' that the pre-study education received at the start of the project provided them a greater understanding of the screening process for ACEs. Only one provider out of four reported that ACE scores added value to the patient encounter.

Implications for Practice: Education for those administering ACE screenings can be successful in increasing confidence and knowledge of staff. Further exploration is needed to improve provider awareness of ACE screening scores and the importance of subsequent BH referral for at-risk individuals.

Keywords: *Adverse Childhood Experiences; Screening; Barrier; Trauma; Primary Care*

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Background and Significance

Adverse childhood experiences (ACEs) are events which occur during childhood and adolescence. These events can be traumatic and have a negative impact on health as one ages. In a landmark study Felitti et al. (1998) identified seven categories of ACEs: psychological, physical, sexual, substance abuse, mental illness, mother treated violently, and criminal behavior in household. Subsequent literature supports that the events are progressively associated with increased risk-taking behaviors and increased incidence of numerous chronic diseases such as coronary heart disease, asthma, and stroke (Merrick et al., 2019). ACEs may negatively impact education, job opportunities, and earning potential (Centers for Disease Control and Prevention [CDC], 2021). Jones et al. (2020) suggested that risk is particularly evident for individuals who have experienced several different types of ACEs due to prolonged activation of the body's stress response systems and dysregulation of normal emotional processing. ACEs are so prevalent that 60.9% of adults reported having experienced at least one adverse event, and 15.6% reported four or more adverse events (Merrick et al., 2019, p. 1001).

Tools that measure ACEs give providers a more complete clinical picture allowing them to better target patient interventions (Glowa et al., 2016). Furthermore, the act of screening increases patient trust in their providers (Flanagan et al., 2018; Rariden et al., 2021). Currently, primary care providers are not regularly screening patients for ACEs. Not screening for ACEs in the primary care setting leads to fewer otherwise appropriate behavioral health (BH) referrals.

Project Purpose and Aim

The purpose of this quality improvement project was to evaluate the occurrence of ACE screenings in a primary care office by addressing provider-perceived barriers to utilizing ACE screening tools. This project was a second-round continuation using the Plan-Do-Study-Act (PDSA) cyclical framework. Building upon the PDSA first-round which introduced ACE screening tools to a primary care setting, the aim of this project was to complete ACE screenings on 70% of patients aged 18 years or older at a primary care office, with referrals to behavioral health offered to patients with ACE scores of 2 or greater.

Problem Statement and PICO Question

ACE screening tools available from the CDC and an organization called *ACEs Aware* are underutilized and or used inconsistently in the primary care setting. Lack of screening for ACEs in primary care leads to a decrease in otherwise appropriate BH referrals and may lead to increased risk for and incidence of chronic health conditions. The question for this study project was:

What is the effect of educating and using staff who room patients in the primary care setting to complete an ACE screening on screening time, the number of patients screened for ACEs, and the number of BH referrals made over a two-month period?

Outcome Measures

Outcome measures for this project included the total number of ACE screenings completed and the number of BH referrals made. In addition, the confidence level of medical assistants (MAs) that completed ACE screenings with patients and the total time taken to complete each screening was measured. Provider satisfaction of ACE screening

implementation and confidence in discussing ACE scores was also assessed, with the goal that 70% of providers would report they felt ‘confident’ post-study.

Literature Review

A literature search was conducted to determine the progressive relationship between ACEs and adulthood health issues, ACE screening practices, and provider identified barriers to screening for ACEs in primary care. A search was made using the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Google Scholar, Cochrane Library, and PubMed. Boolean phrases “and” and “or” were used with the following list of search terms to expand the search: adverse childhood experiences, ACE, screening, barriers, primary care. The initial search yielded 2,555 results collectively. Results were refined to articles written in English published between January 2010 and July 2021. Inclusion criteria were study participants 18 years of age or older and peer reviewed articles. Exclusion criteria included participants younger than 18 years of age, and studies with participants who had previously received ACE screenings at the study site. After filtering for full text articles with abstracts, 325 articles remained. Duplicate articles were removed, resulting in 43 remaining articles for initial review for desired study design, population, and setting. Twenty of the 43 articles were selected for full review. Eleven of those underwent critical appraisal and were included in this literature review. Using the Johns Hopkins Evidence Level and Quality Guide, the majority of identified studies are high quality (A) but are all level V due to the cross-sectional and self-reporting nature required of screening for ACEs. Emerging themes identified include the long-term effects of ACEs, current screening trends for ACEs, provider-perceived barriers to screening for ACEs, and methods to overcome the identified barriers.

