

Screening for Adverse Childhood Experiences in Pediatric Primary Care

by

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A DNP Project Manuscript
Submitted in Partial Fulfillment of the Requirements for the
Doctor of Nursing Practice Degree

University of Maryland School of Nursing
May 2020

Abstract

Problem & Purpose: Pediatric mental illness is a growing epidemic in the United States, yet the average time from onset of symptoms to treatment is eight to ten years. Screening children for Adverse Childhood Experiences (ACEs) is associated with early identification of mental illness risk and improved outcomes. The purpose of this quality improvement project was to implement an ACEs Screening Program for adolescents in a pediatric primary care practice and evaluate the program's effectiveness in early risk-identification and referral to mental health services.

Methods: Patients ages 8-18 years were screened for ACEs using the *Center for Youth Wellness Adverse Childhood Experiences Questionnaires (CYW ACE-Q)* during routine pediatric well visits and consults. Patients and/or caregivers self-completed the pen/paper *CYW ACE-Q* screening tools and pediatricians then analyzed and discussed the results with the patients and/or caregivers. Patients with positive screens were referred to mental health services if not already under care, and appointments were confirmed by the office practice nurses. Statistical Process Control procedures were utilized to demonstrate change over time with screening and referral.

Results: Over 70% of all eligible patients and caregivers during the 13-week implementation period were screened for ACEs (n=232). Of those, 14% (n=32) screened positive, and four were referred for mental health services. Phone-call follow-up to referred patients found one patient obtained an appointment with a mental health professional. Eighty-eight percent of stakeholders strongly agreed that the screening program was feasible for well visits and consults.

Conclusions: An ACEs Screening Program using the *CYW ACE-Q* tools is an effective and feasible strategy for primary care practices to identify children at higher risk for mental illness and facilitate earlier referral to mental health services. This increase in early identification and referral of higher-risk children can play a key role in decreasing the burden of pediatric mental illness and its associated complications in the United States.

Introduction

Pediatric mental illness is a growing epidemic in the United States with catastrophic consequences. Mood disorders are the most common cause of hospitalization for children ages 10-17 years (Agency for Healthcare Research and Quality & Healthcare Cost and Utilization Project, 2011), and tragically, suicide is the second leading cause of death for children and young adults between the ages of 10–24 years, with an over 40% increase in pediatric suicide rates since 2007 (Centers for Disease Control and Prevention [CDC], 2019). An estimated one in eight children ages 8 to 15 years old and one in five children ages 13 to 18 years old live with a serious mental illness (National Institute of Mental Health, 2017), yet the average time from symptom onset to treatment is eight to ten years (National Alliance on Mental Illness, 2018).

Adverse Childhood Experiences (ACEs) are defined as stressful or traumatic events, such as abuse, neglect, or witnessing violence, that take place before a child is 18 years old. Early identification of ACEs is associated with risk-reduction and improved physical, mental, and behavioral outcomes (Bethell et al., 2017; Purewal et al., 2016). An estimated 50 to 60% of American children under 18 years of age experience at least one ACE, with an excess of 25% of children experiencing three or more ACEs (Bethell et al., 2017; Grabbe & Miller-Karas, 2018). In a landmark survey by Felitti et al. (1998), a strong dose-response relationship was observed between the number of ACEs and risk for poor physical and mental health outcomes.

Given the strong association between ACEs exposure and mental illness, routine assessment for ACEs in the pediatric primary care setting serves as a powerful method to improve earlier identification and referral of children at risk for mental illness. Screening for ACEs at annual pediatric primary care visits is recommended by the American Academy of Pediatrics (AAP) to facilitate early identification and intervention (AAP, 2014). The purpose of this quality improvement (QI) project was to implement an Adverse Childhood Experiences

Screening Program for patients ages 8 through 18 years old in a pediatric primary care practice and evaluate the screening program's effectiveness in early risk-identification and referral to mental health services (MHS).

Literature Review

Before implementing the ACEs Screening Program, a literature review was conducted to identify a valid and reliable screening tool, as well as design a workflow process particularly suited for the pediatric primary care setting that served as the project implementation site. The review examined a total of 21 unique ACEs screening tools, each with their own target population and administration process. These tools differed in the types and numbers of ACEs they address, the number of items on the tool, psychometrics, scoring and reporting of results, and whether they address the parent's or child's ACE exposure. While no one tool was identified to be best supported by the literature, the *Center for Youth Wellness Adverse Childhood Experiences Questionnaires (CYW ACE-Q)* were cited by multiple sources as being reliable, valid, feasible, and well-received in the pediatric primary care setting (Bethell et al., 2017; Purewal et al., 2016). The *CYW ACE-Q* tools are found in Appendix A.

The target population varied between studies as well as the screening administration process, with some completing the screen upon office check-in, others conducting the screening assessment during the visit, and still others arranging a separate time (Bethell et al., 2017; Flynn et al., 2015; Gillespie & Folger, 2017; Marie-Mitchell & O'Connor, 2013; Purewal et al., 2016). The consensus among studies was that aggregate-level screening tools, which have a combined ACEs score without divulging specific ACEs, are more effective in detecting ACEs than item-level screening tools, which require the participant to identify which ACEs they have exposure to (Gillespie & Folger, 2017; Purewal et al., 2016). The literature was consistent in the recommendation to take a population-wide approach to screening, rather than a high-risk

approach, given that ACEs cross all demographics (Bethell et al., 2017; Marie-Mitchell & O'Connor, 2013). Most studies found that clinicians felt comfortable carrying out the screening, perceived the screening as useful and feasible, and perceived caregivers to be receptive towards the screening (Flynn et al., 2015; Gillespie & Folger, 2017; Marie-Mitchell & O'Connor, 2013).

Evidence regarding the outcomes of screening for ACEs in the pediatric primary care setting is promising. Much of the literature reviewed concluded that children with four or more ACEs on screening were identified as already having mental, emotional, and/or behavioral health conditions, demonstrating the screen can identify at-risk children (Bethell et al., 2017; Marie-Mitchell & O'Connor, 2013). All studies reported positive outcomes from screening for ACEs, including earlier identification of high-risk children, increased referrals to MHS and community resources, improved parent/patient-provider relationships and parent satisfaction, and decreased risk of adverse mental health outcomes (Bethell et al., 2017; Flynn et al., 2015; Gillespie & Folger, 2017; Marie-Mitchell & O'Connor, 2013; Purewal et al., 2016).

In summary, the evidence supported the use of an aggregate response tool, such as the *CYW ACE-Q* to screen the pediatric population for mental health risk. Providers viewed this tool as valuable and feasible for use in the pediatric primary care setting. Implementation of ACEs screening programs resulted in increased identification of at-risk children and referral to mental health services and community resources, decreased adverse childhood outcomes, and improved parent-provider and patient-provider relationships (Bethell et al., 2017; Flynn et al., 2015; Gillespie & Folger, 2017; Marie-Mitchell & O'Connor, 2013; Purewal et al., 2016). The strength and quality of the evidence supported the implementation of an ACEs Screening Program in pediatric primary care. Appendix B displays the Evidence Review Table.

Theoretical Framework

The theoretical framework for this QI project was Ajzen's (1985) Theory of Planned Behavior (TPB). The TPB postulates that a person's intention to do something, formed by their attitudes, subjective norms, and perceived behavioral control, strongly predicts their behavior. In this manner, behavioral intention and the resulting action is significantly shaped by attitudes and subjective norms, as well as perceived behavioral control (Ajzen, 1985). Figure 1 displays a diagram of the TPB model and details on the framework.

The TPB was leveraged to affect the project site stakeholders' attitudes, subjective norms, and perceived behavioral control towards the goals of the screening program. Leverage strategies included an evidence-based educational training session on the importance of identifying ACEs (attitude), distributed recommendations from the AAP advising primary care to screen for ACEs (subjective norms), and data provided on successful implementation of the screening program in similar pediatric practices (perceived behavioral control). The anticipated outcome of influencing the stakeholders' attitudes, subjective norms, and perceived behavioral control was increased intent to screen, increasing the desired screening behavior.

Methods

Implementation took place in a private, outpatient pediatric primary care practice located in an upper-class metropolitan area. The practice is staffed by six pediatricians, four nurses, four lab technicians, three receptionists, and three administrative personnel. A voluntary group of English reading and speaking children ages 8-18 years and their caregivers attending well visits or consults was used. Exclusion criteria included non-English speaking or reading children and/or caregivers, patients presenting for sick visits, patients ages 8-12 years presenting without a primary caregiver, and patients and caregivers who completed the screening at a previous visit.

The *Center for Youth Wellness Adverse Childhood Experiences Questionnaires (CYW ACE-Q)*, which included three age-dependent versions, were chosen as the screening tools for

this program (Appendix A). The participant entered the number of ACEs they had exposure to on the tool. The pediatrician then scored the tool by considering the patient's ACE score along with the presence or absence of specific symptomatology listed by the Center for Youth Wellness (Figure 2) as correlating with toxic stress (Purewal et al., 2016). Based on the CYW criteria, ACE scores of zero to three without relevant symptomatology were considered negative, while ACE scores of one to three with relevant symptomatology or ACE scores of four or more regardless of relevant symptomatology were considered positive and warranted referral to MHS (Figure 3). A stamp was added to the bottom of all screening tools that noted if patients were already under MHS, referred to MHS, or if symptoms were present.

