# TRAUMA SCREENING IN CHRONIC DISEASE MANAGEMENT:

# A QUALITY IMPROVEMENT PROJECT

by

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# DEDICATION

This work is dedicated to “Nurses.” You are the caregivers, sustainers, innovators, and heroes that meet the needs of society when society is most in need. You put on your cotton armor and daily do battle with forces seen and unseen, often at your great peril. You are strength for the weak. Sometimes you heal, and sometimes you comfort those whose journey is done. Always you are a symbol of hope. You do all of this not for glory or self, but because it is who you are. Your greatest reward is not in treasure but in the knowledge that you have touched the life of another. To be counted among you is truly humbling.

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# ABSTRACT

More than two decades of research has established the association of adverse childhood experiences (ACEs) and adverse health outcomes in adults as initially proposed in the original study by Felitti and colleagues across multiple, well-designed studies. Research indicates that this is a common problem affecting nearly two out of three in the general population. The positive, dose-related, cumulative association of ACEs and poor health outcomes in chronic diseases including diabetes, heart disease, lung disease, and others has been shown to shorten life expectancy by as much as twenty years compared to those with fewer ACEs. Despite the evidence, screening for ACEs in adult primary care is rare. This scholarly project utilized the Trauma-Informed Care framework to introduce an ACE screening tool in the electronic health record of a rural primary care setting. The target population for screening was adults with specific chronic medical conditions. The primary outcome measure was screening tool utilization, and the secondary measure was the referral to integrated behavioral health (IBH). In a six-week period, ACE screening tool utilization was low, being completed in only 9 of 494 included patient encounters. During the project period, the IBH referral rate increased from 1% to 12% in the same patient sample. Provider and organizational acceptance of the tool were modest. This scholarly project demonstrates several challenges that exist when translating research to practice. More time, education, and resources are needed to close this important research to practice gap.

*Keywords:* adverse childhood experiences, ACE, ACE screening in adult primary care, ACE and chronic disease, ACE and health outcomes, ACE and trauma-informed care, chronic toxic stress

# CHAPTER ONE

## INTRODUCTION

"You are the sum total of everything you've ever seen, heard, eaten, smelled, been told, forgot - it's all there. Everything influences each of us, and because of that I try to make sure that my experiences are positive. – Maya Angelou" (Chang, 2020). Other authors and poets have made similar statements. The concept of being more than merely the expression of a genetic code, but rather a culmination of the effect of life experiences on our biological systems, is generally accepted by society. However, what happens if a person's life experiences are not positive? Does any person genuinely have control over the quality of their life experiences? What are the effects of negative experiences?

### Background and Significance

Past trauma has been recognized as a basis for mental health disorders dating back to the late 1800s, as studied and described by Charcot, Janet, Breuer, Freud, and others (Ringel, 2012). Only more recently has healthcare begun to explore the connection between past trauma and physical health outcomes. A landmark study in 1998 examined the relationship of a subset of trauma, adverse childhood experiences (ACEs), to health outcomes in adults and found that a strong, positive, dose-related relationship exists (Felitti et al., 1998). Since then, much has been written about the link between trauma and health outcomes. The literature is replete with studies that replicate and describe this relationship. The problem as it exists today is that past trauma, when not identified, can negatively affect treatment plans leading to poorer individual health outcomes.

## Context of the Problem

In a large (n=79,810) study examining the relationship between ACEs and health outcomes in rural areas in the US using data from the Behavioral Risk Factor Surveillance System, the authors report 2.4 times the adjusted odds of coronary heart disease in those with four or more ACEs and 36% higher adjusted odds of having diabetes in those with three ACEs compared to those with none (Chanlongbutra et al., 2018). Chanlongbutra and colleagues (2018) saw consistent and significant increased adjusted odds of other conditions, including poor mental health, activity limitation, and poor general health, and that the dose-related response was similar between rural and urban settings.

Other studies have demonstrated the connection between past trauma and adverse health outcomes, yet screening for past trauma is not common in adult healthcare practices (Lewis-O'Connor et al., 2019). In a mixed-method study, Kalmakis and colleagues (2017) explored barriers to ACE screening among nurse practitioners and identified six significant barriers to screening. Time constraints related to screening, comfort level with screening, and lack of ability to respond to patients with a history of ACEs were among the most significant barriers (Kalmakis et al., 2017). Despite the study participants unanimously expressing a belief that it is a nurse practitioner's responsibility to screen for ACEs, only 34% reported usually/always conducting ACE screening (Kalmakis et al., 2017). This is a clear example of the gap that exists between research and practice. Lewis-O'Connor and colleagues (2019) propose a tiered approach to trauma assessment and inquiry that follows the principle of acknowledging the trauma, validating the patient's experience, and balancing trauma with resilience, all while maintaining the goal of not requiring disclosure of the details of the trauma.

## Scope of the Problem

The scope of the issue of trauma and poor health outcomes is vast. The original ACEs study included over 17,000 participants, of whom more than half (52%) reported having at least one ACE, and 6.5% reported having four or more ACEs (Felitti et al., 1998). Since then, several large-scale studies have replicated the results with similar findings. A 2010 Centers for Disease Control study (n=26,229) and in the 2012 BRFSS survey in Iowa found 59% and 55% of participants respectively had at least one ACE (Oral et al., 2016).

One interesting aspect of the initial ACE study was the demographic makeup. In the Felitti and colleagues (1998) study, the participants were predominantly white, middle-class, college-educated, and with a regular source of healthcare. This is a clear indication that the adverse effect of ACEs on adult health outcomes is not a phenomenon that is limited to the socially or economically disadvantaged. However, several subsequent studies support a higher prevalence of ACEs in marginalized ethnic groups and economically disadvantaged persons, though with similar health outcomes (Hargreaves et al., 2019; Min et al., 2013) There is evidence of the consistency of poorer health outcomes in a study by Kelly-Irving and others (2013) in which they indicate a persistent effect of ACEs on health outcomes and longevity even after correcting for other social determinants. Llabre and colleagues report an exception to this trend based on a 2017 study in which they found an increased prevalence of ACEs among a Hispanic population but without corresponding associations with disease.

The many studies cited include analysis of sample characteristics and consistently show that the prevalence of ACEs is consistent with the original ACE study and is similar between men and women. The literature contains examples of male versus female prevalence of ACEs

depending on the study population, the phenomenon being studied, and other study design features. The detriment to health outcomes between men and women also depends on the type of ACE experienced and which specific health outcome is measured. The overall phenomenon of ACEs' contribution to poorer health outcomes remains consistent across the majority of studies. A detailed analysis of the sample characteristics is beyond the scope of this project.

Despite the preponderance of evidence regarding the role of ACEs affecting health outcomes, provider knowledge of this phenomenon is low, and screening for ACEs in adult primary care practices is rare (Bryan, 2019). The low rate of trauma screening is surprising since feasibility and acceptance have been established in multiple studies (Bryan, 2019; Glowa et al., 2016).

## Consequences of the Problem

With mounting evidence that there is a strong and cumulative association between ACEs and significant health outcomes, not identifying past trauma, such as ACEs, poses perhaps the single biggest failure of primary care in the prevention of disease and promotion of health. ACEs contribute to a majority of the leading causes of death, including cancer, chronic obstructive pulmonary disease, heart attack, stroke, liver disease, diabetes, and mental health disorders contributing to higher suicide rates (Oral et al., 2016). Oral and colleagues (2016) state that in addition to increased healthcare utilization and cost, those reporting more ACEs have poorer self-reported health, and life expectancies are shortened by as much as 20 years compared to those with fewer ACEs.

## Proposed Project

The project proposed here addresses the underutilization of trauma screening in primary care by developing a screening tool within a rural healthcare organization's electronic health record. Screening to identify trauma is one of several steps in adopting an approach to treatment that recognizes the impact of trauma on an individual's overall health.

The screening tool included clinical decision support and tools for intervention and referral. This project's screening tool was based on the ACEs questionnaire and was available as part of the office visit template for all patients. A reminder prompt appeared for all patients with one or more identified chronic conditions in the problem list during the project's final phase. This project's chronic conditions of interest are diabetes, congestive heart failure, chronic kidney disease, chronic obstructive pulmonary disease, and chronic non-cancer pain.

## Setting

This project took place in a network of four community-based Rural Health Clinics (RHCs) affiliated with a Critical Access Hospital (CAH) in western Montana. The population of interest includes a significant portion of American Indian/Alaska Native (AI/AN) as the facilities lie within a federally recognized reservation. This is significant as research demonstrates that the AI/AN population suffers significantly higher rates of trauma, including ACEs, generational trauma, and cultural marginalization, as well as higher rates of chronic diseases such as diabetes than non-Hispanic whites (Brockie et al., 2015; Kenney & Singh, 2016; Mitchell, 2012; Tiedt & Brown, 2015). It is worth noting that this project was not limited to screening AI/AN patients. Additionally, the project did not collect any patient-specific identification or clinical data.

Instead, the focus was on the organizational acceptance and utilization of the trauma screening tool.

There was no formalized screening method for past trauma in the healthcare organization chosen for this project. The electronic health record in use does not utilize any clinical decision support tools related to trauma-focused screening.

## Conceptual Framework

The framework utilized for the project intervention is Trauma-Informed Care (TIC). TIC is a framework developed by the Substance Abuse and Mental Health Services Administration (SAMHSA) in 2014 in response to the growing body of knowledge regarding the widespread existence and harmful effects of trauma on individuals and society (SAMHSA, 2014). The TIC framework includes several concepts, assumptions, principles, and domains. According to SAMHSA (2014), the basic concept of trauma is represented by the three Es: the traumatic **E**vent, the person's **E**xperience of the event, and the lasting **E**ffect of the trauma on the person.

In response to the concepts of the three Es, the TIC approach then holds to the following assumptions, represented by the four Rs: **R**ealize the widespread impact of trauma, **R**ecognize the signs of trauma in the individual, **R**espond to the trauma with informed care, resources, and policies, and **R**esist the re-traumatization of the individual (SAMHSA, 2014).

Next, the TIC framework utilizes six key principles in the application of care. These principles are safety, trustworthiness and transparency, peer support, collaboration and mutuality, empowerment, voice and choice, and cultural, historical, and gender issues (SAMHSA, 2014).

Finally, SAMHSA (2014) encourages organizations that seek to provide TIC to implement specific changes across the following ten domains: governance and leadership,

policy, physical environment, engagement and involvement, cross-sector collaboration, screening, assessment, and treatment services, training and workforce development, progress monitoring and quality assurance, financing, and evaluation.

Within the TIC framework, the T-SBIRT (Trauma-focused Screening, Brief Intervention, and Referral to Treatment) process was used in this project. This process was developed and piloted in a study that specifically examined the validity and acceptability with an AI/AN population (Avey et al., 2018). This enhances the choice of process, considering the population demographic of the project organization.

## Project Aims

The project's overall goal was to improve patient care and affect the health outcomes of individuals by increasing the recognition of trauma as it relates to chronic disease management in adult primary care. A project aim that supports the overall goal was elevating the attention paid to past trauma in chronic disease management by introducing a trauma screening tool to the electronic health record. A second aim was to improve the integration of behavioral health in treating chronic health conditions with particular attention to the treatment of trauma as identified by the screening tool.

## Project Outcomes

The primary outcome was measuring the utilization of the trauma screening tool to indicate acceptance of the TIC approach. As the pre-project level of utilization was zero, the goal of screening 50% of patients with one or more identified chronic health conditions was an acceptable level during the project period.

A second outcome was measuring the rate of referral to integrated behavioral health (IBH) in conjunction with the trauma screening tool results. As the IBH program already exists, baseline referral rates exist for patients with identified chronic health conditions. The goal of this project is a 20% referral rate to IBH at the end of the project period.