Emerging Themes

Long-Term Effects of Adverse Childhood Experiences

Awareness of the potential impact of adverse childhood experiences on later adult health is a concept studied for the past 25 years. Studies suggest there is a strong relationship between childhood exposure to adverse experiences and risk factors for leading causes of death in adults including but not limited to heart disease, diabetes, and suicide (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998; Shonkoff et al., 2012). Felitti et al. (1998) analyzed 8,506 self-reported mail-in questionnaires which included seven main categories of ACEs occurring the first 18 years of life. This information was compared to self-reported risk behavior, disease, and health status in adulthood. The authors concluded that participants who reported four or more ACEs had a 12 times greater risk of alcoholism, drug abuse, depression, and attempted suicide. Additionally, there was a two- to four-fold increased risk of smoking, poor self-rated health, and greater than or equal to 50 sexual partners. Lastly, a correlation with a 1.4 to 1.6 times greater risk of physical inactivity and severe obesity was found in those who reported four or more adverse events (Felitti et al., 1998). These findings clearly demonstrate a relationship between exposure to adverse events during childhood and increased social and behavioral risks as well as an increased risk of poor health outcomes into adulthood. Recommendations from this study included increasing training for healthcare professionals on the impact that ACEs have on physical and mental health later in life.

Campbell et al. (2016) analyzed data from the 2011 Behavioral Risk Factor Surveillance System (BRFSS) telephone survey. The BRFSS is a system of annual

telephone surveys at the state level coordinated by the CDC to collect health information to be used for fund allocation and health promotion activities. This was a large study completed in five U.S. states yielding a sample size of 48,526. Results revealed that 55.4% of respondents reported exposure to at least one ACE and 13.7% of respondents reported four or more ACEs. Another study by Kalmakis et al. (2018) found that 50% of its participants reported ACE scores of four or greater. Additional findings demonstrated high ACE scores were associated with increased risk-taking behaviors (Campbell et al., 2016; Currie et al., 2021; Felitti et al., 1998). Risk behaviors identified by Campbell et al. (2016) included binge or heavy drinking, smoking, and risky sexual encounters. A correlation was then identified between these risk behaviors and increased incidence of myocardial infarction, coronary heart disease, diabetes, stroke, depression, and disability. Recommendations from the Campbell et al. (2016) study suggested regular implementation of ACE screenings in primary care with targeted interventions to provide improved recognition, treatment, and prevention of ACEs.

Currie and Tough (2021) studied the relationship between adverse childhood experiences and illicit drug use during pregnancy. With a sample size of 1,660 predominantly married, well-educated, middle and upper middle-income pregnant women, the authors concluded that an ACE score of four or more had almost a four-fold increase in reported illicit drug use during pregnancy. The study identified blunted reward responsivity, difficulty in regulating emotions, and an increased risk for more intense reward-seeking behavior in those with elevated ACE scores. Those who had experienced multiple forms of child abuse such as physical, emotional, and sexual, were almost three times as likely to participate in illicit drug use during pregnancy (Currie &

Tough, 2021). Study results revealed that increased ACE scores correlate with a self-reported decrease in social support from respondents' parents. Recommendations from this study included screening pregnant women for ACEs and increasing available resources to decrease the potential for substance abuse while pregnant.