Prior to implementation, the practice-site receptionists, nurses, and pediatricians attended a training session on the ACEs Screening Program. Thereafter the Doctor of Nursing Practice Student Project Lead (DNPS-PL) created a list of all eligible patients weekly based on appointment schedules and attached a screening bundle to each patient chart. This included a cover sheet explaining the purpose of the screening, the age-appropriate screening tool with a pre-coded screening tool number, and an information sheet on ACEs. At appointment check-in, the practice receptionists distributed the screening bundles with the de-identified screening tools to patients and caregivers for self-completion, instructing participants to return the tool to the receptionists upon completion. Once returned, the receptionists attached the completed screening tools to the front of the patients' charts for review by practice nurses for completion and addressed any missing data. During the patient encounter, the pediatricians reviewed the *CYW ACE-Q* results and provided the score-dependent clinical action. If applicable, the pediatrician checked the boxes at the bottom of the screening tool to indicate if the screened patient was already under MHS, was referred to MHS, or had relevant symptomatology present. At the

conclusion, the pediatricians deposited the completed *CYW ACE-Q* tools into the practice-site lockbox.

The DNPS-PL retrieved the completed *CYW ACE-Q* tools weekly from the lockbox and transcribed the de-identified screening tool numbers for any screens that resulted in referral onto a follow-up tool. The practice-site nurses then used this tool to look up the corresponding patients and completed a follow-up phone call 60 days after their appointment to inquire if patients attended an appointment with the recommended MHS and the reasoning if not. See Figure 4 for the Process Map detailing the implementation procedures.

Data collected included the percentage of eligible patients screened for ACEs, the percentage of screened patients who screen positive, the percentage of positive-screening patients who are referred to MHS, and the percentage of referred patients who obtain MHS within 60 days after their appointment. This data was measured weekly using the ACEs Screening Audit Tool (Appendix C), the Weekly Screening Summary Tool (Appendix D), and the Referral Follow-up Tracking Tool (Appendix E).

Anonymous Pre-, Mid-, and Post-Implementation Stakeholder Surveys were distributed to all stakeholders to assess their attitude, knowledge, capability, and value towards the ACEs Screening Program, as well as collect relevant feedback (Appendices F-H, respectively). The results of these surveys were recorded in the Stakeholder Survey Audit Tool (Appendix I). All tracking tools and surveys were created by the project lead and reviewed by content experts, however they were without established validity and reliability.

The data was analyzed using individual descriptive statistics and run charts for the percentage of eligible patients screened for ACEs, percentage of screened patients with positive screens, percentage of positive screening patients referred to MHS, and percentage of referred

patients who obtain MHS within 60 days after referral. Descriptive statistics were also used to analyze the survey responses to the Pre-, Mid-, and Post-Implementation Stakeholder Surveys.

Results

Over the 13-week implementation period, the screening tool was distributed to 245 eligible participants and 232 participants completed the screen. Overall, 71% of eligible patients and caregivers were screened for ACEs with weekly percentages ranging from 40%-90% (Figure 5). Of the eligible patients and caregivers that received a screening bundle, 95% completed the screen. Of those, 14% were considered positive based on the scoring criteria, with a weekly range from 0-33%. Sixty-six percent ($n=4$) of positive-screening patients who were not already under MHS were referred, and of the four patients referred, one obtained follow-up with MHS within 60 days of referral. The data also revealed that 76% of patients who screened positive were already under the care of MHS (Table 1).

Response rates for the Pre-, Mid-, and Post-Implementation Stakeholder Surveys were 66%, 50%, and 66%, respectively. One hundred percent of Pre-Implementation Survey respondents agreed or strongly agreed to the statements “I understand what ACEs are,” and “I understand why it is important to identify ACEs in the pediatric population.” From the Pre-Implementation to Post-Implementation surveys, surveyed stakeholders’ “Strongly Agree” responses went from 25% to 100% on the statement “I understand how the Center for Youth Wellness ACE Questionnaire (*CYW ACE-Q*) works,” from 50%-88% on the statement “I understand the screening process using the *CYW ACE-Q* tool,” and from 25%-88% on the statement “I predict I will be able to/I am able to perform my role in the ACEs screening process with no difficulty.” On both the Pre- and Post-Implementation surveys, 100% of surveyed stakeholders responded, “Strongly Agree” to the statement “I value screening for ACEs in our office.” In the Post-Implementation survey, 100% of surveyed stakeholders responded “Agree”

or “Strongly Agree” to the statement “I would like to continue screening for ACEs at our office.” (Table 2).

A key facilitator during implementation was the project’s receptionist Change Champion, who quickly mastered the receptionist screening program role, and served as a leader in distributing the screening bundle, maintaining the ACEs Screening Audit Tool, and providing informative feedback on implementation. The first unexpected barrier was screening bundles becoming separated from the paper charts due to the charts being packed tightly on the holding rack, which happened on at least nine occasions. Another unforeseen barrier was the initial stamp placed on the screening tool did not have a box to indicate if any of the *CYW ACE-Q* specific relevant symptomatology was present. As a result, the DNPS-PL was unable to determine if completed screening tools with an ACE score of one to three were positive or negative because the status of relevant symptoms was unknown. A revised stamp with a “Symptoms Present” checkbox was implemented in week five of implementation to address this problem.

Discussion

The results from this project support the findings from the literature that an ACEs Screening Program using the *CYW ACE-Q* tools is an effective way for pediatric patients at risk for mental illness to be identified and referred to MHS. Screening rates of eligible caregivers and patients met the 25% short-term goal and nearly met the 80% long-term goal of the project. When underscreening occurred, it was attributed to caregiver/patient refusal, caregivers not present for appointments, receptionist inability to introduce the screen due to time restraints, and screening bundles being separated from charts. However, the overall high rate of completion of distributed screens indicates the feasibility and receptiveness of caregivers and patients to the screening program. While referral to MHS did not occur in all eligible instances, the program was successful in identifying those at higher risk, and resulted in several new referrals.

Stakeholder Surveys showed an increase in knowledge, ability, and value towards screening for ACEs, with stakeholders viewing the screening program using the *CYW ACE-Q* tools as feasible for use in the primary care setting.

An unanticipated finding during the project was the high number of positive-screening patients already under MHS. This finding may differ from the literature due to the contextual influence of the practice setting, which serves a highly educated, upper-class, resource abundant population. Although this finding reduced the number of referrals made for positive screens, the high number of positive-screening patients already under MHS further validates the sensitivity and reliability of the *CYW ACE-Q* tools in identifying at-risk children. This also supports the literature findings that children with four or more ACEs often already have mental, emotional, and/or behavioral health conditions.

A noted strength of this QI project is the integration of evidence-based practice, AAP recommendations, and reviews of the literature to bring about a change in practice. The pediatrician checklist stamp at the bottom of each screening tool sought to enhance the accuracy of the findings by allowing the DNPS-PL to assess pediatrician compliance in referring positive-screening patients. This structural process helped the DNPS-PL identify gaps in the screening and referral process, and strengthened communication between pediatricians and the DNPS-PL.

One limitation in accuracy of project findings is the sensitive nature of the screening topic, which may cause some individuals to refuse the screening or not answer the questionnaires truthfully. An aggregate-level screening tool was used to help off-set this limitation, however it is uncertain how the sensitive nature of the topic affected the results. The spread of the findings is also limited as the specifics of the program are not intended to apply to similar healthcare settings due to differences in office processes, procedures, systems, and populations. An

additional limitation in accuracy arose from the initial project design not including a “Symptoms Present” checkbox at the bottom of each screening tool, making it impossible for the DNPS-PL to know if screens with an ACE score of one to three were positive or negative. Although a new stamp was created and implemented, it is unclear whether the new checkbox was fully utilized, possibly due to pediatrician unfamiliarity with the designated symptoms of importance. As a result, the number of positive screens may be falsely low, contributing to missed opportunities for referral of at-risk patients. To minimize this limitation, the project sustainability plan proposes an additional form in the ACEs screening bundle listing all the relevant symptoms be checked off by participants. Lastly, a limitation in understanding stakeholder knowledge, ability, and value for the ACEs Screening Program is the low response rate to the Pre-, Mid-, and Post-Implementation Stakeholder Surveys. The lack of full stakeholder participation in the surveys results in an incomplete assessment of their knowledge, ability, and value towards the ACEs Screening Program. Attempts to reduce this limitation included in-person reminders to complete the surveys during weekly site visits, which did improve the response rates marginally.

Conclusions

This QI project provides initial support regarding the feasibility and effectiveness of implementing an ACEs Screening Program using the *CYW ACE-Q* tools in the pediatric primary care setting to increase identification and referral of patients at risk for mental illness. Implementing this program also shows success in increasing stakeholder knowledge, ability, and value towards screening for ACEs in the pediatric primary care setting. Although the number of referred patients was small, the ability of the screens to identify patients already under care for mental health conditions further validates the reliability of the tools in detecting at risk patients.

To help promote sustainability of the practice change, numerous changes in structures and processes will be considered. First, a symbol will be created in the electronic scheduling

system to alert receptionists of patients who already completed an ACEs screening that year. This symbol facilitates rapid identification of patients who need the ACEs screen. Other sustainability measures include the addition of a Relevant Symptomatology form in the screening bundle, engagement of senior clinical leaders as change champions, inclusion of the practice change training in new staff orientation, and development of a sustainability measurement plan to continue tracking screening progress and outcomes.