The final outcome of interest in the project was measuring staff acceptance of utilizing the trauma screening tool as part of the introduction of the TIC framework. This is an important aspect of providing TIC. Many of the six principles of TIC involve organizational culture, climate, and operations, without which the effectiveness of the implementation is undermined (SAMHSA, 2014).

## Quality Improvement Model

The quality improvement method was the Plan-Do-Study-Act (PDSA) model. This method is iterative and well suited to small-scale improvement projects (White et al., 2021). PDSA follows a cyclical pattern of continuous, systematic improvement that contributes to the project's long-term sustainability (White et al., 2021). This project implemented the PDSA cycle at 2-week intervals during the project period.

For this QI project, planning consisted of identifying key stakeholders and forming a QI committee. The QI committee set the scope of the project and approved the project elements, such as the ACE screening tool, at the organizational level. The do phase entailed staff education regarding the scope and aims of the project. Training included content on the association of ACEs and health outcomes, an overview of the TIC conceptual framework, and the T-SBIRT model. At two-week intervals, during the six-week study period, the QI committee met and reviewed the primary and secondary outcome measures and developed refinements to the project

implementation. The act phase included both implementation of refinements as well as developing strategies for project sustainability.

## Congruence of DNP Project to Selected Organization's Mission, Goals, and Strategic Plan

The TIC framework was an appropriate fit for the mission of the organization selected for this project. The selected organization is community-owned and operated with an emphasis on providing high-quality care with a patient-centered, culturally sensitive, evidence-based approach to healthcare (St. Luke Community Healthcare, 2019).

The selected organization had many of the elements of TIC already in place. These included creating a safe environment, providing patient engagement opportunities, the existence of IBH, and others. Lacking was the organizational framework to unite these elements in a comprehensive TIC approach. This small-scale improvement project may serve as a catalyst for change to incorporate TIC at the organizational level.

# CHAPTER TWO

## REVIEW OF LITERATURE

Since the original ACE study (Felitti et al., 1998) was conducted, much attention has been paid to the association between past trauma and chronic diseases later in life. Recent literature is replete with studies that are consistent with, and some even nearly replicate, the results of the original ACE study. In the original study, Felitti and colleagues (1998) examined the association of ACEs and multiple risk factors for many of the leading causes of death, including alcoholism, smoking, drug abuse, risky sexual behavior, and diseases such as heart disease, cancer, and liver disease. Subsequent studies expand the poor health outcomes, including diabetes, mental health disorders, suicide, obesity, lung disease, and auto-immune diseases. This review will summarize recent literature regarding this association between ACEs and health outcomes.

For the scholarly project proposed here, three separate searches were conducted regarding the phenomenon of interest, the feasibility of the intervention, and the acceptability of clinical decision support (CDS) tools within an electronic health record (EHR). These searches utilized multiple databases, including Web of Science, CINAHL, MEDLINE, and ProQuest Central. Search filters applied include peer-reviewed articles in English. It has been over twenty years since the original ACE study. For this reason, the literature search included a ten-year span in order to capture important early works and to demonstrate the consistency of the phenomenon over time. The majority of articles included in the review were published within the past five years.

The initial search utilizing the keywords "adverse childhood experience" and "adult" and "chronic disease" yielded over 27,000 results. A review of these results by title and abstract for relevance led to the inclusion of thirty-three articles. A second search utilizing the keywords "adverse childhood experience" and "screening" and "feasibility" yielded over 3000 results. A review of these results by title and abstract led to the inclusion of ten articles. The third and final search utilizing the keywords "electronic health record alerts" and "health outcomes" yielded over 13,000 results. A review of these articles by title and abstract led to the inclusion of 5 articles.

## Phenomenon of Interest

In a large (n=95,677) national, cross-sectional survey study of the association of modified ACEs and the prevalence of chronic health conditions such as asthma, attention deficit hyperactivity disorder, and obesity, Bethel and colleagues (2014) found that the detrimental health effects related to past trauma may begin during childhood years. Their findings revealed that there was a positive, dose-related association between ACEs and chronic conditions. For example, children with two or more ACEs had more than double (31.6% vs. 14.6%) the incidence of special healthcare needs or chronic conditions (Bethell et al., 2014). Bethell and colleagues (2014) also found that those who experienced two or more ACEs showed fewer resilience factors and were less likely to have a regular source of family-centered medical care, two important and related social determinants of health (SDOH).

A 2017 study in the State of Iowa attempted to replicate the original ACE study using the 2012 Behavioral Risk Factor Surveillance System (BRFSS) data set for the entire State (Downey et al., 2017). Data from 6,361 Iowa residents over the age of 18 years with appropriate

oversampling to adjust for minority representation yielded very similar results to the original ACE study, with 58% experiencing at least one ACE compared to 52% in the original study by Felitti and colleagues (1998) (Downey et al., 2017). Downey and associates (2017) report a positive, dose-related association between ACEs and health risk behaviors (smoking, heavy drinking, obesity, sedentary lifestyle) and chronic health problems (heart disease, cancer, stroke, chronic obstructive pulmonary disease, and diabetes).

Campbell and associates (2016) also conducted a very large (n=48,526) cross-sectional, multi-state survey using 2011 BRFSS data. These results were consistent with current literature showing a positive, dose-related association between ACEs and both health risk behavior and chronic diseases. This study examined twelve outcome categories of health risk behavior and chronic disease. The authors report statistically significant increased odds ratios for every category and nearly every level of the ACE score (1, 2, 3, 4+) even after correction for other SDOH (Campbell et al., 2016).

These examples of studies that show the significant, positive, dose-related association between ACEs and health risk behaviors and chronic diseases are validated by myriad other studies across multiple populations and settings, with all showing similar results (Brown et al., 2013; Chanlongbutra et al., 2018; Cubbin et al., 2019; Friedman et al., 2015; Hargreaves et al., 2019; Kelly-Irving et al., 2013; Loria et al., 2014; Min et al., 2013; Norman et al., 2012; Sonu et al., 2019; Wade Jr. et al., 2016; Yeoman et al. 2013).

While the literature supports a strong association between ACEs and chronic disease, this is not the only negative effect. There is also a significant positive association between ACEs and mental health and substance abuse disorders. For example, Kerker and colleagues (2015)

conducted a study of 912 children under age six to examine the association of ACEs with early childhood mental health as measured by the Child Behavior Checklist (CBCL) in children referred to US child welfare agencies. In this sample, 98.1% of children had experienced at least one ACE, and just over half (50.5%) had experienced four or more ACEs (Kerker et al., 2015). Furthermore, Kerker and colleagues (2015) report a 32% increase in problem score on the CBCL for every additional ACE incurred.

Another large study (n=13,593) utilizing the 2010 BRFSS dataset for Washington state shows a positive association between ACEs and poorer psychological health into adulthood (Nurius et al., 2015). This study showed significant associations across nearly all measures on the dependent variables of mental health symptoms, perceived well-being, and impairment of daily activities, even when corrected for other predictors (Nurius et al., 2015).

Several other studies show a similar and consistent association between ACEs and mental health and substance abuse disorders (Brockie et al., 2015; Mosely-Johnson et al., 2019; Whitaker et al., 2014). Perhaps one of the most compelling studies of this type is a qualitative review of twenty years of research related to ACEs and the effect on the mind and body throughout the lifespan (Zarse et al., 2019). Zarse and colleagues (2019) examined the effect of ACEs on general mental health indicators, depression, post-traumatic stress disorder, psychosis, suicide, aggression, and pain and found positive associations in each category. Furthermore, Zarse and colleagues (2019) reviewed the associations between ACEs and medical conditions, including obesity, autoimmune and gastrointestinal diseases, pulmonary disease, cardiovascular disease, and cancer, and again found significant positive associations. While these authors state a lack of knowledge of the specific mechanisms or pathways of the broad range of chronic

conditions associated with ACEs, they propose that the connection is causal rather than merely associative (Zarse et al., 2019).

Studies have sought to describe the specific mechanism or pathway to explain the association of ACEs and chronic conditions. One such study examined cortisol levels of hair samples as a more reliable method of testing for dysregulation of hypothalamic-pituitary-adrenal (HPA) activity than point testing with saliva or serum (Kalmakis et al., 2015). This study examined the hair, using specific, validated measures, of 55 healthy 18-24-year-old adults and found that lower cortisol levels were present in participants who reported childhood stress as a function of HPA dysregulation, which is believed to be linked to chronic disease states (Kalmakis et al., 2015).

Morris and associates (2019) take the HPA dysregulation proposal and further examine the autonomic nervous system's responses, inflammation, nitrosative and oxidative stress, and mitochondrial dysfunction as significant contributors to what is referred to as allostatic load and chronic toxic stress. While a detailed discussion of the neurobiology and genetics involved in Morris and associates (2019) study is beyond the scope of this review, it is important to note that genetic, epigenetic, and biological markers of allostatic load are being identified, which may lead to research that could uncover therapeutic approaches to mitigating these effects across the lifespan. This important research continues with a study that sought to examine the effect of early life stress on telomere length and mitochondrial DNA function as biomarkers related to chronic disease (Ridout et al., 2018). Ridout and colleagues (2018) conclude that having reliable biomarkers such as these may lead to therapeutic treatments and be used to monitor the effectiveness of mindfulness interventions and resilience factors.

One additional study that is an important contribution to the body of knowledge regarding ACEs and chronic disease is by Reuben and associates (2016), which compared retrospective and prospective assessments related to adult health in a longitudinal study in Australia. The findings showed moderate agreement between retrospective and prospective ($r=.47$, $p<.001$) recording of ACEs and that the effect size of the association reported in the original ACE study was similar (Reuben et al., 2016). This study supports the veracity of the phenomenon, whether approached with childhood screening for predictive interventions or with adult screening for explanations of the incidence of chronic disease, leading to new treatment approaches at the primary care level.

Finally, it is noteworthy to comment that not all studies support that adult diseases have associations with ACEs. A prospective study of 143 adult patients seeking orthopedic specialty care, the association of ACEs and physical limitations, and pain intensity found no association (Ottenhoff et al., 2019). Similarly, a study by Kenney and Singh (2016) found that increased incidence of diabetes in Alaska Native/American Indian youth was associated with higher ACE scores, but that the statistical significance was erased when the data were adjusted for other common SDOH. While not consistent with the majority of the literature, each of these studies supports the need for continued, well-designed research on this topic.

## Feasibility of Implementing a Trauma Screening Tool

While there is a large body of evidence in the literature spanning more than twenty years describing the association between ACEs and chronic disease, there is less evidence of applying this knowledge to practice. An important aspect of the translation of any body of knowledge to practice is the feasibility of the implementation. This project proposes specifically to implement

a screening process to evaluate the presence of ACEs in adults with chronic disease. Current literature supports this type of project.

A small cross-sectional study based on the TIC conceptual framework screened thirty patients at a substance abuse treatment center in Maryland for ACEs and performed follow-up interviews (Chandler et al., 2018). The results of Chandler and associates (2018) were that clients were willing to participate, felt validated by a new understanding of the role of past trauma in their addiction, and forty percent accepted referrals for mental health counseling.

Another study in a prenatal setting screened 375 women for ACEs during routine prenatal visits (Flanagan et al., 2018). This study aimed to measure patient and provider acceptance of screening. The authors report that 91% of patients reported being comfortable with the screening process, about 85% felt that clinicians should be asking patients about past childhood trauma, and 53% stated that the screening increased the trust they had in their clinician (Flanagan et al., 2018). Furthermore, Flanagan and colleagues (2018) reported that clinicians were accepting of the screening process and reported increased knowledge and comfort in the screening process and increased ability to respond to clients with needs identified by the screening.