Current Screening Trends for Adverse Childhood Experiences

All primary care providers should routinely screen their patients for ACEs. However, Maunder et al. (2020) stated that 66.3% of family physicians screened for ACEs "when indicated," 31.7% of physicians surveyed screened for ACEs "never" or "not usually," while only 27.3% of physicians screened their patients for ACEs "routinely" (p. 2). This trend has remained constant for over ten years, as a study by Weinreb et al. (2010) found that fewer than one-third of providers regularly screened for ACEs.

Lack of screening for ACEs is found in established providers as well as family medicine residents. Tink et al. (2017) found that ACE screening rates by residents were "extremely low," indicating that new physicians are not being taught the importance of screening adult patients for adverse experiences during childhood.

Provider-Perceived Barriers to Screening for Adverse Childhood Experiences

Healthcare providers need to adopt an ACE informed mentality and regularly screen patients for ACEs in practice. Studies have indicated that providers may not complete ACE screenings due to perceived barriers. In a cross-sectional study that surveyed family physicians, psychiatrists, and other specialties, Maunder et al. (2020) identified four major barriers as perceived by providers. Of the 184 providers surveyed, 59% felt there to be a lack of follow up mental health resources available if an ACE were

identified. Separately, 59% expressed there is not enough time during an office visit to complete the screening. An additional 49.7% were concerned with causing unnecessary distress to the patient, while 43.7% reported a lack of confidence in addressing ACEs. These barriers were echoed by Tink et al. (2017) who reported that 22.3% of providers did not feel comfortable asking patients about psychosocial issues and 16.1% were concerned that screening may re-traumatize a patient. From these findings, the authors recommended focusing efforts on addressing provider-perceived barriers to screening for ACEs. After surveying seven primary care providers immediately after patient visits that included an ACE screening, Glowa et al. (2016) mentioned additional perceived barriers to screening for ACEs: ACE questionnaires may not be accepted by providers or patients, and the act of administering the questionnaire would interfere with the visit's purpose and/or would increase the length of the visit.

Overcoming Barriers to Screening for Adverse Childhood Experiences

Other reviewed literature focused on processes to reduce the perceived barriers to screening for ACEs. In a cross-sectional study, Flanagan et al. (2018) used MAs to complete ACE screenings. The study included 26 providers in both urban and rural offices. Prior to the study, providers received a two-hour long training while MAs received a one-hour long training on ACEs and screening procedures. While rooming patients, MAs provided patients with ACE questionnaires and assisted as needed to complete the screening prior to seeing the provider. Providers reviewed ACE scores and discussed them with patients as needed during the regularly scheduled visit. Ninety-one percent of patients reported feeling somewhat or very comfortable completing the ACE questionnaires, and 93% felt comfortable discussing their scores with the provider.

Providers reported a significant pre- to post-pilot increase in comfort discussing ACEs, providing education, and offering resources to patients. This study suggested that screening for ACEs is feasible and is generally accepted by patients. Recommendations from this study include standardizing the office workflow for ACE screening implementation with a linkage to mental health resources.

In a study by Glowa et al. (2016), nursing staff provided the ACE questionnaire when rooming the patient, after which providers reviewed screening results with patients during their visit. Although the sample size was small (111 screenings and seven providers), 100% of the providers felt that the ACE screening did not interfere with the patient visit and that the screenings only added five or fewer minutes in 90% of the appointments. The authors suggested that incorporating ACE screenings into routine care is "feasible and can provide a more complete picture of health determinants not usually assessed" (p. 307).

Kalmakis et al. (2016), Marsicek et al. (2019), and Rariden et al. (2021) all found ACE screenings to be feasible in the primary care setting and recommended screenings for regular practice.

Marsicek et al.'s (2019) cross-sectional study sent standardized ACE screening questionnaires with instructions to patients to be completed prior to the patient visit. After sampling 1,206 patients in a pediatric primary care clinic, it was determined that patients can, and should, be screened for ACEs using a standardized ACE-specific screening tool.