While findings from the QI project may not be generalizable, the information gathered from this practice's implementation can be used to establish an ACEs Screening Program in additional pediatric primary care settings. For example, integrating a method for easy identification of relevant symptomatology in screened patients and using a provider checkbox stamp will aide in screen result determination and action in other settings.

Implications for pediatric primary care practice include initiating ACEs Screening Programs in other pediatric primary care settings, and if effective, potential standardization of ACEs Screening Programs in pediatric primary care practices across the United States in accordance with widely followed recommendations, such as Bright Futures (AAP, 2020). Should ACEs Screening Programs become part of the universal recommended pediatric screenings, there will be an increased need for accessible, trauma-informed mental health specialists for collaboration and referral. Potential future QI projects include investigating and implementing evidence-based methods to increase screening distribution and completion rates, increase provider recognition and value towards the relevant symptoms specified by the *CYW ACE-Q* program, and increase referred patient follow-up with MHS.

References

- Agency for Healthcare Research and Quality, & Healthcare Cost and Utilization Project. (2011). *HCUP facts and figures: Statistics on hospital-based care in the united states, 2009*. Rockville, MD: Agency for Healthcare Research and Quality. Retrieved from https://www.hcup-us.ahrq.gov/reports/factsandfigures/2009/pdfs/FF_report_2009.pdf
- Ajzen I. (1985) From Intentions to Actions: A Theory of Planned Behavior. In: Kuhl J., Beckmann J. (eds) Action Control. SSSP Springer Series in Social Psychology. Springer, Berlin, Heidelberg
- American Academy of Pediatrics. (2014). *Addressing adverse childhood experiences and other types of trauma in the primary care setting*. American Academy of Pediatrics. Retrieved from https://www.aap.org/en-us/Documents/tfb_addressing_aces.pdf
- American Academy of Pediatrics (2020). Bright Futures. <https://brightfutures.aap.org/Pages/default.aspx>
- Bethell, C. D., Carle, A., Hudziak, J., Gombojav, N., Powers, K., Wade, R., & Braveman, P. (2017). Methods to assess adverse childhood experiences of children and families: Toward approaches to promote child well-being in policy and practice. *Academic Pediatrics, 17*(7S), S51-S69. doi:10.1016/j.acap.2017.04.161
- Bucci, M., Wang, L. G., Koita, K., Purewal, S. K., Marques, S. S., & Harris, N. B. (2015). *Center for youth wellness ACE-Q user guide for health professionals*. San Francisco, CA: Center for Youth Wellness. Retrieved from https://pediatricsociale.fondationdrjulien.org/wp-content/uploads/2017/05/CYW_ACEQ_UserGuide.pdf

- Centers for Disease Control and Prevention. (2019). CDC Wonder [database]. Available at: <http://wonder.cdc.gov.proxy-hs.researchport.umd.edu>.
- DeNicola, E., Aburizaize, O. S., Siddique, A., Khwaja, H., & Carpenter, D. O. (2016). Road traffic injury as a major public health issue in the kingdom of Saudi Arabia: A review. *Frontiers in Public Health*, 4(4) doi:10.3389/fpubh.2016.00215
- Felitti, V. J., Andra, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., . . . Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventative Medicine*, 14(4), 245-258. doi:10.1016/S0749-3797(98)00017-8
- Flynn, A. B., Fothergill, K. E., Wilcox, H. C., Coleclough, E., Horwitz, R., Ruble, A., . . . Wissow, L. S. (2015). Systematic review: Primary care interventions to prevent or treat traumatic stress in childhood: A systematic review. *Academic Pediatrics*, 15(5), 480-492. doi:10.1016/j.acap.2015.06.012
- Gillespie, R. J., & Folger, A. T. (2017). Feasibility of assessing parental ACEs in pediatric primary care: Implications for practice-based implementation. *Journal of Child and Adolescent Trauma*, 10(3), 249-256. doi:10.1007/s40653-017-0138-z
- Grabbe, L., & Miller-Karas, E. (2018). The trauma resiliency model: A "bottom-up" intervention for trauma psychotherapy. *Journal of the American Psychiatric Nurses Association*, 24(1), 76-84. doi:10.1177/1078390317745133
- Marie-Mitchell, A., & O'Connor, T. G. (2013). Adverse childhood experiences: Translating knowledge into identification of children at risk for poor outcomes. *Academic Pediatrics*, 13(1), 14-19. doi:10.1016/j.acap.2012.10.006

National Institute of Mental Health. (2017). Mental illness. Retrieved

from <https://www.nimh.nih.gov/health/statistics/mental-illness.shtml>

Perou, R., Bitsko, R. H., Blumberg, S. J., Pastor, P., Ghandour, R. M., Gfroerer, J. C., . . . Huang,

L. N. (2013). Mental health surveillance among children: United states, 2005-

2011. *Morbidity and Mortality Weekly Report*, 62(2), 1-35. Retrieved

from https://www.cdc.gov/mmwr/preview/mmwrhtml/su6202a1.htm?s_cid=su6202a1_w

Purewal, S. K., Bucci, M., Wang, L. G., Koita, K., Marques, S. S., Oh, D., & Harris, N. B.

(2016). Screening for adverse childhood experiences in an integrated pediatric care

model. *Zero to Three*, 36(3), 10-17.

Tables

Table 1
Summary of Screening Results

Variable	<i>n</i>	%	Weekly Range
Distributed Screens	245	75%	40-100%
Completed Screens	232	71%	40-91%
Positive Screens	32	14%	0-33%
Referred Positive Screens (Not Already Under MHS)	4	66%	0-80%
Referred Patient Follow-up with MHS	1	25%	N/A
Positive-Screening Patients Already Under MHS	19	76%	33-100%

Note. MHS= Mental Health Services

Table 2

Summary of “Strongly Agree” Responses on Stakeholder Surveys

Topic	Pre-Implementation	Mid-Implementation	Post-Implementation
Response Rate	66% (n=8)	50% (n=6)	66% (n=8)
Understands What ACEs are	63%	N/A	N/A
Understands Why Important to Identify for ACEs	75%	N/A	N/A
Understands How CYW ACE-Q Tool Works	25%	83%	100%
Understands Their Role in Screening Process	50%	83%	88%
Able to Screen for ACEs	25%	66%	88%
Feasible to Screen for ACEs	N/A	66%	88%
Value Screening for ACEs	100%	100%	100%
Caregivers and Patients Receptive to ACEs Screening	25%	66%	63%
Would like to Continue Screening for ACEs	N/A	83%	50%

Note. CYW ACE-Q= Center for Youth Wellness Adverse Childhood Experiences Questionnaires

Figures

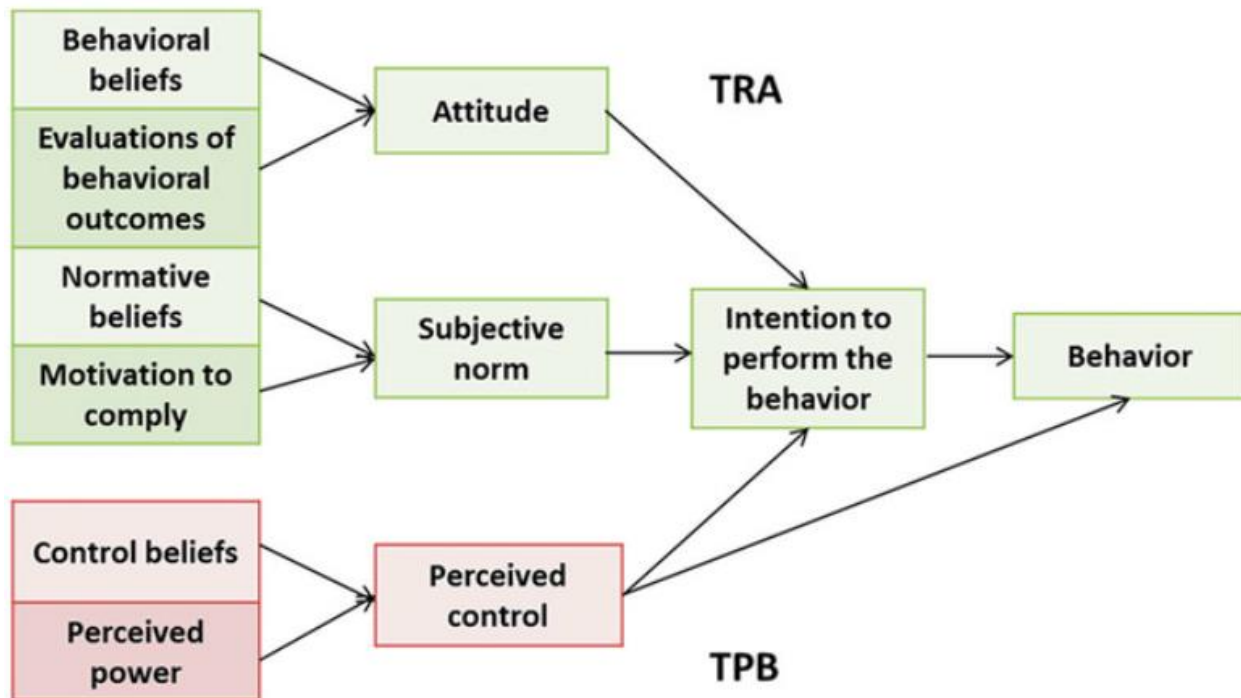


Figure 1. Theory of Planned Behavior Model

(DeNicola, Aburizaize, Siddique, Khwaja, & Carpenter, 2016)

Ajzen defines attitude as a series of beliefs that affect the way one thinks and behaves; subjective norms as perceptions about what important people in one's life expect of them and their desire to comply with these expectations; and perceived behavioral control as what control a person believes they have over performance of a behavior (1985). In the Theory of Planned Behavior, these determinants collectively influence a person's behavioral intention, and consequently, their behavior. In general, positive attitudes, positive subjective norms, and greater perceived control strengthen a person's intention and subsequent success in completing a behavior.