Another large study (n>700) examined the acceptability and feasibility of ACE screening as part of a multi-phase PDSA implementation project in a large pediatric clinic in southern California (Marie-Mitchell et al., 2019). The authors report that patient caregivers and physicians were willing to utilize the screening tool and reported satisfaction with the process (Marie-Mitchell et al., 2019).

Other studies and articles identified in the literature concerning the feasibility of ACE screening deal primarily with pediatric practices, perhaps indicating greater acceptance of the

phenomenon in this setting (Ford et al., 2019; Gillespie, 2019; Selverage et al., 2019; Watson, 2019; Wickramasinghe et al., 2019). There is a dearth of literature regarding ACE screening in adult primary care, thus supporting the need for additional study in this area.

Wade and colleagues (2017) conducted a study using BRFSS data from a large sample (n=71,413) to examine the feasibility of adapting the 11-item BRFSS ACE questionnaire into a 2-item screening tool that could be used in an adult primary care practice. They found that the 2-item ACE screening tool showed varying sensitivity (99-70%) and specificity (66-94%) depending on the ACE cut-point used (Wade et al., 2017). Wade and colleagues (2017) concluded that screening for past trauma could be an important part of adult primary care, and further research is merited on how to accomplish this best.

## Acceptability of Clinical Decision Support Tools

The use of technology to support health care, specifically nursing informatics, has become an essential part of modern nursing, allowing retrieval of the right knowledge at the right time for the right patient (McGonigle & Mastrian, 2018). With the power of modern computing and comprehensive electronic health records comes the ability to harness that power to the benefit of patient safety and improved quality through the use of clinical decision support (CDS) tools. CDS is more than just an electronic reminder; it is an informatics tool that provides a variety of timely information to the user for improved decision making and care (McGonigle & Mastrian, 2018). Part of ensuring that CDS tools accomplish the goals set forth is to study the implementation's acceptability. This section describes literature relevant to CDS implementation and acceptability. Examples include a variety of CDS tools in multiple settings.

In a study that examined the use of an alert CDS tool to improve guideline adherence for blood transfusions, the authors report the alert effectiveness was not statistically significant; however still helped to avoid over 5,600 unnecessary transfusions over two years, saving over $4 million (Lam & Ng, 2017). This study also looked at the acceptability of the alerts and found that adjustments were needed to prevent false alerts based on exceptions to the guidelines, a solution that was not possible in the current EHR platform (Lam & Ng, 2017). Fitting the CDS tool's capability to the practice patterns is of high importance when developing the tool.

The effectiveness of a CDS tool is a problematic improvement to accomplish. In a systematic review of CDS reminder implementation studies (n=28) from 1950 thru 2008, the authors report that no CDS reminder tools provided a significant level of process improvement (Shonjania et al., 2010). Furthermore, several CDS reminder features were examined to see if some may significantly affect provider behavior. Shonjania and colleagues (2010) report that even the individual features that had the greatest effect on provider behavior failed to reach significance.

More recently, an implementation study designed, implemented, and evaluated a CDS alert to remind providers to prescribe anticoagulation to newly diagnosed atrial fibrillation patients (Cook et al., 2015). From a large sample of electrocardiograms (n=16,755), the CDS tool selected 604 as possibly new-onset atrial fibrillation, of which 44% were correctly identified and similar to manual identification (Cook et al., 2015). When measuring the primary outcome of appropriately prescribing anticoagulant medication, the providers with the CDS alert performed at nearly the same rate as the control (45% v. 43%) (Cook et al., 2015). Again, the CDS tool did not have a significant impact on provider behavior.

However, another large study (n=41,042) that examined CDS alerts effect on the recommendation rate for colorectal cancer screening found no significant increase (Guiriguet et al., 2016). The authors report that their findings are similar to the results of a Cochrane review that indicated the impact of CDS alerts in the EHR provides a small to modest benefit (Guiriguet et al., 2016).

In a 2018 study, Downing and colleagues sought to determine if CDS alerts would improve adherence to treatment guidelines and clinical outcomes in patients with severe sepsis. After the randomization of 1123 patients at a large medical center, the intervention group had multiple technology-based alerts sent to the nurse and physician when sepsis criteria were identified in the EHR (Downing et al., 2018). With 64% of cases being true positives, there was no significant increase in the intervention group for neither the primary nor secondary outcomes measured (Downing et al., 2018).

## Synthesis of the Literature

As demonstrated in this review, there is much evidence supporting the role of ACEs, chronic toxic stress, and allostatic load in the risk of developing health risk behaviors, mental health disorders, substance abuse disorders, and medical conditions including heart disease, diabetes, COPD, and cancer. Furthermore, recent research is suggesting several biomarkers to support these observations. The breadth of evidence in the literature supporting the contribution of ACEs in particular, and past trauma in general, demands increased attention at all levels of primary care.

This literature review highlights the feasibility of implementing an ACE screening intervention in primary care. The studies in this review describe both patient and provider

acceptance of ACE screening in the clinic setting. While more widely demonstrated in the pediatric setting, projects such as proposed in this scholarly project can add to the body of knowledge of quality improvement related explicitly to adult primary care.

Finally, there is ample evidence in the literature to suggest that adding a screening tool to the EHR with CDS alert tools to encourage utilization will likely not affect clinician behavior. Translating the evidence supporting the implementation of ACE screening in adult primary care will necessarily rely on other factors. Utilizing strategies at the organizational level to create a culture change toward accepting the TIC framework should be explored. The current literature review supports the rationale for the proposed project and provides guiding principles for the implementation and evaluation methods. The evidence review table is presented in Appendix A.

# CHAPTER THREE

# METHODOLOGY

This chapter will provide a detailed description of the methodology of the proposed QI project. The description includes ethical considerations, setting, participants, the intervention, the tools used, data analysis, and the dissemination plan.

## Ethical Consideration

There are ethical considerations with this QI project. The most important consideration was that of patient consent and privacy. This project's design did not require the collection of any patient information or other individually identifiable data. As this was a quality improvement project approved by the healthcare organization's administration and specifically not a research project, it did not require informed consent.

The QI project underwent a review by the Montana State University – Bozeman institutional review board (IRB) and was determined to be exempt. Additionally, the QI project underwent a review by the Salish and Kootenai College IRB. In accordance with SKC policy 1000.0, the proposed project is recognized as not being research and is exempt from full IRB review. Both determinations are included in Appendix B.

## Setting

The setting for this QI project was a multi-site primary care clinic organization in rural Western Montana. The clinics are directly affiliated with a 25-bed Critical Access Hospital that includes emergency and obstetrical care (SLCH, 2019). The community served by this healthcare

organization has a population of nearly 30,000 and is within the boundaries of a federal Indian reservation (Lake County Courthouse, nd.). The four family practice clinics are located in three separate towns within the county and staffed by a mix of physicians, physician assistants, and nurse practitioners.

A SWOT analysis (Appendix C) outlines several facilitators and barriers to project implementation within this organization. Strengths included organizational structure and governance. This is a community hospital with a local board of directors. Decision-making is done locally with no remote corporate oversight. Also, this organization has a large market share being one of only two hospitals in the region. The organization had also recently upgraded the health information technology (HIT) platform to one that integrates across multiple practice settings and includes several CDS tools.

The organization's weaknesses included poor organizational communication that makes change difficult when considering different practice settings such as the clinics versus the hospital. Contributing to the poor communication that makes QI change difficult is that the organization does not consistently utilize a framework to guide change initiatives. Lastly, the current implementation of the HIT platform had not enabled several features, including CDS tools and patient registries, that can be helpful with QI projects.

Opportunities for change that will benefit the organization and the community do exist. Most notably is the increased acceptance of the need to address a variety of social determinants of health. There is an opportunity to rebrand the organization in a manner that can be used to create new marketing strategies based on improving individual and population health. Adopting the TIC framework can contribute to this, and ACE screening serves as a small feasibility project to inform

a possible organizational change.

Current threats include the global Covid-19 pandemic and recent increases in competition in the community. The pandemic exerts a strain on current staff, financial, and material resources that make any QI project challenging to implement. There have been regular additions of staff and service lines to competing organizations in the community, highlighting the need to be strategic and make quality improvements based on needs analysis and not in reaction to outside market forces.

## Participants

The primary participants in this QI project were the providers and nurses in the primary care organization. There were nine physicians, five physician assistants, two nurse practitioners, and a complement of nurses and medical assistants. These were the end-users who conducted the ACE screening in the clinic setting.

Supporting the QI project's implementation is the QI committee comprised of the chief operations officer, a physician champion, a health information technology specialist, an IBH social worker, the organization foundation director, and the author. The author is included in the description of the provider staff for this organization but elected to exclude himself from data collection for the project.

## Budget

This QI project did not intend to measure the change in revenue or specific financial impact to the organization; however, the direct cost of the project was considered. No new equipment or software was required to be purchased for this project. Expenses were limited

to the attribution of time by the key stakeholders. Activities included for financial consideration include meetings, training sessions, technology build activities, and office supplies. The estimated cost of implementation totaled $1,600. There is an opportunity to recover the cost of this project through coding changes for increased complexity of visits that include ACE screening, increased number of referrals to IBH, and increased market share from activities related to this project. Direct measurement of these revenue factors was beyond the scope of this scholarly project.

## Intervention

This QI project took place in several steps between Fall 2020 and Spring 2021. The project timeline is included in Appendix D. The purpose of the project was to facilitate screening for ACEs among adults with chronic health conditions. This was accomplished by introducing an ACE screening tool within the EHR.

Following the adoption step of the RE-AIM framework, organizational support was sought in the following manner. With the faculty team's approval of the project concept, the intervention then received approval from the healthcare organization's executive committee. Next, the QI committee's membership was formalized through a series of individual and group meetings with identified stakeholders to introduce the project aims. The first QI committee meeting laid out the project proposal, introduced the major framework and method of translation, assigned responsibilities to the stakeholders, established a budget, and served as the first planning session of the plan, do, study, act (PDSA) cycle. The project period was six weeks in length, and PDSA cycles occurred at two-week intervals (for a total of three PDSA cycles). At the completion of the project period, the QI committee met a final time to discuss results and plans for sustainability. The QI project template is included in Appendix E.

A template design meeting held separately outlined the IT framework needed to meet the project goals and develop data collection methods. The initial screening tool was developed and tested for functionality within the EHR's test environment. Once the template design was deemed functional, QI committee approval was given to activate the screening tool in the EHR's live environment at the start of the project period. The EHR utilized in the project was Meditech Expanse (Meditech, 2020).

Informational and training meetings held before the start of the project period served to reach the target population. Approximately two months prior to commencing the project, the project proposal, including background and significance, methods, aims, and sustainability plan, was presented to the medical and nursing staff during regularly scheduled meetings. Training sessions with all clinical staff on implementing and using the ACEs screening tool within the EHR, how to utilize the T-SBIRT method, and referral resources available occurred within the month prior to project implementation.

## Tools

The primary tool used in this QI project was the ACE screening questionnaire, which contains ten questions pertaining to multiple dimensions of childhood adversity, including abuse, neglect, and household dysfunction (Felitti, 1998). The ACE questionnaire used over the past 20 years has consistently yielded similar results as the original study. Murphy and colleagues (2014) conducted a study to examine the validity of the ACE questionnaire and found it to be internally consistent (Cronbach's a = 0.88). The version of the ACE questionnaire used in this project only records the ACE score (0-10) and not the specific type or category of ACEs encountered and is

part of the EHR's office visit template. The content of the screening tool is included in Appendix F.