Lastly, a meta-analysis by Rariden et al. (2021) reviewed 13 studies from various settings, finding that adult patients with or without a history of trauma felt it was acceptable to be screened for past trauma and had the expectation that their clinicians

would be able to help them. The reviewed samples were of relatively small sample size, which was identified as a limitation.

Gaps in the Literature

Limitations among studies are similar: self-reported results may provide underreported and/or inaccurate information. A gap in the literature appears to be a lack of targeted education to patients. Without understanding the impact of ACEs on health and health behaviors, individuals may be unwilling or uncomfortable sharing this type of information. To address this, providers in this study were encouraged to educate patients on the significance of the screening score and the importance of following through with BH referrals when offered.

Literature strongly supports that adverse experiences during childhood do have a negative impact on health, morbidity, and mortality into adulthood. Research indicates that ACE screening tools are useful in identifying adverse experiences in childhood. Furthermore, this literature review commends the need for regular and consistent ACE screening with standardized tools in primary care settings. Underutilization in primary care is due to perceived time restrictions and discomfort in talking about the subject of childhood trauma with patients. In addition, using ACE screening tools requires increased provider and staff training. This clinical scholarly project focused on removing these perceived barriers by having MAs complete ACE screenings with patients, which were then reviewed by the provider.

Quality Improvement Framework for Change

The Plan-Do-Study-Act (PDSA) framework to facilitate change was selected for this quality improvement project. This framework is a cyclical scientific method with

four stages. The Institute for Healthcare Improvement (n.d.) explains that when using this process, changes are planned, tried, observed and analyzed, and then acted upon. Researchers then use what is learned from the previous trial phase to modify and continue into the next phase, continuing the cycle. This QI project was a second-round cycle that built upon a previous QI project that took place in the same primary care organization. In the first PDSA cycle, the primary investigator who was a primary care provider, singularly completed ACE screenings during office visits with referrals to BH made for scores of two or higher. This second-cycle project was expanded to include multiple providers with MAs trained to complete ACE screenings to minimize the perceived barriers of adding time to each office visit, with a goal for future expansion to system-wide routine screenings for ACEs. The first cycle measured the number of ACE screenings completed, and the number of BH referrals made. This project cycle added an educational element for providers and rooming staff. In addition to measuring the number of screenings completed and BH referrals made, outcome measures of MA and provider confidence with the ACE screening and discussion process, and the timeliness of ACE screenings was added.

Methods

Design

This quality improvement project was an observational study with prospective and retrospective data collection that followed staff and provider education prior to data collection. Data was collected from February 1 to March 31, 2022. Data collected included the number of ACE screenings performed, the number of BH referrals made, and post-surveys measuring satisfaction and confidence of MAs and providers.

Setting and Sample

This project took place in a primary care office in a Midwest urban setting using convenience sampling of patients aged 18 years of age and older who presented seeking routine primary care. A unique alphanumeric identifier was assigned to each patients' information for deidentification (combination of the patients first and last initials and date of birth in month/day/year format, which generated a unique ten-digit identifier). All collected information was de-identified, with all data stored within a password-protected computer in the primary investigator's home. A master list of codes and patient presentation date was also stored in the private investigator's password protected computer.

Procedures

Addressing perceived barriers to screening for adverse childhood experiences was a quality improvement project requested by the primary stakeholder (a partnering primary healthcare organization with multiple locations) and led by a Doctor of Nursing Practice (DNP) student who served as primary investigator. This project used the CDC's ACE screening tool which was previously uploaded into the healthcare organization's electronic health record (EHR) for use during the first PDSA cycle (see Appendix A). Staff used this ACE screening questionnaire along with a script that was printed for them to ensure consistency of staff-patient engagement. To enhance staff buy-in, the MAs rooming patients at the start of regular office visits were educated on adverse experiences in childhood and their potential long-term negative health impact into adulthood (see Appendix B for the fact sheet provided to staff). ACE screenings were timed and completed with patients by the MAs for the study's duration. Timing ACE screenings