Symptomatology check-list
<input type="checkbox"/> Sleep disturbance
<input type="checkbox"/> Weight gain or loss
<input type="checkbox"/> Failure to thrive
<input type="checkbox"/> Enuresis, encopresis
<input type="checkbox"/> Constipation
<input type="checkbox"/> Hair loss
<input type="checkbox"/> Poor control of chronic disease (e.g. asthma, diabetes)
<input type="checkbox"/> Developmental regression
<input type="checkbox"/> School failure or absenteeism
<input type="checkbox"/> Aggression
<input type="checkbox"/> Poor impulse control
<input type="checkbox"/> Frequent crying
<input type="checkbox"/> Restricted affect or numbing
<input type="checkbox"/> Unexplained somatic complaints (e.g., headache or abdominal pain)
<input type="checkbox"/> Depression
<input type="checkbox"/> Anxiety
<input type="checkbox"/> Interpersonal conflict

Figure 2. Center for Youth Wellness Relevant Symptomatology Used for Screening

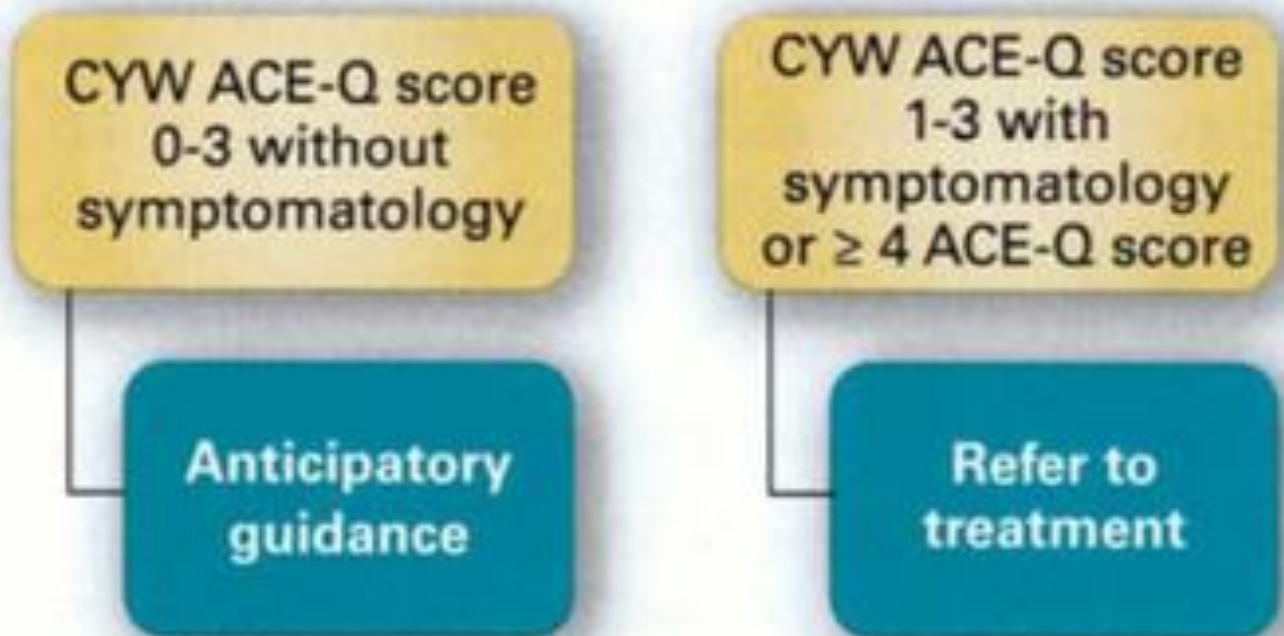


Figure 3. Center for Youth Wellness Adverse Childhood Experiences-Questionnaire Scoring and Referral Criteria

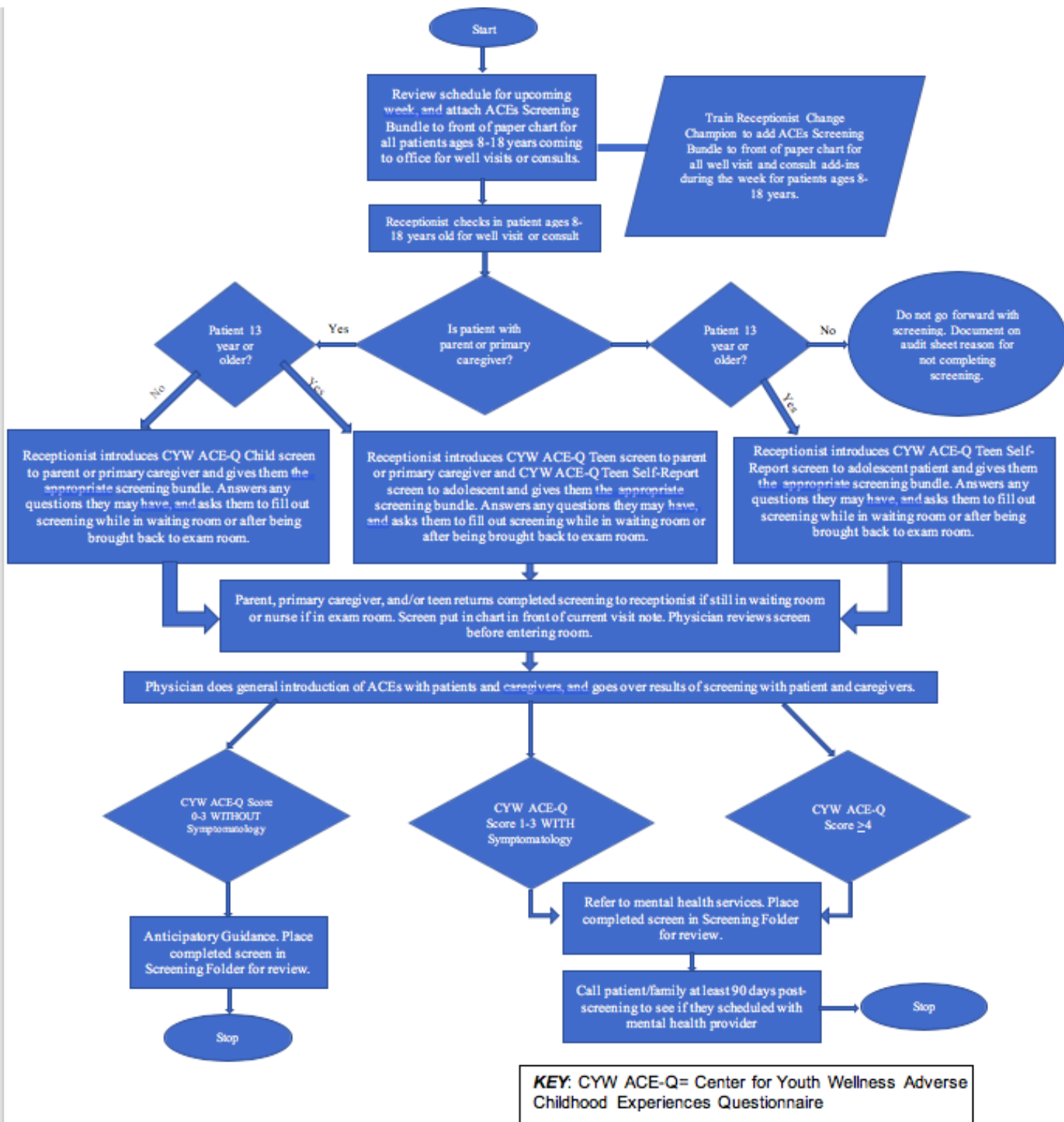


Figure 4. Process Map of Implementation Plan for Screening for Adverse Childhood Experiences in Pediatric Primary Care