The providers participating in the project completed an anonymous pre- and post-survey designed on a five-point Likert scale. The analysis consists of a simple comparison of before and after results. This measure of satisfaction and feasibility is patterned after the survey used in an ACE screening feasibility study by Glowa and colleagues (2016). The QI committee approved the content and wording of the tool. The survey tools are included in Appendices G and H.

The EHR was the Meditech Expanse platform and utilized CDS tools in the form of reminder alerts (MediTech, 2020). The EHR also allowed for data collection to track the utilization of the screening tool among staff.

Recognizing that screening is a first step in addressing the overall phenomenon of the relationship between ACEs and poor health outcomes later in life, this project included next step items following the T-SBIRT framework. Staff training on the Trauma-Screening step of the model also included training on Brief Intervention and Referral to Treatment. Screening, brief intervention, and referral for treatment (SBIRT) is a standardized approach to the treatment of alcohol abuse that was adapted to the trauma environment and shown to have suitability and acceptability to encourage acceptance of referrals to specialty treatment (Topitzes et al., 2017).

After completing the ACE screening, the provider used the opportunity to acknowledge the potential effects of past trauma and inquired about resilience factors or healthy coping strategies that the patient may have employed. Finally, the provider sought patient acceptance to refer the patient for additional trauma care with either IBH or trauma-informed mental health providers outside the organization.

## Data Analysis

The data analysis plan for this project was to extract screening tool utilization rates directly from the EHR. The baseline rate was known to be zero, as no ACE screening tool currently existed within the EHR utilized by this organization. The denominator is the number of office visits during the six-week study period that met inclusion criteria. The numerator is the number of qualified visits for which an ACE screening was recorded. Inclusion criteria are office visits for adults (aged 18 or older) with one or more of the following chronic conditions listed on the current problem list in the EHR: diabetes, coronary artery disease, congestive heart failure, chronic kidney disease, chronic obstructive pulmonary disease, and chronic non-cancer pain. The project goal was to screen at least 50% of eligible patients.

The secondary data point was the rate of referral to IBH as a result of the ACE screening. The denominator was the number of office visits that meet inclusion criteria, as mentioned above. The numerator is the number of qualified visits for which a referral was made in the EHR to IBH. The rate of referral for these services in the target population was 1% (n= 846 eligible visits) in a three-month period prior to project implementation, a period during which no ACE screening occurred. The project goal was a 20% referral rate as a result of the intervention.

## Goals

There were several short, mid, and long-term goals associated with this QI project. Among the short-term goals was testing the ability to implement a QI project while utilizing a quality improvement framework. This can serve to improve the success of future projects by adding structure and improving communication within the organization.

A mid-term goal was to demonstrate the acceptability and feasibility of adding screening tools and CDS alerts to the practice environment. If successful, greater efficiency can lead to improved quality of the information in the EHR and improved provider satisfaction.

The main long-term goal associated with this project was improved patient outcomes. Through effective, systematic use of informatics, improved safety and better individual and population health outcomes are possible.

## Dissemination of Results

An essential aspect of any translation of evidence in a QI project is disseminating the results, which occurs at multiple levels (White et al., 2021). Furthermore, Moran and colleagues (2020) point out that in addition to meeting the Doctor of Nursing Practice program's academic requirements, dissemination within the project organization and beyond adds strength and value to evidence-based practice knowledge.

The dissemination plan for this QI project included project proposal defense before implementation, executive summary at the completion of the project, conference-style presentation to the project organization, and presentation of results to the academic program.

# CHAPTER FOUR

# RESULTS

The principal aim of this QI scholarly project was to introduce an ACE screening tool in the adult primary care setting. A second aim was to improve the integration of behavioral health in treating chronic health conditions with particular attention to the treatment of trauma as identified by the screening tool. The primary outcome measure was the utilization of the ACE screening tool in adults with identified chronic health conditions. The secondary outcome measure is the rate of referral to IBH during the project period. The final outcome measure is staff acceptance of the ACE screening tool as part of the introduction of the TIC framework. This chapter presents the results of the scholarly project.

## Participants

While the entire organization had a role in the QI project, the QI committee identified the providers (MD, DO, NP, PA) as being the primary utilizers of the ACE screening tool in practice. Demographic data for the providers of the project organization are presented in Table 1. Nurses and other staff received training to utilize the screening tool but primarily served to identify appropriate patients and remind providers to conduct the screening.

Table 1. Provider demographics

| | |
|---|---|
| Participating MD, DO | 9 (5 male, 4 female) |
| Participating NP, PA | 6 (3 male, 3 female) |
| Average Age of MD, DO (range) | 43 (31-69) |
| Average Age of NP, PA (range) | 44 (31-60) |
| Average years at organization MD, DO (range) | 9 (1-28) |
| Average years at organization NP, PA (range) | 8.5 (3-16) |

## Outcome Measures

### Plan-Do-Study-Act

This QI project took place over six weeks in early 2021, consisting of three 2-week PDSA cycles. QI committee meetings concluded each PDSA cycle to review the results and discuss refinements to the project implementation. Results of the ACE screening tool utilization are summarized in Table 2.

To prepare for the first PDSA cycle, a training session was held with the medical staff about the upcoming project launch the following Monday. This training, conducted remotely by teleconference, was part of the regular monthly medical staff meeting. During the first PDSA cycle, the ACE screening tool appeared in the office visit template for all patient encounters. All providers received internal email reminders that the QI project was underway. One ACE screening occurred in the first 2-week cycle. During the QI committee meeting after the first cycle, the committee decided that additional reminders of a more tangible nature could increase screening utilization.

During the second PDSA cycle, conducted two weeks later, the organization distributed laminated cards of the ACE screening tool (Appendix F) for use in each clinic exam room. Providers received additional email reminders that contained elements of the training received prior to the start of the project. Also, nursing and support staff received internal email reminders to help promote increased engagement throughout the organization. Two ACE screenings occurred during the second PDSA cycle.

During the final PDSA cycle, and on the advice of the QI committee, electronic alerts were implemented to enhance the visibility of the project. Internal email reminders were sent to providers to make them aware of and explain the use of the electronic alerts. A regularly scheduled medical staff meeting took place during the final PDSA cycle, which allowed for additional provider training.

Table 2. ACE screening tool utilization

| Time Period | Number of Qualified Visits | Number of ACE Screenings Completed |
|---|---|---|
| Baseline (3 months fall 2020) | 846 | 0 |
| PDSA #1 | 162 | 1 |
| PDSA #2 | 195 | 2 |
| PDSA #3 | 137 | 6 |
| Total | 494 | 9 |

The secondary outcome measure was to track the number of IBH referrals during the project period using the same criteria of adults with the previously mentioned specific chronic conditions. The results of the IBH referrals are presented in Table 3. This measure intended to observe if there was a trend in IBH referrals that followed the trend of ACE screenings

completed. The data suggests no relationship between ACE screening and IBH referral. However, there was a notable increase in IBH referrals during the project period compared to the baseline period. The IBH referral rate in the three-month baseline period was approximately 1% compared to a rate of just over 12% in the six-week project period.

Table 3. IBH referrals

| Time Period | Number of Qualified Visits | Number of IBH Referrals |
|---|---|---|
| Baseline (3 months fall 2020) | 846 | 9 |
| PDSA #1 | 162 | 19 |
| PDSA #2 | 195 | 26 |
| PDSA #3 | 137 | 15 |
| Total | 494 | 60 |

Staff Acceptance

A pre- and post-survey that measured staff acceptance of the QI project included questions about familiarity and comfort level with ACE screening and perceptions of time and practice patterns associated with screening. The survey tool utilized a five-point Likert scale with one being less frequent/favorable and five being more frequent/favorable with comparisons made between weighted averages. The survey results are presented in Appendix I and Appendix J. Response rate to the pre-survey was high, with fourteen out of fifteen completing the survey. Fewer providers, eight out of fifteen, completed the post-survey. Results indicate increased familiarity and comfort level with ace screening and decreased perception of the importance of changing practice patterns, such as with referrals.

On the pre-survey, providers reported a weighted average of 3.5 for the familiarity of the relationship between ACEs and adult health outcomes which increased to 3.75 on the post-survey. Providers reported a weighted average of 2.0 for comfort level with conducting ACE

screening on the pre-survey and 3.13 on the post-survey. Providers also reported increased confidence in responding to patients who screen positive for ACEs, with the weighted average increasing from 2.5 on the pre-survey to 2.88 on the post-survey.

Despite the increase in familiarity and confidence with ACEs and ACE screening, the weighted average decreased from 2.79 on the pre-survey to 2.67 on the post-survey when asked how much ACE screening would change the clinical care for their patients. Another survey score that decreased from the pre-survey to the post-survey occurred when asked how much ACE screening would change referral patterns with patients, which decreased from 3.07 to 2.14. This is interesting given the rather large increase in IBH referrals during the study period.

Solicitation of staff feedback during the project period provided additional insight into the organizational acceptance of the project's aims. One provider said, "Thank you for doing this project. This is such an important topic to discuss with our patients." Another provider stated, "I reviewed the ACE screening with one of my patients. They scored a zero, but the conversation led to revealing significant trauma that occurred after the age of 18. It allowed me to make an appropriate referral." Finally, a nurse reported feeling "more connected" with the patients because of her awareness of the presence of past trauma. No negative comments were shared with the author.

The administration of the organization remained highly supportive throughout the project period. One demonstration of this was the inclusion of an article about the project in the quarterly newsletter sent to the entire community. A copy of the article is presented in Appendix K.

# CHAPTER FIVE

# DISCUSSION

More than two decades of research has established the association of ACEs and adverse health outcomes in adults as initially proposed in the original study by Felitti and colleagues (1998) across multiple, well-designed studies (Bethel et al., 2014; Downey et al., 2017; Campbell et al., 2016; Brown et al., 2013; Chanlongbutra et al., 2018; Cubbin et al., 2019; Friedman et al., 2015; Hargreaves et al., 2019; Kelly-Irving et al., 2013; Loria et al., 2014; Min et al., 2013; Norman et al., 2012; Sonu et al., 2019; Wade Jr. et al., 2016; Yeoman et al. 2013). However, screening for ACEs is relatively uncommon in adult primary care practices (Lewis-O'Connor et al., 2019; Kalmakis et al., 2017). This QI project sought to help bridge the gap between research and practice by introducing an ACE screening tool in a primary care setting of four community-based RHCs in western Montana. The conceptual framework of this project is TIC (SAMHSA, 2014).

## Findings

The primary outcomes of the project reveal much about the challenges facing translation of research into practice. Implementing the ACE screening tool resulted in a mere 1.8% utilization rate over the six-week project period. The result is far short of the 50% goal stated at the beginning of the project. Reasons for this are varied and are discussed in detail in the challenges section.

The secondary outcome revealed an interesting trend. The rate of referral of adults with chronic conditions to IBH was 1.1% during the baseline period of ninety days in the months

preceding the project period. During the six-week project period, the rate jumped to 12.1%. This project's scope did not include drilling into the data to ascertain the specific diagnosis codes associated with the individual referrals. Some of the participating providers' feedback suggests an increased awareness of behavioral factors affecting health, including past trauma, among others, that may have contributed to the increase in referral. Interestingly, this increase in IBH referrals happened when the participating providers knew of significant change in the IBH team in that staff resignations dropped the team to one behavioral health provider.

## Challenges

This project faced several challenges, including informatics limitations, key staff turnover, a short time frame, a small number of participants, next steps, and occurring during a pandemic. Each will be discussed in detail here.