provided insight to the functionality of study design. Providers also received education on the importance of screening for ACEs, referring to BH if a patient's ACE score was two or higher, and encouraged patients to keep their BH referrals (see Appendix C for the fact sheet given to providers). Once ACE screenings were completed, the primary care provider proceeded with their regular office visit, reviewing ACE scores with patients as needed or requested. Each screened patient also received an educational sheet about ACEs (CDC, November 2019). Data collection included the total number of ACE screenings completed and number of BH referrals made. In addition, post-study surveys of the MAs that administered screenings as well as the providers who reviewed them with patients (see Appendix D for MA surveys, and Appendix E for provider surveys) were collected and analyzed.

Data Collection/Analysis

De-identified data was collected prospectively February through March 2022 for this second PDSA cycle. Data was entered into Microsoft Excel and analyzed using descriptive statistics to determine the effectiveness of education delivered to staff and their attitudes toward the new ACE screening process. Additional data included the effect of increased ACE screenings on the number of BH referrals offered.

Approval Processes

Approval was obtained from the participating healthcare organization's Chief Medical Officer (CMO) on November 18, 2021. The project was deemed as quality improvement and approval was obtained from the primary investigator's host university Institutional Review Board (IRB) on January 10, 2022.

Results

Demographics

The sample included 310 patients aged 29 to 90 years, with a mean age of 67 years (*SD* = 12.34). Of the 310 patients, 63 were aged 59 years or younger while 247 (79.68%) were aged 60 years or older.

ACE Screenings

During the two-month implementation period, 1,401 patients aged greater than 18 years presented to the partnering primary care office for a routine visit, with a total of 310 ACE screenings administered (*n* = 310). Therefore, screenings were conducted at a 22.13% compliance rate. This number may have been impacted by a ten-day period when no screenings were completed due to unforeseen office misunderstanding of collection dates. After removing that ten-day period, a total of 1,158 patients were seen for primary care visits, which increased ACE screening compliance to 26.77%. Of the 310 patients who were successfully screened, 67 scored a two or greater making them eligible for a BH referral. Of those 67 eligible for a BH referral, four (5.97%) received referrals. Figure 1 displays the breakdown of applicable patients who were not referred to BH. As shown in Figure 2, 78.39% of patients reported an ACE score of zero or one (*n* = 243).

Figure 1

Eligible Patients not Referred to Behavioral Health

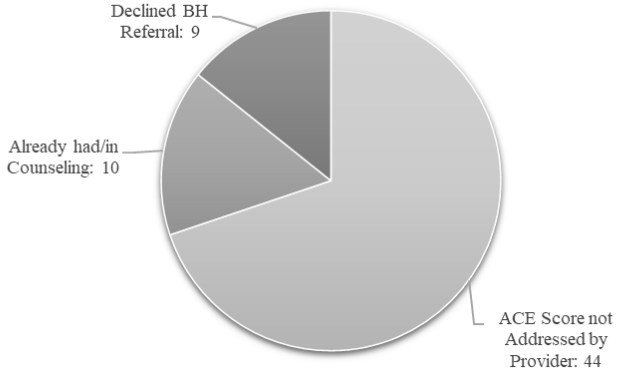
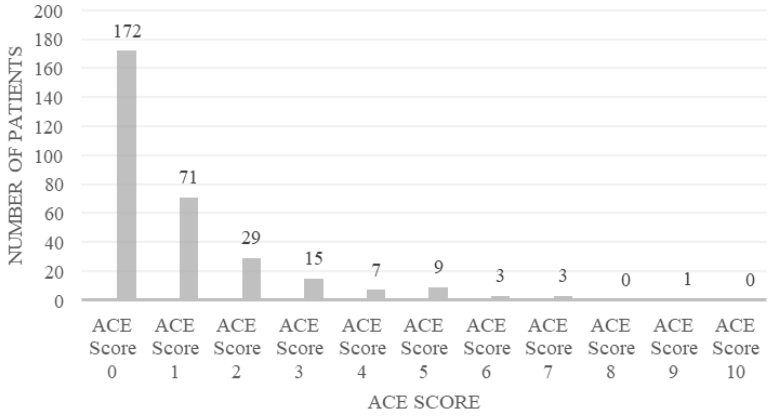