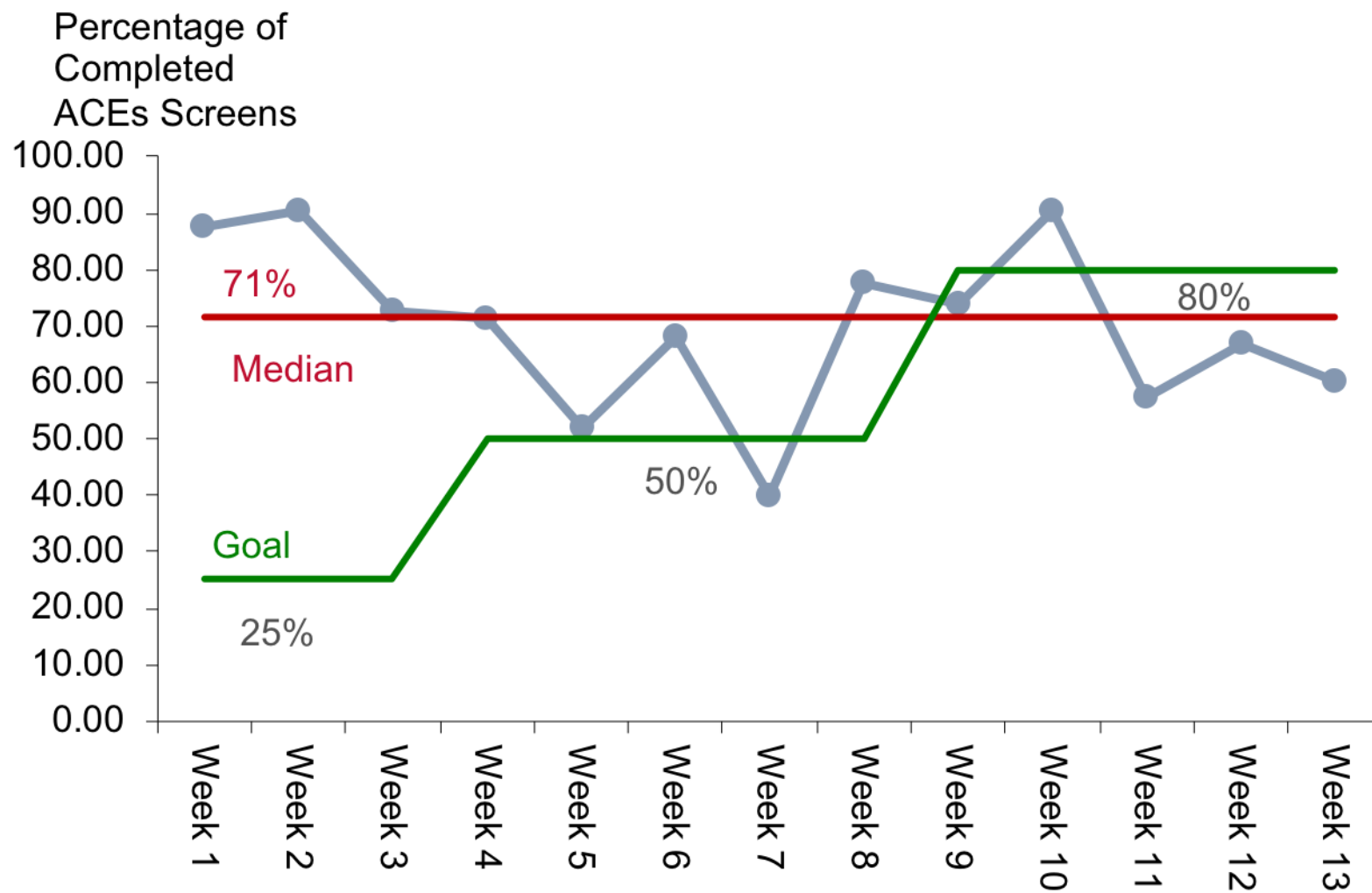


Figure 5. Percentage of Eligible Patients Screened for Adverse Childhood Experiences

Appendix A

The Center for Youth Wellness Adverse Childhood Experiences Questionnaires

CYW Adverse Childhood Experiences Questionnaire (ACE-Q) Child

To be completed by Parent/Caregiver

Today's Date: _____

Child's Name: _____ Date of birth: _____

Your Name: _____ Relationship to Child: _____

Many children experience stressful life events that can affect their health and wellbeing. The results from this questionnaire will assist your child's doctor in assessing their health and determining guidance. Please read the statements below. Count the number of statements that apply to your child and write the total number in the box provided.

Please DO NOT mark or indicate which specific statements apply to your child.

1) Of the statements in Section 1, HOW MANY apply to your child? Write the total number in the box.

Section 1. At any point since your child was born...

- Your child's parents or guardians were separated or divorced
- Your child lived with a household member who served time in jail or prison
- Your child lived with a household member who was depressed, mentally ill or attempted suicide
- Your child saw or heard household members hurt or threaten to hurt each other
- A household member swore at, insulted, humiliated, or put down your child in a way that scared your child OR a household member acted in a way that made your child afraid that s/he might be physically hurt
- Someone touched your child's private parts or asked your child to touch their private parts in a sexual way
- More than once, your child went without food, clothing, a place to live, or had no one to protect her/him
- Someone pushed, grabbed, slapped or threw something at your child OR your child was hit so hard that your child was injured or had marks
- Your child lived with someone who had a problem with drinking or using drugs
- Your child often felt unsupported, unloved and/or unprotected

2) Of the statements in Section 2, HOW MANY apply to your child? Write the total number in the box.

Section 2. At any point since your child was born...

- Your child was in foster care
- Your child experienced harassment or bullying at school
- Your child lived with a parent or guardian who died
- Your child was separated from her/his primary caregiver through deportation or immigration
- Your child had a serious medical procedure or life threatening illness
- Your child often saw or heard violence in the neighborhood or in her/his school neighborhood
- Your child was often treated badly because of race, sexual orientation, place of birth, disability or religion

CYW Adverse Childhood Experiences Questionnaire Teen (ACE-Q) Teen

To be completed by Parent/Caregiver

Today's Date: _____

Child's Name: _____ Date of birth: _____

Your Name: _____ Relationship to Child: _____

Many children experience stressful life events that can affect their health and wellbeing. The results from this questionnaire will assist your child's doctor in assessing their health and determining guidance. Please read the statements below. Count the number of statements that apply to your child and write the total number in the box provided.

Please DO NOT mark or indicate which specific statements apply to your child.

1) Of the statements in Section 1, HOW MANY apply to your child? Write the total number in the box.

Section 1. At any point since your child was born...

- Your child's parents or guardians were separated or divorced
- Your child lived with a household member who served time in jail or prison
- Your child lived with a household member who was depressed, mentally ill or attempted suicide
- Your child saw or heard household members hurt or threaten to hurt each other
- A household member swore at, insulted, humiliated, or put down your child in a way that scared your child OR a household member acted in a way that made your child afraid that s/he might be physically hurt
- Someone touched your child's private parts or asked them to touch that person's private parts in a sexual way that was unwanted, against your child's will, or made your child feel uncomfortable
- More than once, your child went without food, clothing, a place to live, or had no one to protect her/him
- Someone pushed, grabbed, slapped or threw something at your child OR your child was hit so hard that your child was injured or had marks
- Your child lived with someone who had a problem with drinking or using drugs
- Your child often felt unsupported, unloved and/or unprotected

2) Of the statements in Section 2, HOW MANY apply to your child? Write the total number in the box.

Section 2. At any point since your child was born...

- Your child was in foster care
- Your child experienced harassment or bullying at school
- Your child lived with a parent or guardian who died
- Your child was separated from her/him primary caregiver through deportation or immigration
- Your child had a serious medical procedure or life threatening illness
- Your child often saw or heard violence in the neighborhood or in her/his school neighborhood
- Your child was detained, arrested or incarcerated
- Your child was often treated badly because of race, sexual orientation, place of birth, disability or religion
- Your child experienced verbal or physical abuse or threats from a romantic partner (i.e. boyfriend or girlfriend)

CYW Adverse Childhood Experiences Questionnaire (ACE-Q) Teen Self-Report

To be completed by Patient

Today's Date: _____

Your Name: _____ Date of birth: _____

Many children experience stressful life events that can affect their health and development. The results from this questionnaire will assist your doctor in assessing your health and determining guidance. Please read the statements below. Count the number of statements that apply to you and write the total number in the box provided.

Please DO NOT mark or indicate which specific statements apply to you.

1) Of the statements in section 1, HOW MANY apply to you? Write the total number in the box.

Section 1. At any point since you were born...

- Your parents or guardians were separated or divorced
- You lived with a household member who served time in jail or prison
- You lived with a household member who was depressed, mentally ill or attempted suicide
- You saw or heard household members hurt or threaten to hurt each other
- A household member swore at, insulted, humiliated, or put you down in a way that scared you OR a household member acted in a way that made you afraid that you might be physically hurt
- Someone touched your private parts or asked you to touch their private parts in a sexual way that was unwanted, against your will, or made you feel uncomfortable
- More than once, you went without food, clothing, a place to live, or had no one to protect you
- Someone pushed, grabbed, slapped or threw something at you OR you were hit so hard that you were injured or had marks
- You lived with someone who had a problem with drinking or using drugs
- You often felt unsupported, unloved and/or unprotected

2) Of the statements in section 2, HOW MANY apply to you? Write the total number in the box.

Section 2. At any point since you were born...

- You have been in foster care
- You have experienced harassment or bullying at school
- You have lived with a parent or guardian who died
- You have been separated from your primary caregiver through deportation or immigration
- You have had a serious medical procedure or life threatening illness
- You have often seen or heard violence in the neighborhood or in your school neighborhood
- You have been detained, arrested or incarcerated
- You have often been treated badly because of race, sexual orientation, place of birth, disability or religion
- You have experienced verbal or physical abuse or threats from a romantic partner (i.e. boyfriend or girlfriend)

Note: The *CYW ACE-Q Child* tool was given to caregivers of patients ages 8-12 years old, the *CYW ACE-Q Teen* tool was given to caregivers of patients ages 13-18 years old, and the *CYW ACE-Q Self-Report* was given to patients ages 13-18 years old. Depending on the tool, 17-19 ACEs were listed.