In preparation for the QI project, there was a misunderstanding of the functionality of the EHR platform. The promotional material published by the EHR manufacturer indicates the ability to utilize CDS (Meditech, 2020). In practice, the EHR platform does not contain the ability to design and employ clinical alerts in the practice setting. In other words, the program cannot evaluate the context of an individual patient visit (problem list, age, results of prior screening) and generate an electronic alert at the time of service to prompt the provider to a specific action. Further, the program lacks the ability to automatically navigate the provider to the chart's relevant section to facilitate screening. This limitation is system-wide and not limited to this QI project's specifics but any future project of similar design. The project team developed a workaround that did present an electronic alert during the final PDSA cycle. However, the alert

utilized was clunky, inconsistent, and likely served as a barrier to promoting screening rather than a facilitator.

Another limitation was the loss of some key personnel during the project period. During the months leading up to the project period, two of the three IBH team members resigned from their positions. The third withdrew from the QI committee in anticipation of resigning, which did occur immediately following the final PDSA cycle. In the month before the project commenced, a new social worker was hired and ultimately did join the QI committee amid the PDSA cycles. Additionally, one of the providers went on maternity leave just before the project began, perhaps reducing the number of screenings completed. These changes may have altered the consistency of the project in practice.

The time involved in a translation project is another challenge. Even when the strength of research supports a change in practice, this project demonstrates that six weeks is not enough time to alter providers' long-held practice patterns. The providers' range of practice in this organization was from 1-26 years (average 8.5-9 years). Even with a reasonable degree of buy-in to the project's importance, altering the behavior to adopt new tools into practice does not happen instantaneously. The literature indicates that it takes about seventeen years for research to become part of clinical practice (McCorkle, 2019). McCorkle (2019) states that DNP projects such as this may be an essential strategy to reduce translation time. The actual impact of DNP projects on translation times is a matter of ongoing research.

Another factor that may have contributed to the poor utilization of the ACE screening tool is the lack of extrinsic motivating factors. The final PDSA meeting revealed that with no incentive such as the quality measures as mandated by the Centers for Medicare and Medicaid

Service (CMS), which are tied to significant financial penalty or gain (CMS, 2020), organizational change is not likely. While this may be the case at the organizational level, the authors of a systematic review that examined factors that influenced behavior change of individual primary care providers report that financial incentives do not promote long-term practice behavior change (Chauhan et al., 2017). Rather, collaborative, team-based care approaches and multifaceted education provided the most effective methods to promote change (Chauhan et al., 2017). This suggests a disparity in the factors that affect translation projects between healthcare organizations and providers that may hinder efforts at effective change.

This QI project took place in a small, rural setting with a limited number of providers. While this makes it easier to reach the participants with project information and obtain feedback, it limits the generalizability of the results.

While the research supporting the phenomenon of ACEs and poor health outcomes is strong, the treatment for patients with high ACE scores is less well understood. As previously mentioned, this lack of a clearly defined treatment modality for positive ACE screens and sparse behavioral health resources in many communities has led some to a position against universal ACE screenings (Finkelhor, 2018).

Finally, this project occurred concurrently with the global Covid-19 pandemic. This pandemic has had a profound impact on many aspects of healthcare, including both practice and education. One of the most notable for this project was the limited availability to meet in person with key stakeholders for meetings and education sessions. All of the QI committee meetings and staff training sessions took place via teleconference. As a relatively new paradigm of

meeting, it is unclear how this may have impacted the participants' attention and engagement in key aspects of the project planning and implementation.

## Strengths

One key strength of this project was the level of organizational buy-in. Starting with the executive leadership and spreading to clinic management, providers, nurses, and other support staff, there was much conversation about the project and its perceived value to the organization. Clinic management employed the leadership principle of over-communication (Lencioni, 2020). In his example from the world of business, Lencioni (2020) explains that even high-level leaders in an organization need to repeatedly hear messages of innovation before recognizing something as being something more than internal propaganda. The clinic manager ensured that discussion of this QI project was included in all provider and nurse staff meetings leading up to and during the project period. This commitment to over-communicating, given enough time, can improve the successful translation of research into practice.

The greatest strength of this project is the strength of the evidence from research. As healthcare strives to incorporate evidence into all aspects of practice, there is an underlying necessity for strong evidence from well-designed studies of adequate power to support practice changes. This is perhaps nowhere more important than in nursing as DNPs and nurse PhDs collaborate to innovate practice improvements where each discipline contributes their unique skill sets to make translation and implementation a reality (Trautman et al., 2018). This project is an example of DNP scholarship utilizing the processes of translation of substantial evidence in an effort to affect improved healthcare delivery.

## Sustainability

Throughout the planning and implementation stages, sustainability has been an integral part of the project. The project organization is committed to providing a patient-centered, culturally sensitive, evidence-based approach to healthcare (St. Luke Community Healthcare, 2019). Including a screening of past trauma is congruent with this mission and is consistent with other initiatives already underway.

As part of the project's design, creating the ACE screening tool and the ability to track a patient's ACE score in the EHR is durable. In other words, those elements remain part of the EHR even after completion of the six-week project period. The tool remains active and available for use at any time in the future, allowing providers to continue to functionally consider ACE screenings as they develop comprehensive plans of care. In effect, the effort to change the providers' behavior regarding ACE screening continues.

## Future Potential

With the ACE screening tool remaining a part of the EHR, as mentioned above, there is potential for future activities related to this project. These include additional data collection and evaluation of other outcomes. Additional data collection can include those that could support the organizational structure's expansion to more fully embrace the TIC framework and provide future direction for additional behavioral health integration. Future projects could examine the role of resilience measures and treatment modalities for combating ACEs' negative health effects.

Additional outcomes that occur over a prolonged period could be developed. These could include specific patient outcomes such as glycemic control in people with diabetes, improved blood pressure and body mass index in those with heart disease, and decreased utilization of opiates in patients suffering chronic pain.

The lessons learned from applying the systems approach in this project can serve as a framework for future QI activities within the organization. Adding detailed analysis to each step of the RE-AIM model this project was based on would provide additional data to inform the success or failure of this and other QI initiatives.

## DNP Essentials

This section will discuss how this project was congruent with the American Association of Colleges of Nursing (AACN) Essentials of DNP practice. The essentials are considered foundational competencies for this terminal practice degree. The essentials serve to meet the call to prepare advanced practice nurses to meet the greater healthcare needs of safe, client-centered care and promote interdisciplinary leadership within the healthcare professions (AACN, 2006).

### Essential I: Scientific Underpinnings for Practice

The current project draws on multiple scientific disciplines, including nursing, medicine, psychology, sociology, and others. The project is built on the foundation of a conceptual framework and robust research-based evidence.

### Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

Every phase of this project contained elements of organizational and systems leadership. There was an inclusion of multiple levels of organizational leadership, focusing on following the RE-AIM translational framework and incorporating PDSA rapid-cycle change methodology. This supported the ability to apply change with consideration at the individual, organizational, and population levels.

### Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

This essential is met in that the project is built upon a research to practice gap that is well established in the literature. Research extensively supports the phenomenon that underpins the scope of the problem addressed. The literature review component is comprehensive in that it includes relevant research on the phenomenon, the feasibility, and the technical aspects that support the project.

### Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

Information systems and technology implementation were central to this project. Development of the project's framework from scratch occurred by working with the organization's health information technology specialist. Also, we developed EHR frameworks that can support future QI projects within this organization.

Essential V: Health Care Policy for Advocacy in Health Care

This project served to lay a foundation within the organization to promote increased attention to access, health equity, and social determinants of health. Lessons learned will influence future policy and strategic planning to better meet the community's healthcare needs. The project's focus on past trauma has led to the organization's leadership discussing developing community partnerships to address this pervasive and important problem.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

This project's scope spanned administration, medical staff, nursing, support staff, HIT, and IBH. All interdisciplinary team members made meaningful contributions that provided for the project's logistical success and helped to ensure the sustainability of the translation of research to practice.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

The core of this project is to address a phenomenon that has a large negative effect on population health. As a form of past trauma and chronic toxic stress, ACEs contribute to increased health risk behaviors, increased chronic health conditions, and shortened lifespan (Zarse et al., 2019). Recognizing and responding to this issue is a step towards improved population health outcomes.

### Essential VIII: Advanced Nursing Practice

The conceptualization, design, and implementation of this project demonstrate the synthesis of multiple elements of advanced nursing practice. Elements of every curriculum item from the entire education program are included. Examples are research, statistics, informatics, systems design, finance, leadership, and scholarly writing.

## Summary

The current QI project represents the scholarly application of research to practice in a translation method that incorporates a systems-based approach and is consistent with the DNP project's foundational purpose. Despite the small size and limited data, the project utilized key elements to facilitate sustainability, allowing additional time for increased utilization of the practice change. By incorporating the essentials of DNP practice, this project serves to add to the knowledge of the DNP degree and the DNP project's role in a meaningful way. This is accomplished through the dissemination plan discussed herein.

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# APPENDICES

# APPENDIX A

## IRB DETERMINATION

# IRB Determination

INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

MONTANA STATE UNIVERSITY

2155 Analysis Drive
c/o Microbiology & Immunology
Montana State University
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Telephone: 406-994-4706
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Chair: Mark Quinn
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Cheryl Johnson
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**MEMORANDUM**

**TO:** David Vaughan and Sandra Benavides-Vaello

**FROM:** Mark Quinn
Chair, Institutional Review Board for the Protection of Human Subjects

**DATE:** November 30, 2020

**RE:** *"Trauma Screening in Chronic Disease Management. A Quality Improvement Project" [DV113020-EX]*

The above research, described in your submission of November 25, 2020, is exempt from the requirement of review by the Institutional Review Board in accordance with the Code of Federal regulations, Part 46 section 101. The specific paragraph which applies to your research is:

____ (b) (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

__X__ (b) (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation; and (iii) the information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by section 15.111(a)(7).

____ (b) (3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

____ (b) (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available, or if the information is recorded by the investigator in such a manner that the subjects cannot be identified, directly or through identifiers linked to the subjects.

____ (b) (5) Research and demonstration projects, which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

____ (b) (6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed, or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the FDA, or approved by the EPA, or the Food Safety and Inspection Service of the USDA.

Although review by the Institutional Review Board is not required for the above research, the Committee will be glad to review it. If you wish a review and committee approval, please submit 3 copies of the usual application form and it will be processed by expedited review.

On Thu, Oct 15, 2020 at 9:58 AM Institutional Review Board <irb@skc.edu> wrote:

David, Thank you for your call. The IRB did receive your information.

At this time, your project does not appear to qualify as research per the SKC IRB's definitions. Therefore, you would not need to go through the IRB here.

Do you want a formal letter stating such?