Figure 2

Number of Patients by ACE Score



Staff and Provider Post-Study Surveys

Seven providers (five physicians and two nurse practitioners) and six MAs took part in this study. Of those participants, three MAs and four providers returned anonymous surveys post-project regarding their experience. All three MAs selected ‘agree’ that the pre-study education received from the primary investigator at the start of the project provided them a greater understanding of adverse childhood events, and two of the three (66.67%) selected ‘agree’ that the pre-study education was helpful when screening patients for ACEs. When assessing post-study confidence of MAs in screening for ACEs, one MA selected ‘confident’ while two selected ‘neutral’ (66.67%).

Of the four providers surveyed, one reported that ACE scores added value to the patient encounter (25%), while three providers selected ‘neither agree nor disagree’ (75%). Two providers reported they felt ‘confident’ discussing ACE scores with patients (50%), while two providers selected a ‘neutral’ (50%) level of confidence post-study.

Discussion

While 310 patients were screened for ACEs, implementation of this QI effort did not appear to accomplish the purpose of increasing the number of ACE screenings with referrals made to BH for ACE scores of two or greater. Neither the 22.13% or 26.77% screening compliance rates met the set goal of 70% for all patients aged 18 years or greater. These numbers also fell below the Flanagan et al. (2018) study which described a 78% (n = 375) ACE screening compliance rate for eligible patients. Additionally, the distribution of ACE scores for this QI initiative was lower than other studies. Glowa et al. (2016) described an ACE score of four or more from 22% (n = 24) of patients, while only 7.42% (n = 23) of patients in this QI initiative reported the same (p. 305).

With only four BH referrals (5.97% of all applicable patients), the project did not meet the stated goal of referring 90% of all patients with an ACE score of two or greater to BH. The descriptive data analysis and lack of applicable retrospective data collection does not allow for determination of statistical significance in ACE screening compliance or BH referrals. As seen in the average patient age of 67, the patient population at the primary care site selected for this project is in mid to late stages of life. Therefore, many patients did not feel that they would benefit from a BH referral and counseling. This was reflected in much of the verbal and written feedback from staff participating in the ACE screening and referral process. Future PDSA cycles regarding ACE screenings may be better suited in an office with a majority patient population aged 55 years and younger.

With only 50% of providers reporting confidence in addressing ACE scores, this project also did not meet the stated goal of 70% provider post-study confidence and reinforced the study by Tink et al. (2017) that noted decreased levels of provider comfort in discussing social issues and trauma. Providers noted both verbally and in the post-

study survey that they felt screening for ACEs added time to appointments. Even though the average reported screening time for this study was only 5.19 minutes, this reinforced previous studies on ACE screening that noted providers to believe screenings add too much time to, or take too much from, the regular patient visit (Maunder et al., 2020 and Glowa et al., 2016). Having MAs complete the screening did not appear to remove the perceived added time barrier identified in the literature.

A recommendation for practice to address the low number of BH referrals is to embed a flagging system in the electronic health record that requires the provider to refer to BH when a patient presents with an ACE screening score of two or greater.

Conclusion

Using MAs to screen patients aged 18 years and older in the primary care setting in this second-cycle PDSA QI project did not appear to increase the number of ACE screenings or subsequent BH referrals made. While perceived barriers were addressed, further study is needed to identify if additional education will better motivate providers to integrate ACE screening and BH referrals into their primary care practice.

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Appendix A

ACE Screening Questionnaire (CDC, 2021)

Please circle yes or no question as honestly as possible, we will use these answers to calculate your score. You will have the option to discuss the questionnaire with your provider if you wish and feel comfortable doing so.