Appendix B
Evidence Review Table

<p>Citation: Bethell, C. D., Carle, A., Hudziak, J., Gombojav, N., Powers, K., Wade, R., & Braveman, P. (2017). Methods to assess adverse childhood experiences of children and families: Toward approaches to promote child well-being in policy and practice. <i>Academic Pediatrics, 17</i>(7S), S51-S69. Doi:10.1016/j.acap.2017.04.161.</p>		<p>LEVEL: 5A</p>
Purpose or Hypothesis	<p>Purpose: Compare different methods to assess ACEs among children and families, assess the acceptability and validity of the National Survey of Children’s Health (NSCH)-ACEs measure, and identify implications for assessing ACEs in research and practice. Hypothesis: No hypothesis provided.</p>	
Design	<p>Review of the literature related to ACEs and ACEs measurement tools and key informant interviews.</p>	
Sample	<p>Sampling Technique: Structured search of published research literature and online resources as well as key informant interviews. Article Selection: Ten child-focused ACEs measurement methods identified and compared against four adult ACEs measures. Excluded: Reviews of available measures to formally document specific adversities, and reviews of biomarkers and specific measures of chronic stress. Accepted: 14 total ACE assessment methods were accepted, 10 which were child-focused and 4 which were adult-focused. Sample Demographics: Children as young as 8 years to adults. More detailed demographics of the sample population was not provided. Power analysis: None disclosed.</p>	
Intervention	<p>Control: No controls noted. Intervention: The identified ACEs measurement methods were compared using the parameters of 1) primary purpose and target population, 2) data source and collection methods, 3) types and numbers of adversities addressed, 4) scoring and reporting of results, 5) development and validation status, 6) concurrent information collected, and 7) availability of tools, user guidelines, and publications.</p>	
Outcomes	<p>Dependent Variable: Purpose of the ACEs assessment tools, data source and collection methods for the ACEs tools, number of constructs and survey items on the tools, ACEs topics addressed, scoring and reporting results, testing and validation of the tools, additional content assessed during screening, recommendations for administration, and acceptability and efficiency of the NSCH-ACEs tool. Measure: Analysis of each study including their ACEs measurement tool, who reported the data, number and types of questions, scoring method, design highlights, testing and validation status, availability of implementation guidelines, and concurrent content included on screen. The differential effect of ACEs across household income groups evaluated by separately evaluating key child outcomes for 4 income subgroups across 4 NSCH-ACEs score categories.</p>	
Results	<p>Analysis: Of the 14 ACEs assessment methods identified, 5 have been used in clinical settings and 13 were parent- or self-reported and 1 was teacher-reported. All assessment tools use a cumulative scoring mechanism, giving each construct a weight of 1 point, however some tools included graded response options (i.e. often, sometimes, rarely, never), which were calculated to provide an overall ACEs score. Testing and validation information on the ACEs measurement methods varied. Most assessment tools are recommended to be used in conjunction with other questionnaires, such as demographic questions, current and past health history questions, health care access, resilience, and other types of protective factors. Most assessment tools include guidance on how to introduce the topic of ACEs and how to frame the ACEs questions as well as information on how to handle positive screens. Among children with 4 or more ACEs, 39% were identified as having emotional, mental, and/or behavioral (EMB) health conditions on the NSCH-ACEs screen, which is an adjusted odds ratio of 5.02. Conclusions: Though some important differences exist, the available ACE assessment tools examined are similar, and positive screens show consistent associations with poorer health outcomes in the absence of protective factors and resilience. All tools reviewed share the broader goal of facilitating health education, promoting health, and mitigating the negative sequelae that can arise with exposure to ACEs. ACEs crossed all household income groups, demonstrating that level of ACEs is independent of economic status. Based on this finding, population-wide screening for ACEs is recommended over a high-risk subgroup screening approach. Even for children who have never experienced ACEs, assessing ACEs has value as an educational tool to help educate children and their families about the importance of ACE exposure, how to recognize and manage chronic stress, and how to learn resilience.</p>	

<p>Citation: Flynn, A. B., Fothergill, K. E., Wilcox, H. C., Coleclough, E., Horwitz, R., Ruble, A., . . . Wissow, L. S. (2015). Primary care interventions to prevent or treat traumatic stress in childhood: A systematic review. <i>Academic Pediatrics, 15</i>(5), 480-492. Doi:10.1016/j.acap.2015.06.012.</p>		<p>LEVEL: 1A</p>
<p>Purpose or Hypothesis</p>	<p>Purpose: Examine the current evidence on prevention and treatment of child traumatic stress in the pediatric primary care setting. Identify interventions that have been implemented and assess their effectiveness on a variety of outcomes including provider behavior and clinical outcomes. Hypothesis: No hypothesis provided.</p>	
<p>Design</p>	<p>Systematic review</p>	
<p>Sample</p>	<p>Sampling Technique: Search of the PubMed, Embase, PsycINFO, Scopus, Academic Search Complete, CINAHL, Web of Science, and the Cochrane Library databases in addition to the National Registry of Evidence-based Programs and Practices, the National Child Traumatic Stress Network website, and a general web search using Google. The key terms used in the database search were “child” AND “abuse or trauma or violence or mass casualty or bereavement” AND “mental health” AND “primary care.” Article Selection: Eligible articles limited to peer-reviewed, original research articles in English that describe an intervention for the prevention of childhood traumatic stress or treatment of child traumatic stress and were completed in a pediatric primary care setting. Each study assessed for inclusion by two authors in a stepwise fashion. Data extracted by two reviewers using a data extraction tool. Each study was assessed for potential bias by two reviewers using the Cochrane “Risk of Bias Tool.” Excluded: Studies carried out in specialty care settings; on adult survivors of abuse; on determining the prevalence of various disorders and exposures rather than intervention evaluation; case reports, opinions, and reviews. Accepted: 1,711 articles identified through database searches and an additional 24 articles identified by hand searching the references of included articles. 1,675 eliminated based on exclusion criteria. The remaining 36 articles reviewed for eligibility, 24 were further excluded, leaving twelve final articles reporting on 10 separate studies in the final review. Of these 10 studies, 6 were randomized controlled trials and 4 were observational studies. Sample Demographics: The 10 studies selected included diverse settings. Seven of the studies targeted providers and five of the studies targeted children using their parent’s report and medical chart review. Power analysis: None disclosed.</p>	
<p>Intervention</p>	<p>Control: Wide range of controls, including clinicians not trained on screening tool, and patients who received standard care with no screening. Interventions: Variety of interventions across studies, with most of the studies having multi-component interventions. In four of the studies, clinicians were taught to use a particular model/program or screening questionnaire with follow-up based on caregiver responses. Intervention elements included referrals to parenting programs, a telephone-based parenting curriculum, and referral to a social worker or nurse case-management session. Other studies involved training clinicians to recognize the issues of child maltreatment, domestic violence, and psychosocial risk factors without a screening tool.</p>	
<p>Outcomes</p>	<p>Dependent Variable: Primary care provider outcomes measured included clinician confidence to carry out sensitive screenings, percentage of patients receiving screening, intention to screen, comfort with screening, perceived usefulness of screening, and awareness of community resources for patients. Parent/children outcomes measured included risk or occurrence of trauma, number of referrals to community resources, risk reduction, and instances of possible medical neglect. Measure: Measurement of the dependent variable is not clearly described for each of the ten studies included in the evidence review.</p>	
<p>Results</p>	<p>Analysis: Varied by study and outcomes measured. Conclusions: Collectively, the reviewed studies conclude that interventions to prevent and treat child traumatic stress are feasible and can have positive effects on health professionals’ clinical practices as well as patient outcomes. Authors of 9 out of the 10 studies concluded that the interventions studied had a positive effect on their intended outcomes. Findings suggest that screening and training/education interventions in the pediatric primary care setting can improve provider skills and increase their perceived competence and knowledge of trauma in childhood. In studies that measured patient outcomes, it was found that screenings reduced adverse childhood outcomes including child physical abuse and maltreatment, domestic violence exposure, delinquent behavior, aggression, and injury. The interventions also increased discussions about psychosocial issues during clinic visits and improved referral rates for mental health services. Long term outcomes included significant decreases in child maltreatment and Child Behavior Checklist scores.</p>	