Stacey

–
Stacey Sherwin, Ph.D.
Chair, Salish Kootenai College Institutional Review Board
Director, Institutional Effectiveness, Salish Kootenai College
(406) 275-4931
stacey_sherwin@skc.edu

# APPENDIX B

## ORGANIZATION SWOT ANALYSIS

**Organization SWOT Analysis**

| Strengths | Opportunities |
|---|---|
| • Community based organization<br>• Local governance<br>• Large market share<br>• Modern, integrated HIT platform | • Embrace new organizational culture<br>• Improved marketing strategy<br>• Explore new revenue models |
| **Weaknesses** | **Threats** |
| • Change is difficult at organizational level<br>• Poor organizational communication<br>• No organizational framework for change<br>• Ineffective use of HIT | • Current global pandemic<br>• Increasing competition in the community |

# APPENDIX C

## PROJECT TIMELINE

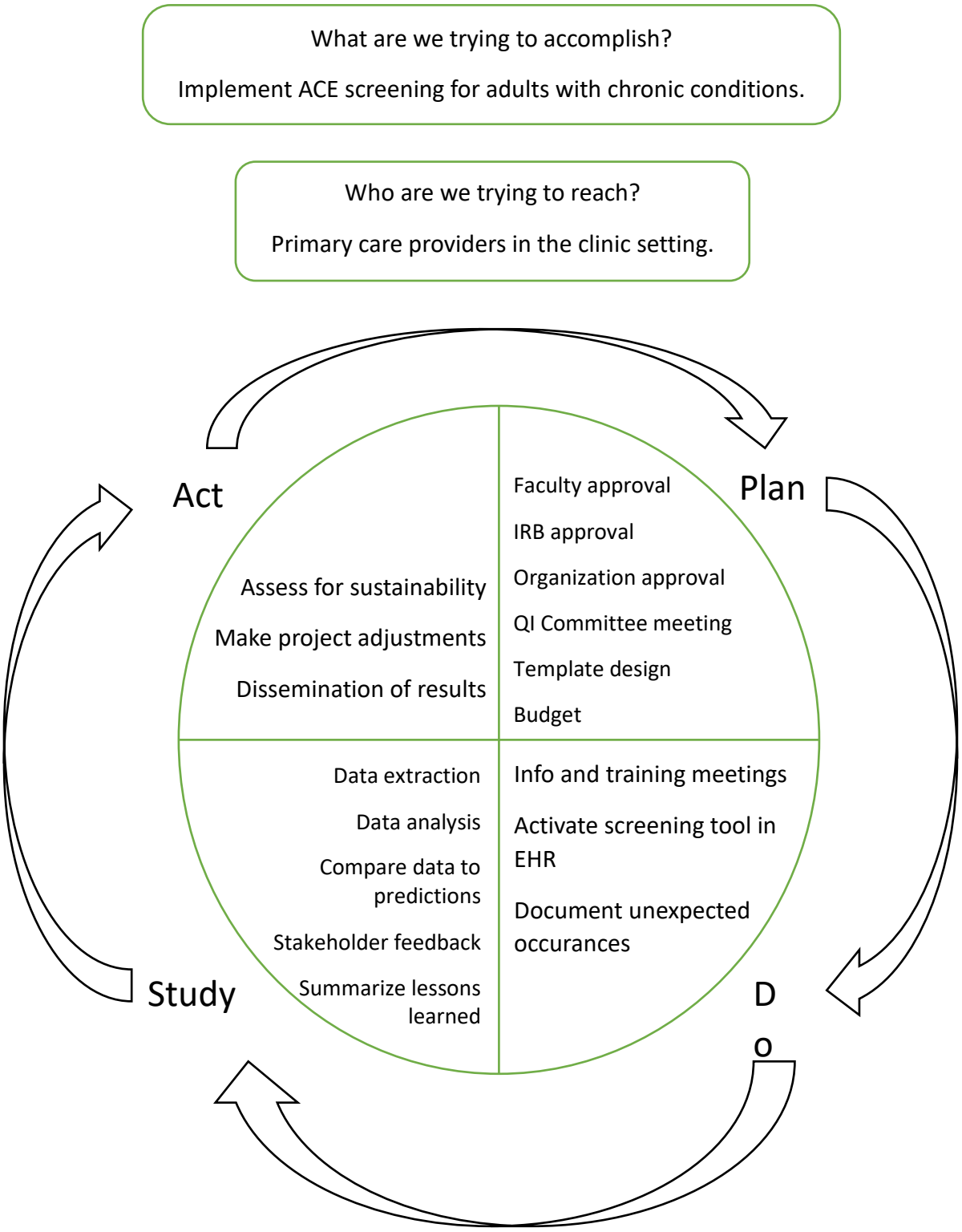
## Project Timeline

- Nov. 12, 2020 - Initial QI committee meeting.
- Nov. 12, 2020 – Project defense and faculty approval.
- Nov. 30, 2020 - IRB approval.
- Jan. 2021- Provider training.
- Mid Jan. – Mid Feb. 2021- Project implementation.
- Feb. 2021- data analysis and reporting.
- Mar. 12, 2021- Dissemination of results – Lunch and Learn

# APPENDIX D

## IMPLEMENTATION DIAGRAM

**Implementation Diagram**



# APPENDIX E

## ADVERSE CHILDHOOD EXPERIENCE QUESTIONNAIRE

**Adverse Childhood Experience Questionnaire**

Research has shown that adverse childhood experiences can have an impact on our health later in life. Research also shows that adverse childhood experiences are *very common*, affecting nearly 2 out of every 3 adults. By understanding your personal experience better, you and your provider may be able to work in more meaningful ways to improve your health in a variety of ways.

**Instructions:**

Privately consider each of the following questions. Score 1 for each "yes" answer. It is not necessary to identify which questions you answered yes to. Only the total score will be recorded.

Prior to your 18th birthday: (yes or no)

1. Did a parent or other adult in the household often or very often swear at you, insult you, put you down, or humiliate you?
2. Did a parent or other adult in the household often or very often push, hit, grab, slap, kick or throw something at you to cause you physical harm?
3. Did you experience sexual touching or fondling (including oral/anal/vaginal intercourse or penetration) by an adult or person at least 5 years older than you?
4. Did you often or very often feel that no one in your family loved you or thought you were important or special?
5. 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?
6. Did you ever lose a parent to separation, divorce, abandonment, or death?
7. Did your parents or other adults in the home often or very often push, hit, grab, slap, kick or throw something at each other to cause physical harm?
8. Did you live with anyone who was a problem drinker or alcoholic, or who abused prescription or street drugs?
9. Was a household member depressed or mentally ill, or did a household member attempt suicide?
10. Did a household member go to prison?

The total number of YES answers is your ACE score.

# APPENDIX F

## ACE SCREENING QI PROJECT PRE-SURVEY

**ACE Screening QI Project Pre-Survey**

1. How familiar are you with the relationship between adverse childhood experiences (ACEs) and adult health outcomes?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

2. How often do you conduct ACE screening with adults in your day-to-day practice?

| Not at all | | Sometimes | | Often |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

3. How comfortable are you with conducting ACE screening with adults in your day-to-day practice?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

4. Will ACE screening provide new information regarding your patients?

| Not at all | | Somewhat | | A lot |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

5. How confident are you in responding to patients who screen positive for ACEs?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

6. How much will ACE screening change your clinical care for your patients?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

7. How much will the ACE screening results change your plan for follow up care?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

8. How much will the ACE screening results change the referral patterns with your patients?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

9. In your opinion, are electronic alerts helpful to remind you to conduct ACE screening?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

10. About how many extra minutes will be added to office visits during which you will conduct ACE screening?

| > 20 | 15-20 | 10-15 | 5-10 | 0-5 |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

Adapted from: Glowa, P., Olson, A., & Johnson, D. (2016). Screening for adverse childhood experiences in a family medicine setting: A feasibility study. *Journal of the American Board of Family Medicine, 29*(3), 303-307. https://www.doi.org/10.3122/jabfm.2016.03.150310

# APPENDIX G

## ACE SCREENING QI PROJECT POST-SURVEY

**ACE Screening QI Project Post-Survey**

1. How familiar are you with the relationship between adverse childhood experiences (ACEs) and adult health outcomes?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

2. How often to you conduct ACE screening with adults in your day-to-day practice?

| Not at all | | Sometimes | | Often |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

3. How comfortable are you with conducting ACE screening with adults in your day-to-day practice?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

4. How much did ACE screening provide new information regarding your patients?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

5. How confident are you in responding to patients who screen positive for ACEs?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

6. How much did ACE screening change your clinical care for your patients?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

7. How much did the ACE screening results change your plan for follow up care?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

8. How much did the ACE screening results change the referral patterns with your patients?

| Not at all | | Somewhat | | Very |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

9. In your opinion, were the electronic alerts helpful to remind you to conduct ACE screening?

| Not at all | Somewhat | Very |
|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

10. About how many extra minutes were added to office visits during which you conducted ACE screening?

| | | | | |
|---|---|---|---|---|
| > 20 | 15-20 | 10-15 | 5-10 | 0-5 |
| 1 | 2 | 3 | 4 | 5 |

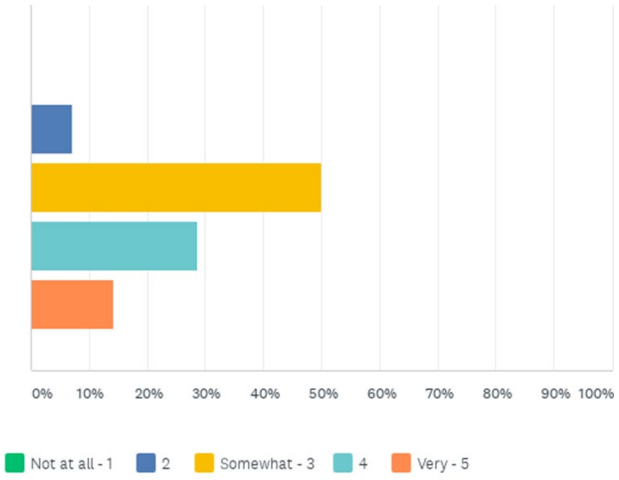
Adapted from: Glowa, P., Olson, A., & Johnson, D. (2016). Screening for adverse childhood experiences in a family medicine setting: A feasibility study. *Journal of the American Board of Family Medicine, 29*(3), 303-307. https://www.doi.org/10.3122/jabfm.2016.03.150310

# APPENDIX H

## PRE-SURVEY RESULTS

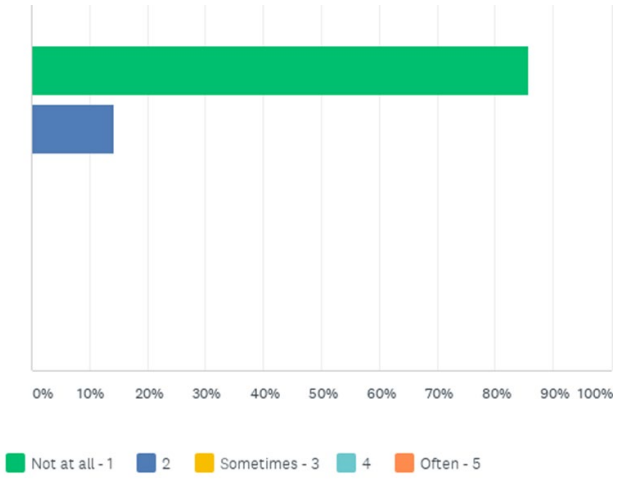
**Pre-Survey Results (n=14)**

1. How familiar are you with the relationship between adverse childhood experiences (ACEs) and adult health outcomes?



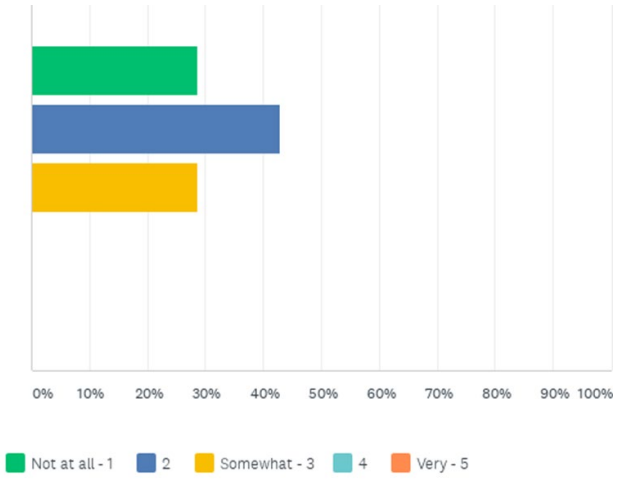

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00%<br>0 | 7.14%<br>1 | 50.00%<br>7 | 28.57%<br>4 | 14.29%<br>2 | 14 | 3.50 |