1. Before your 18th birthday, 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?	NO	YES
2. Before your 18th birthday, 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?	NO	YES
3. Before your 18th birthday, did an adult or person at least five years older than you ever touch or fondle you or have you touch their body in a sexual way? OR attempt to actually have oral, anal, or vaginal intercourse with you?	NO	YES
4. Before your 18th birthday, 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?	NO	YES
5. Before your 18th birthday, 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?	NO	YES
6. Before your 18th birthday, was a biological parent ever lost to you through divorce, abandonment, or other reason?	NO	YES
7. Before your 18th birthday, 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?	NO	YES
8. Before your 18th birthday, did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?	NO	YES
9. Before your 18th birthday, was a household member depressed or mentally ill, or did a household member attempt suicide?	NO	YES
10. Before your 18th birthday, did a household member go to prison?	NO	YES

Appendix B

Educational Fact Sheet Provided to Staff Prior to Start of Study

What are Adverse Childhood Experiences (ACEs)?

- Traumatic events during childhood that are harmful into adulthood.
- ACEs are associated with increased risk-taking behaviors (i.e. binge or heavy drinking and smoking).
- ACEs contribute to several leading causes of death: coronary heart disease, asthma, stroke, and suicide.

Facts about ACEs

- 60.9% adults report having experienced at least one ACE and 15.6% experience four or more ACEs
- People with ACE scores of four or greater have:
    - 12 times greater risk of alcoholism, drug abuse, depression, and attempted suicide
    - Two- to four-fold risk of smoking, poor self-related health, and greater than or equal to 50 sexual partners
- ACEs lead to a blunted reward system, difficulty regulating emotions, and increased reward-seeking behavior.

Perceived Barriers to Screening for ACEs

- Perceived lack of time in common office visit
- Concern for causing unnecessary distress to the patient
- Lack of confidence in addressing ACEs

Barriers de-Bunked

- Data has revealed that patients feel comfortable completing ACE questionnaires and discussing scores with their provider.
- Screening for ACEs when rooming only added five or fewer minutes in 90% appointments
- Screening for ACEs in primary care is feasible

What Can We Do?

- Screen every patient aged 18 years or older for childhood ACEs
- Refer ACE scores ≥ 2 to behavioral health
- Encourage patients to schedule and keep their behavioral health appointments

Routinely screening patients for ACEs is important so that we can intervene when appropriate and refer to behavioral health. The goal is to develop *healthy* coping mechanisms to working through the childhood trauma, which will help prevent chronic diseases that commonly lead to illness and death.

Information contained in this educational pamphlet obtained from:

Merrick et al. (2019): *Morbidity and Mortality Weekly Report, 68*(44)
Felitti et al. (1998): *American Journal of Preventive Medicine, 14*(4)
Flanagan et al. (2018): *Journal of Women's Health, 27*(7)
Glowa et al. (2016): *The Journal of the American Board of Family Medicine, 29*(3)

Appendix C

Educational Fact Sheet Provided to Providers Prior to Start of Study

What are Adverse Childhood Experiences (ACEs)?

- Traumatic events during childhood that are harmful into adulthood
- ACEs are associated with increased risk-taking behaviors (i.e. binge or heavy drinking and smoking).
- ACEs contribute to several leading causes of death: coronary heart disease, asthma, stroke, and suicide.
- Experiencing several different types of ACEs leads to the development of toxic stress (prolonged activation of the body's stress response systems) and dysregulation of normal processing (the inability to process or manage one's emotions as stimuli are introduced).
- ACE scores offer a more complete clinical picture and allows better targeting of patient interventions, while the act of screening increases patient trust in their providers.

Facts about ACEs

- 60.9% adults report having experienced at least one ACE and 15.6% experience four or more ACEs (Merrick et al., 2019)
- People with ACE scores of four or greater have:
    - 12 times greater risk of alcoholism, drug abuse, depression, and attempted suicide
    - Two- to four-fold risk of smoking, poor self-related health, and greater than or equal to 50 sexual partners (Felitti et al., 1998)
- ACEs lead to a blunted reward system, difficulty regulating emotions, and increased reward-seeking behavior.