<p>Citation: Gillespie, R. J., & Folger, A. T. (2017). Feasibility of assessing parental ACEs in pediatric primary care: Implications for practice-based implementation. <i>Journal of Child and Adolescent Trauma</i>, 10(3), 249-256. Doi:10.1007/s40653-017-0138-z.</p>		<p>LEVEL: 4A</p>
<p>Purpose or Hypothesis</p>	<p>Purpose: Determine feasibility and provider acceptability of implementing assessment for parental ACEs, and comparison of parental ACE detection rates between an item-level response tool and an aggregate-level response tool. Hypothesis: No hypothesis provided.</p>	
<p>Design</p>	<p>Cohort study taking place at a private pediatric office in a metropolitan area.</p>	
<p>Sample</p>	<p>Sampling Technique: Convenience Eligible Participants (Target Population): Parents at their child’s four-month well visit. Excluded: No exclusion criteria noted. Accepted: A total of 2,283 parents representing 1780 children completed the ACEs assessment. 1308 parents completed the item-level response assessment, and 975 parents completed the aggregate response assessment. Sample Demographics: Chart review on a subset of 460 respondents provided the following demographic data: Race reported as 52.2% White, 16.1% Hispanic, 8.7% Asian, 1.1% African-American, and less than 1% American Indian and Pacific Islander (20.2% declined to answer). Ethnicity reported as 30.5% Hispanic/Latino and 69.5% non-Hispanic (29% declined to answer). Of the practice’s total population, about 20% have Medicaid and 80% are private payers; about 25% speak a language other than English, mainly Spanish. Power analysis: None disclosed.</p>	
<p>Intervention</p>	<p>Control: No control noted. Intervention: Cohort one received an item-level ACE assessment tool asking parents to specify which ACEs they had experienced. Cohort two received an aggregate-level ACE assessment tool asking parents to solely specify how many ACEs they had experienced. Both tools were translated into Spanish. Protocol: Tool given to parents upon check in for four-month well-visit and completed in the waiting or exam room. If both parents present, both offered the screening. Providers collected and discussed the results with the family during the visit.</p>	
<p>Outcomes</p>	<p>Dependent Variable: Number of parental ACEs endorsed. Also, the providers’ perception of the screening tool’s value and parental receptiveness. Measure: Comparison of parental ACE scores on the item-level assessment tool and the aggregate response tool. Electronic surveys comparing the pre-implementation and post-implementation qualitative feedback from providers on the usefulness, feasibility, and parental receptiveness to the screenings.</p>	
	<p>Analysis: Chi-square tests measured the difference in proportion of ACEs reported from the first cohort’s item-level responses to the second cohort’s aggregate level responses. Statistical significance defined as an alpha <0.05 (2-tailed). 8.1% of parents endorsed an ACE score of 4 or higher on the item-level response tool, compared to 11.2% in the aggregate response group ($p=0.013$). ACE disclosure scores were higher in mothers compared to fathers, and in publicly insured compared to privately insurer, and these trends were statistically significant between the two tools. Qualitative feedback from the providers’ pre- and post- surveys reviewed manually for major themes. All providers reported the information obtained from the ACE assessment tools was useful to their practice and was feasible to administer in their busy practice setting. The providers also observed that parents were very appreciative and grateful to be able to discuss the ACE questions and answers with the provider, and felt it helped foster their parent-provider relationships and improve their patient outcomes. Conclusions: An aggregate response format for the assessment tool yielded significantly higher detection rates of elevated ACE scores than an item-level assessment tool. Implementing an ACE assessment tool is feasible for a busy pediatric practice, viewed as extremely helpful by providers, and well received by parents. Providers feel the conversation between provider and parents about positive ACE screens helped them understand the family better, provide better anticipatory guidance, and increase parent-provider trust. These outcomes in turn helped improve parenting ability by validating their experiences, acknowledging their resilience, and referring them to mental health services when warranted.</p>	

<p>Citation: Marie-Mitchell, A., & O’Connor, T. G. (2013). Adverse childhood experiences: Translating knowledge into identification of children at risk for poor outcomes. <i>Academic Pediatrics</i>, 13(1), 14-19. Doi:10.1016/j.acap.2012.10.006.</p>		<p>LEVEL: 4C</p>
<p>Purpose or Hypothesis</p>	<p>Purpose: Pilot test a screening tool for ACEs, and determine if this tool can distinguish early child outcomes among lower- and higher- risk children. Hypothesis: Brief measures that are feasible for use in clinical practice can show an association between ACEs and specific early child outcomes.</p>	
<p>Design</p>	<p>Cross-sectional pilot study conducted at an urban federally qualified health center that serves a low-income inner-city population.</p>	
<p>Sample</p>	<p>Sampling Technique: Convenience Eligible Participants (Target Population): Female primary caretakers of children between the ages of 4 and 5 years presenting for well child visits. Excluded: Caretakers of children with chronic healthcare needs, language barriers, lack of female primary caretaker, and caretakers with another child enrolled in the study. Accepted: 149 eligible subjects, of whom 102 participated (68%). Sample Demographics: Participating children were 57% African American and 43% Hispanic/Latino, which reflects the clinic’s overall pediatric population. Roughly equal number of male and female children enrolled. Clinic population is low-income inner-city, with 90% of patients on Medicaid. Power analysis: None disclosed.</p>	
<p>Intervention</p>	<p>Control: No control noted. Intervention: Questionnaires, including a 6-item and 7-item (one with and one without maternal education question) Child ACE tool, a child health questionnaire, and the Pediatric Symptom Checklist completed by the female primary caretaker. Questionnaires followed by two standardized tests with the child. After the encounter, physician audited the past year of the child’s medical record. Protocol: Female primary caretakers invited to participate in study when they arrived for their child’s well visit or by phone call after the visit. If interested, arranged a meeting with the caretaker and child to go over the study and obtain written consent. The caretakers first completed the questionnaires, then two standardized tests performed by the research assistant with the child. Lastly, participant’s charts were audited by a physician, while being blinded to the child’s ACE score and maternal reports.</p>	
<p>Outcomes</p>	<p>Dependent Variable: Correlation between ACE score and child health outcomes (behavior problems, developmental delay, injury, poor health status, weight status, asthma, infections, and utilization of health care). Measure: Descriptive statistics generated prevalence rates of child exposure to each risk factor. Logistic regression analysis adjusted for child’s ethnicity, sex, and birth weight used to test the degree of association between each child outcome and risk exposure based on the 6-item and 7-item Child ACE tools. Child ACE score dichotomized into lower and higher risk scores, with a score of three or above defining the higher risk group. Logistic regression equations used to calculate the odds ratio of having a child outcome in the higher-risk group compared to the lower-risk group. Statistical Analysis System software version 9.2 used for all analyses.</p>	
<p>Results</p>	<p>Analysis: The prevalence of developmental delay and behavior problems was 2-4 times greater in the higher-risk ACE group compared to the lower-risk ACE group. Injury visits were also 5 times higher in the higher-risk ACE group. In contrast, the higher-risk ACE children tended to have lower BMIs and decreased likelihood of medically reported asthma and other problem visits over the past year. Researchers surmise the trend of lower BMIs in the higher-risk group could be due to more of these children being low birth weight. There is also a question of whether the decrease in asthma and sick visits in the higher-risk group truly portrays the health of these children, or if this decrease could be explained by decreased utilization of health services and/or reduced recognition of symptoms related to lower maternal education. Conclusions: The 7-item Child ACE tool had good reliability in determining specific childhood outcomes, and can be used to evaluate the early onset effects of accumulated risk factors. These findings are consistent with previous studies that identify a strong relationship between ACEs and behavioral problems and/or developmental delays. Screening for ACE exposures helps providers identify higher-risk children and lessen the effects of these damaging exposures to help improve health outcomes. The researchers also concluded that screening for child ACEs can be feasible in a busy pediatric practice. Further research is needed to validate the 7-item Child ACEs tool with larger, more diverse samples.</p>	

<p>Citation: Purewal, S. K., Bucci, M., Wang, L. G., Koita, K., Marques, S. S., Oh, D., & Harris, N. B. (2016). Screening for adverse childhood experiences in an integrated pediatric care model. <i>Zero to Three, 36</i>(3), 10-17.</p>		<p>LEVEL: 6B</p>
<p>Purpose or Hypothesis</p>	<p>Purpose: Describe the theoretical framework and rationale for screening ACEs in the primary care pediatric setting, introduce the Center for Youth Wellness Adverse Childhood Experiences Questionnaire (CYW ACE-Q), describe the Bayview Child Health Center (BCHC)-Center for Youth Wellness (CYW) Integrated Pediatric Care Model aimed at addressing the effects of ACEs and toxic stress, and review considerations for implementing ACE screening in the pediatric primary care setting. Hypothesis: No hypothesis provided.</p>	
<p>Design</p>	<p>Descriptive study conducted at the Center for Youth Wellness (CYW) clinic and research center and the BCHC located in San Francisco California</p>	
<p>Sample</p>	<p>Sampling Technique: Convenience Eligible Participants (Target Population): Parents of children ages 9 months, 24 months, or older, as well as adolescents ages 13-19 years presenting to the BCHC for well-child exams. Excluded: Parents of children younger than 9 months and parents of children in between their 9 month and 24 month well child visits. Accepted: Number of participants not provided. Sample Demographics: Not provided. Power analysis: None disclosed.</p>	
<p>Intervention</p>	<p>Control: No control noted. Intervention: Completion of the CYW ACE-Q Child screening tool by parents of children ages birth to 12 years old, completion of the CYW ACE-Q Teen screening tool by parents of youth ages 13 to 19 years old, and completion of the CYW ACE-Q Teen Self-Report screening tool by youth ages 13 to 19 years old. The CYW ACE-Q contains two sections: Section 1 (items #1-10) consists of the traditional 10 ACEs questions and Section 2 consists of 7-9 additional questions on early life stressors associated with poor physical and mental health outcomes. The screening tools measure the cumulative number of ACEs, and do not specify which ACEs the child or teen has been exposed to. Protocol: A BCHC medical assistant presents the appropriate CYW ACE-Q to the caregiver and/or the adolescent youth upon check-in for well-child appointments and describes the screenings' purpose and instructions for completion. The screening is completed by the caregiver and/or patient in the waiting or exam room. During the appointment, the primary care provider follows a standard step-by-step procedure for reviewing the CYW ACE-Q results with the patient and/or caregivers, which includes providing information on the effects of stress on health and development, normalizing the screening, inquiring about symptoms associated with toxic stress, and providing anticipatory guidance or referral to the CYW for integrated care based on the patient's CYW ACE-Q score and relevant toxic stress symptomatology. If referred to CYW, a multidisciplinary clinical team provides support to the family through a family-centered care coordination approach. Care coordinators help educate the families and other providers about the impacts of ACEs and toxic stress on health, collaborates with the families and multidisciplinary team members to develop and implement a comprehensive treatment plan, and facilitates referrals to additional services as needed. Screening is presented yearly after 24 months.</p>	
<p>Outcomes</p>	<p>Dependent Variable: The numerical ACE score determined by the CYW ACE-Q screening tool. Measure: The ACE scores are determined by the cumulative scores on the CYW ACE-Q screen. If the score from Sections 1 and 2 combined is 0 or 1-3 without symptomatology, the provider gives the patient and caregiver anticipatory guidance. If the CYW ACE-Q score is 1-3 with symptomatology or 4 or more with or without symptomatology, the provider recommends referral to CYW integrated care.</p>	
<p>Results</p>	<p>Analysis: No analysis information provided. Conclusions: Due to their regular contact with children and their families, pediatric primary care providers are uniquely positioned to perform routine universal screening of ACEs for children and adolescents. Screening children for ACEs at regular intervals starting at an early age allows pediatric care providers and their mental health provider partners to implement primary prevention strategies such as education and tailored integrated interventions. This regular screening also facilitates early intervention and treatment of children and adolescents with high ACE scores, decreasing the patient's risk for adverse health outcomes.</p>	