2. How often do you conduct ACE screening with adults in your day-to-day practice?



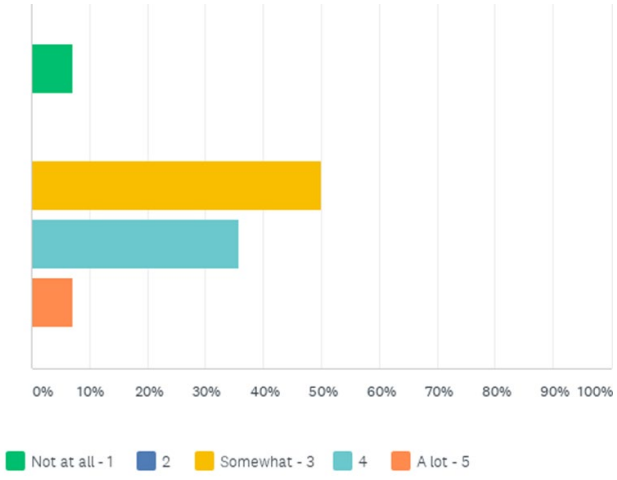

| | NOT AT ALL - 1 | 2 | SOMETIMES - 3 | 4 | OFTEN - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 85.71%<br>12 | 14.29%<br>2 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 14 | 1.14 |

3. How comfortable are you with conducting ACE screening with adults in your day-to-day practice?



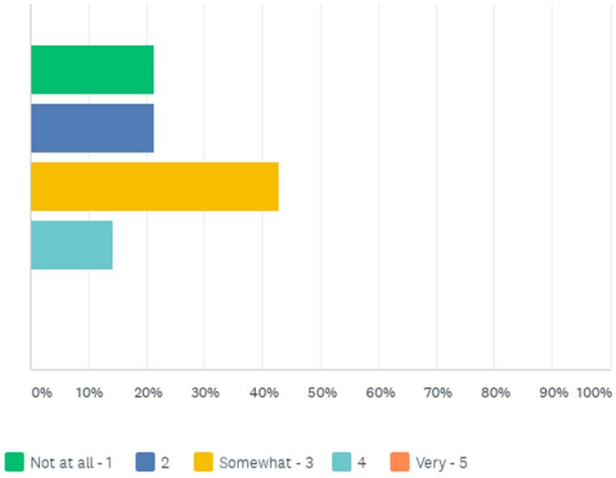

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 28.57%<br>4 | 42.86%<br>6 | 28.57%<br>4 | 0.00%<br>0 | 0.00%<br>0 | 14 | 2.00 |

4. Will ACE screening provide new information regarding your patients?



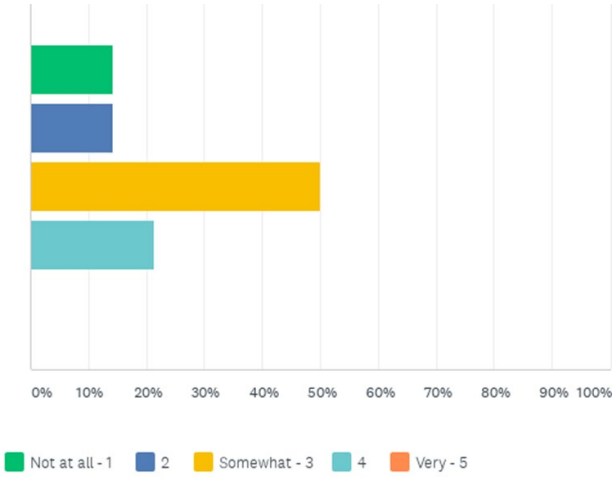

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | A LOT - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 7.14%<br>1 | 0.00%<br>0 | 50.00%<br>7 | 35.71%<br>5 | 7.14%<br>1 | 14 | 3.36 |

5. How confident are you in responding to patients who screen positive for ACEs?



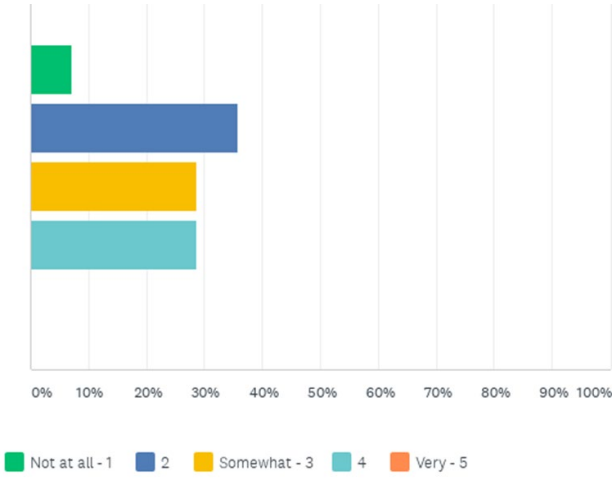

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 21.43% 3 | 21.43% 3 | 42.86% 6 | 14.29% 2 | 0.00% 0 | 14 | 2.50 |

6. How much will ACE screening change your clinical care for your patients?



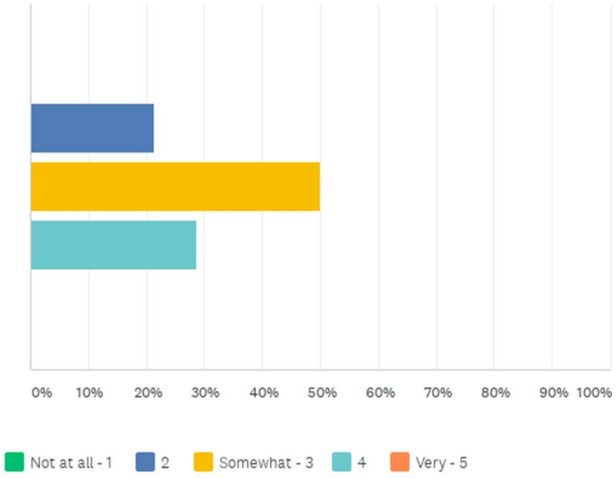

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 14.29% 2 | 14.29% 2 | 50.00% 7 | 21.43% 3 | 0.00% 0 | 14 | 2.79 |

7. How much will the ACE screening results change your plan for follow up care?



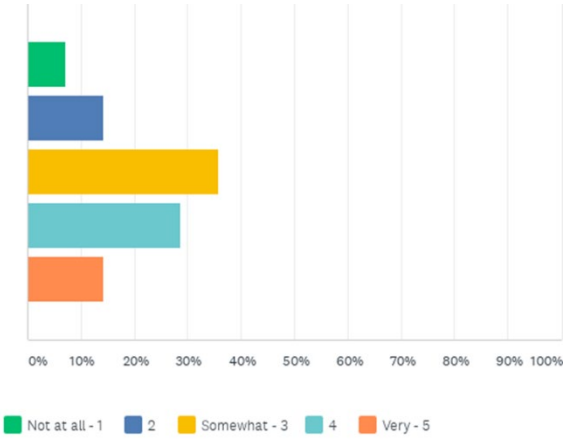

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 7.14%<br>1 | 35.71%<br>5 | 28.57%<br>4 | 28.57%<br>4 | 0.00%<br>0 | 14 | 2.79 |

8. How much will the ACE screening results change the referral patterns with your patients?



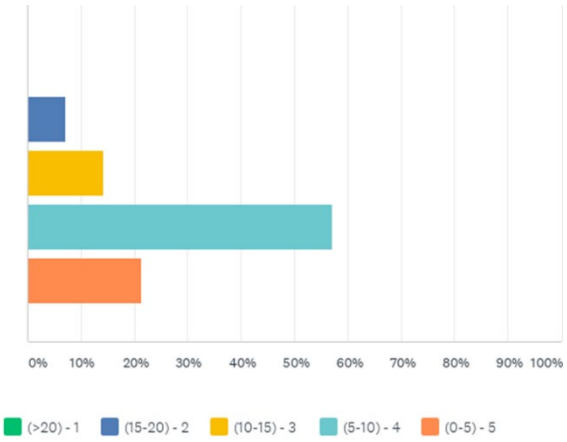

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00%<br>0 | 21.43%<br>3 | 50.00%<br>7 | 28.57%<br>4 | 0.00%<br>0 | 14 | 3.07 |

9. In your opinion, are electronic alerts helpful to remind you to conduct ACE screening?




| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 7.14%<br>1 | 14.29%<br>2 | 35.71%<br>5 | 28.57%<br>4 | 14.29%<br>2 | 14 | 3.29 |

10. About how many extra minutes will be added to office visits during which you will conduct ACE screening?




| | (>20) - 1 | (15-20) - 2 | (10-15) - 3 | (5-10) - 4 | (0-5) - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00%<br>0 | 7.14%<br>1 | 14.29%<br>2 | 57.14%<br>8 | 21.43%<br>3 | 14 | 3.93 |

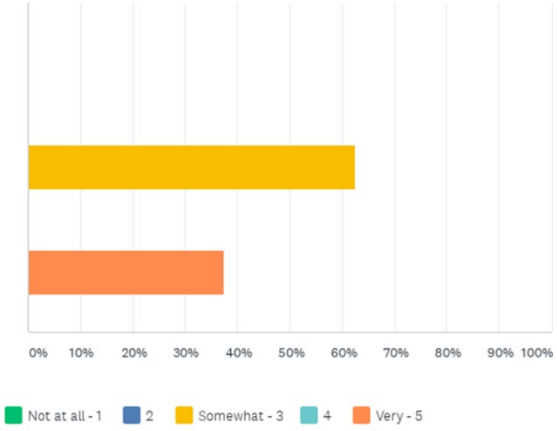
*Note.* Graphic content generated by Survey Monkey, Inc., San Mateo, CA, USA. www.surveymonkey.com

# APPENDIX I

## POST-SURVEY RESULTS

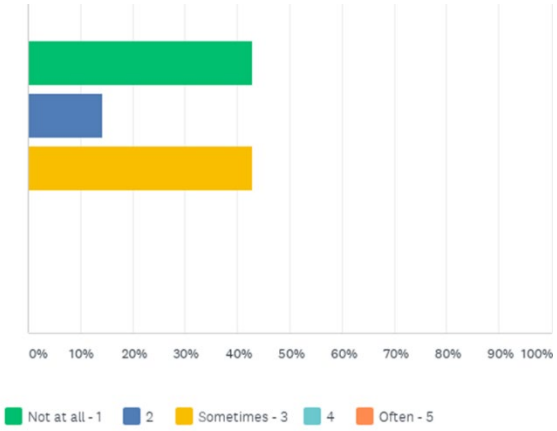
**Post-Survey Results (n=8)**

1. How familiar are you with the relationship between adverse childhood experiences (ACEs) and adult health outcomes?



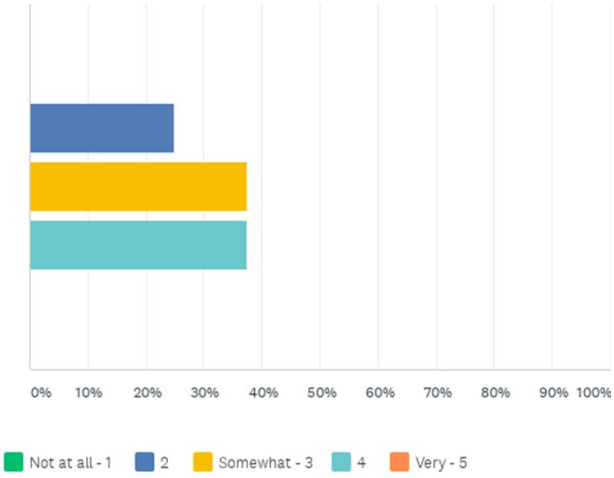

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00%<br>0 | 0.00%<br>0 | 62.50%<br>5 | 0.00%<br>0 | 37.50%<br>3 | 8 | 3.75 |