Current Screening Trends for ACEs

- 31.7% of physicians screen their patients for ACEs "never" or "not usually;" and
- Fewer than one third (27.3%) of physicians screened their patients for ACEs "routinely" (Maunder et al., 2020).

Perceived Barriers to Screening for ACEs

- Perceived lack of time in common office visit
- Concern for causing unnecessary distress to the patient
- Lack of confidence in addressing ACEs (Maunder et al., 2020, Glowa et al., 2016, & Tink et al., 2017).

Barriers de-Bunked

- 93% patients felt comfortable discussing ACE scores with their provider;
- Providers reported significant pre- and post-pilot increase in comfort discussing ACEs, providing education, and offering resources to patients (Flanagan et al., 2018).

- Screening for ACEs when rooming only added five or fewer minutes in 90% appointments (Glowa et al., 2016).
- Screening for ACEs in primary care is feasible (Kalmakis et al., 2016, Marsicek et al., 2019, & Rariden et al., 2021).

What Can We Do?

- Screen every patient aged 18 years or older for childhood ACEs
- Refer ACE scores ≥ 2 to behavioral health
- Encourage patients to schedule and keep their behavioral health appointments
- Stress to patients that a referral to behavioral health does not mean they have a mental illness

Routinely screening patients for ACEs is important so that we can intervene when appropriate and refer to behavioral health. The goal is to develop *healthy* coping mechanisms to working through the childhood trauma, which will help prevent chronic diseases that commonly lead to illness and death.

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Appendix D

Post-Study Survey of Rooming Staff

Please answer the following questions regarding the last three months of study period. These questions pertain to screening for adverse childhood experiences (ACEs).

How strongly do you agree with the following…?			
1. The pre-study education received provided me a greater understanding of ACEs.	Disagree	Neither Agree nor Disagree	Agree
2. The pre-study education was helpful for me when screening patients for ACEs.	Disagree	Neither Agree nor Disagree	Agree
3. Screening patients for ACEs is an important way that I now contribute to the healthcare team.	Disagree	Neither Agree nor Disagree	Agree
4. I feel an increased sense of purpose in my role to help patients when screening for ACEs.	Disagree	Neither Agree nor Disagree	Agree
5. After this study, how confident are you discussing and screening for ACEs?	Not Confident	Neutral	Confident
6. Screening for ACEs caused unnecessary distress for patients.	Disagree	Neither Agree nor Disagree	Agree
7. We should continue screening for ACEs this way.	Disagree	Neither Agree nor Disagree	Agree
Comments:			

Appendix E

Post-Study Survey of Providers

Please answer the following questions regarding the last three months of study period. These questions pertain to screening for adverse childhood experiences (ACEs).

How strongly do you agree with the following…?			
1. The pre-study education provided increased my awareness of ACEs.	Disagree	Neither Agree nor Disagree	Agree
2. Following this study, I better understand the impact that ACEs have on chronic disease.	Disagree	Neither Agree nor Disagree	Agree
3. Screening for ACEs is valuable for improving patient outcomes.	Disagree	Neither Agree nor Disagree	Agree
4. Discussing ACE scores did not interfere with my patient's visit.	Disagree	Neither Agree nor Disagree	Agree
5. ACE scores added value to the patient encounter.	Disagree	Neither Agree nor Disagree	Agree
6. ACE screenings are a significant part of chronic disease prevention.	Disagree	Neither Agree nor Disagree	Agree
7. Discussing ACE scores caused unnecessary distress for my patients.	Disagree	Neither Agree nor Disagree	Agree
8. After this study, how confident do you feel discussing ACE scores with patients?	Not Confident	Neutral	Confident
9. I discussed, or gave the opportunity to discuss, my patient's ACE scores ≥ 50% time.	Disagree	Neither Agree nor Disagree	Agree
10. We should continue screening for ACEs this way.	Disagree	Neither Agree nor Disagree	Agree
Comments:			