Appendix C

ACEs Screening Audit Tool

	Date	Patient Account ID Number	Pre-Coded Screening Number	Screening Tool Distributed	Screening Tool Completed	Reason for Incomplete Screen	ACE Score	Positive Screen	Referred to MHS	Already Under MHS	
Week One											<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Key:</p> <p>1= Yes</p> <p>0= No</p> <p>?= Unsure</p> <p>Pre-Coded Screening Number:</p> <p>A= CYW ACE-Q Child Screening Tool</p> <p>B=CYW ACE-Q Teen Screening Tool</p> <p>C=CYW ACE-Q Teen Self-Report Screening Tool</p> <p>Reason for Incomplete Screen:</p> <p>1= Refused screening</p> <p>2= Ran out of time</p> <p>3=Caregiver not present to complete screen</p> <p>4=Did not meet inclusion criteria</p> <p>5=Unable to introduce screen due to receptionist time constraints</p> <p>6= Other reason (Please specify)</p> </div>
Week Two, Etc.											

Note: The practice receptionists used the ACEs Screening Audit Tool to record the patient identification (ID) number along with the corresponding pre-coded screening tool number, whether or not the CYW ACE-Q tools were distributed and completed, and the reasoning for incomplete screens.

Appendix D

Weekly Screening Summary Tool

	Number of Distributed Screens	Number of Possible Patients to Screen	Percentage of Screens Distributed	Number of Completed Screens	Number of Distributed Screens	Percentage of Screens Completed	Number of Referrals for Positive Screens	Number of Patients who Screen Positive	Percentage of Referrals for Positive Screens
Week 01 (09/02-09/06)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 02 (09/09-09/13)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 03 (09/16-09/20)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 04 (09/23-09/27)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 05 (09/30-10/04)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 06 (10/07-10/11)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 07 (10/14-10/18)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 08 (10/21-10/25)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 09 (10/28-11/01)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 10 (11/04-11/08)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 11 (11/11-11/15)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 12 (11/18-11/22)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 13 (11/25-11/29)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Week 14 (12/02-12/06)			▶ #DIV/0!			▶ #DIV/0!			▶ #DIV/0!
Project Total	0	0	▶ #DIV/0!	0	0	▶ #DIV/0!	0	0	▶ #DIV/0!

Note: Weekly, the DNPS-PL retrieved the completed *CYW ACE-Q* tools from the lockbox and used the pre-coded screening tool number to record positive screens and referrals to MHS on the ACEs Screening Audit Tool with the identifying patient ID number removed by the receptionists.

Appendix F

Pre-Implementation Stakeholder Survey

ACEs Screening Pre-Implementation Survey (NOTE: Actual survey likely to be electronic to help protect anonymity)

Date: _____ Job Title: _____

Thank you for attending the ACEs Trainings. For the following questions, please rate your answer on a scale from 1 through 5, with 1 being "strongly disagree," and 5 being "strongly agree." All answers are anonymous.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I understand what an Adverse Childhood Experiences (ACEs) is.	1	2	3	4	5
2. I understand why it is important to identify ACEs in the pediatric population.	1	2	3	4	5
3. I understand how the <i>Center for Youth Wellness ACE Questionnaire (CYW ACE-Q)</i> works.	1	2	3	4	5
4. I understand the screening process using the <i>CYW ACE-Q</i> tool.	1	2	3	4	5
5. I understand my role in the screening process.	1	2	3	4	5
6. I predict I will be able to perform my role in the ACEs screening process with no difficulty.	1	2	3	4	5
7. I value the concept of screening for ACEs in our office.	1	2	3	4	5
8. I predict patients and/or their caregivers will be receptive to and appreciative of the ACEs screening program.	1	2	3	4	5

Do you have any questions or concerns about screening for ACEs at [insert practice name]?

Do you have any comments you would like to share?

Thank you for taking the time to complete this survey! If you have any questions or concerns you would like to discuss, please contact Sarah at sarah.gross@umaryland.edu.

Note: Actual surveys were electronic to help increase anonymity

Appendix G

Mid-Implementation Stakeholder Survey

ACEs Screening Mid-Implementation Survey

Date: _____

Thank you for your support and feedback during implementation of the ACEs Screening Program. For the following questions, please rate your answer on a scale from 1 through 5, with 1 being "strongly disagree," and 5 being "strongly agree." All answers are anonymous

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I understand what an Adverse Childhood Experience is.	1	2	3	4	5
2. I understand why it is important to identify ACEs in the pediatric population.	1	2	3	4	5
3. I understand how the <i>Center for Youth Wellness ACE Questionnaire (CYW ACE-Q)</i> works.	1	2	3	4	5
4. I understand the screening process using the <i>CYW ACE-Q</i> tool.	1	2	3	4	5
5. I understand my role in the screening process.	1	2	3	4	5
6. I am able to perform my role in the ACEs screening process with no difficulty.	1	2	3	4	5
7. It is feasible to screen for ACEs at well visits and consults.	1	2	3	4	5
8. I value screening for ACEs in our office.	1	2	3	4	5
9. Patients and/or their caregivers seem to be receptive to and appreciative of the ACEs screening program.	1	2	3	4	5
10. I would like to continue screening for ACEs at our office.	1	2	3	4	5

Do you have any questions or concerns about screening for ACEs at [insert practice name]?

Do you have any comments you would like to share?

Thank you for taking the time to complete this survey! If you have any questions or concerns you would like to discuss, please contact Sarah at sarah.gross@umaryland.edu.

Note: Actual surveys were electronic to help increase anonymity

Appendix H

Post-Implementation Stakeholder Survey

ACEs Screening Post-Implementation Survey (NOTE: Actual survey likely to be electronic to help protect anonymity)

Date: _____ Job Title: _____

Thank you for your support and feedback during implementation of the ACEs Screening Program. For the following questions, please rate your answer on a scale from 1 through 5, with 1 being "strongly disagree," and 5 being "strongly agree." All answers are anonymous

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I understand what an Adverse Childhood Experience is.	1	2	3	4	5
2. I understand why it is important to identify ACEs in the pediatric population.	1	2	3	4	5
3. I understand how the <i>Center for Youth Wellness ACE Questionnaire (CYW ACE-Q)</i> works.	1	2	3	4	5
4. I understand the screening process using the <i>CYW ACE-Q</i> tool.	1	2	3	4	5
5. I understand my role in the screening process.	1	2	3	4	5
6. I was able to perform my role in the ACEs screening process with no difficulty.	1	2	3	4	5
7. It was feasible to screen for ACEs at well visits and consults.	1	2	3	4	5
8. I value screening for ACEs in our office.	1	2	3	4	5
9. Patients and/or their caregivers seem to be receptive to and appreciative of the ACEs screening program.	1	2	3	4	5
10. I would like to continue screening for ACEs at our office.	1	2	3	4	5

Do you have any questions or concerns about screening for ACEs at [insert practice name]?

Do you have any comments you would like to share?

Thank you for taking the time to complete this survey! If you have any questions or concerns you would like to discuss, please contact Sarah at sarah.gross@umaryland.edu.

Note: Actual surveys were electronic to help increase anonymity

Appendix I

Stakeholder Survey Audit Tool

	Understand what ACEs are	Understand why it's important to identify ACEs	Understand how the CYW ACE-Q works			Understand the screening process and their role		
	Pre-Imp.	Pre-Imp.	Pre-Imp.	Mid-Imp.	Post-Imp.	Pre-Imp.	Mid-Imp.	Post-Imp.
Strongly Disagree								
Disagree								
Neutral								
Agree								
Strongly Agree								
Totals:								

	Ability to perform their role in screening process			Value screening for ACEs in our office			Patient and/or caregiver receptiveness to screening		
	Pre-Imp.	Mid-Imp.	Post-Imp.	Pre-Imp.	Mid-Imp.	Post-Imp.	Pre-Imp.	Mid-Imp.	Post-Imp.
Strongly Disagree									
Disagree									
Neutral									
Agree									
Strongly Agree									
Totals:									

	Feasibility of screening for ACEs at well visits and consults		Desire to continue ACEs screening		Open Ended Questions/Comments		
	Mid-Imp.	Post-Imp.	Mid-Imp.	Post-Imp.	Pre-Implementation	Mid-Implementation	Post-Implementation
Strongly Disagree							
Disagree							
Neutral							
Agree							
Strongly Agree							
Totals:							