2. How often to you conduct ACE screening with adults in your day-to-day practice?



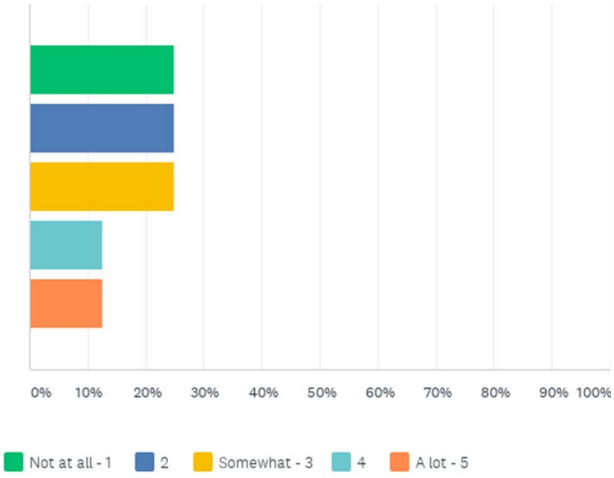

| | NOT AT ALL - 1 | 2 | SOMETIMES - 3 | 4 | OFTEN - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 42.86%<br>3 | 14.29%<br>1 | 42.86%<br>3 | 0.00%<br>0 | 0.00%<br>0 | 7 | 2.00 |

3. How comfortable are you with conducting ACE screening with adults in your day-to-day practice?



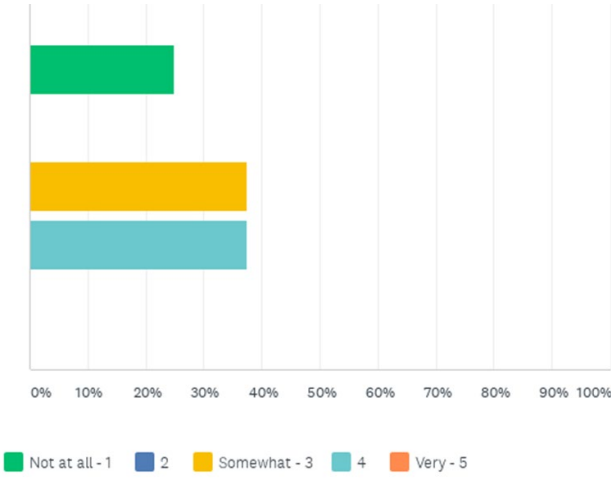

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00% 0 | 25.00% 2 | 37.50% 3 | 37.50% 3 | 0.00% 0 | 8 | 3.13 |

4. How much did ACE screening provide new information regarding your patients?



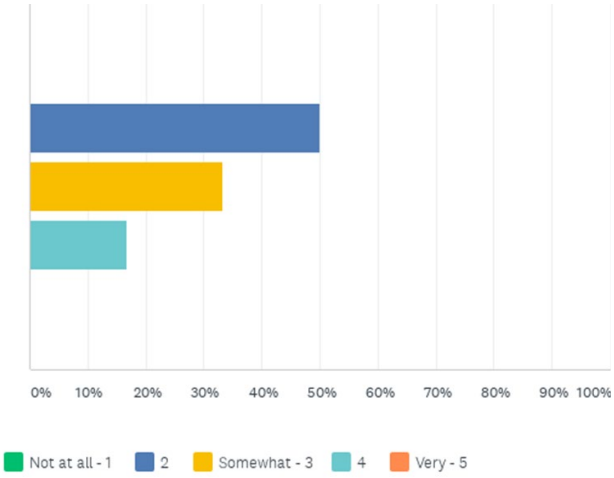

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | A LOT - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 25.00% 2 | 25.00% 2 | 25.00% 2 | 12.50% 1 | 12.50% 1 | 8 | 2.63 |

5. How confident are you in responding to patients who screen positive for ACEs?



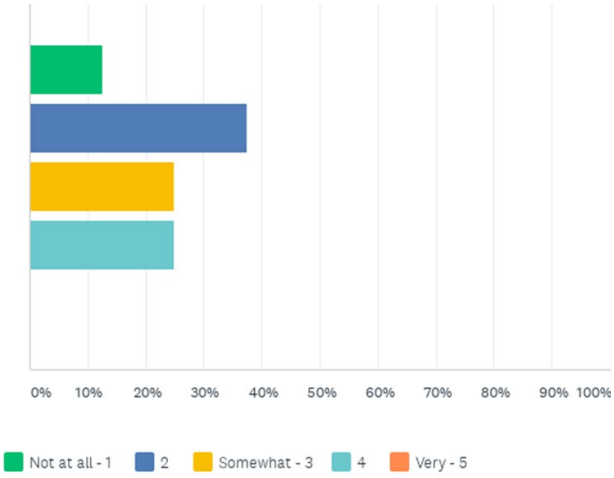

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 25.00% 2 | 0.00% 0 | 37.50% 3 | 37.50% 3 | 0.00% 0 | 8 | 2.88 |

6. How much did ACE screening change your clinical care for your patients?



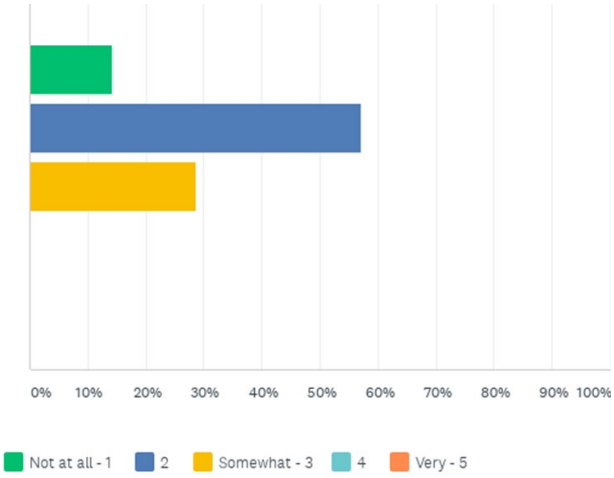

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00% 0 | 50.00% 3 | 33.33% 2 | 16.67% 1 | 0.00% 0 | 6 | 2.67 |

7. How much did the ACE screening results change your plan for follow up care?



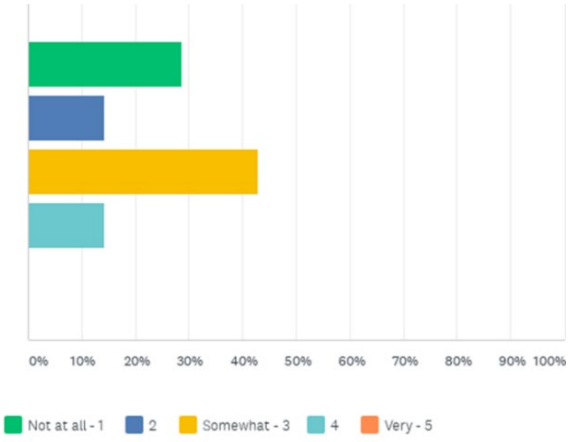

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 12.50%<br>1 | 37.50%<br>3 | 25.00%<br>2 | 25.00%<br>2 | 0.00%<br>0 | 8 | 2.63 |

8. How much did the ACE screening results change the referral patterns with your patients?



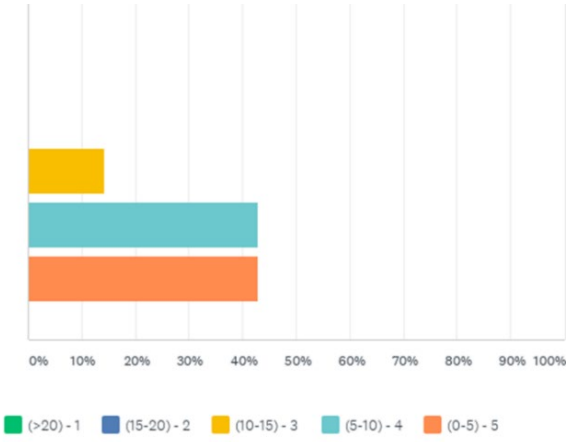

| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 14.29%<br>1 | 57.14%<br>4 | 28.57%<br>2 | 0.00%<br>0 | 0.00%<br>0 | 7 | 2.14 |

9. In your opinion, were the electronic alerts helpful to remind you to conduct ACE screening?




| | NOT AT ALL - 1 | 2 | SOMEWHAT - 3 | 4 | VERY - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 28.57%<br>2 | 14.29%<br>1 | 42.86%<br>3 | 14.29%<br>1 | 0.00%<br>0 | 7 | 2.43 |

10. About how many extra minutes were added to office visits during which you conducted ACE screening?




| | (>20) - 1 | (15-20) - 2 | (10-15) - 3 | (5-10) - 4 | (0-5) - 5 | TOTAL | WEIGHTED AVERAGE |
|---|---|---|---|---|---|---|---|
| | 0.00%<br>0 | 0.00%<br>0 | 14.29%<br>1 | 42.86%<br>3 | 42.86%<br>3 | 7 | 4.29 |

*Note.* Graphic content generated by Survey Monkey, Inc., San Mateo, CA, USA. www.surveymonkey.com

# APPENDIX J

## NEWSLETTER ARTICLE

**Newsletter Article**

# New project brings ACEs screen to St. Luke family practice physicians

A SCREENING TOOL FOR CHILDHOOD TRAUMA IS NOW AVAILABLE TO ST. LUKE PHYSICIANS via electronic patient records. The screening tool is being made available to physicians as part of a study to see if physicians will use the ACEs (Adverse Childhood Experiences) screen as part of adult patients' health profile.

David Vaughan has worked as a nurse practitioner for the past 13 years in the St. Luke Community Clinic in St. Ignatius. In May he will graduate from Montana State University's doctorate of medical practice program. The study is one of his last projects before graduation. His inspiration for the project comes from knowing how common the knowledge about ACEs is and yet how seldom it is talked about.

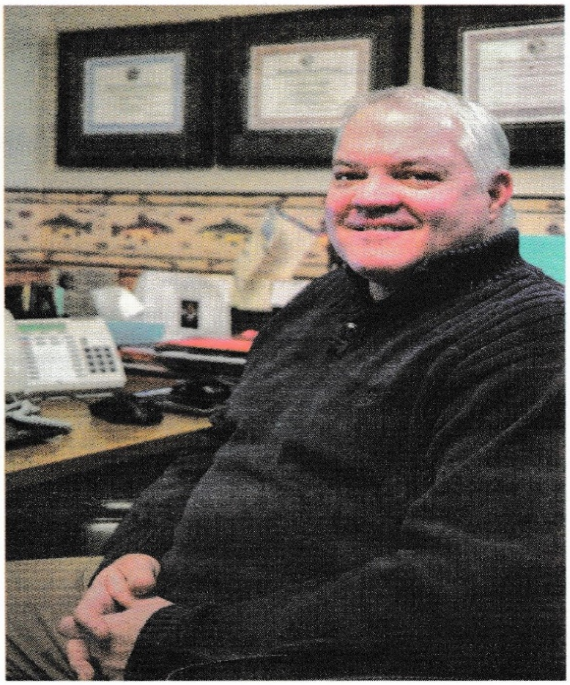
Vaughan claims, "Governance and mission need to be part of lived experience. As one of the few, true, community hospitals left in the country," Vaughn said, "St. Luke's mission is to serve the community." In their service to the community, physicians can help our local culture when they use ACEs scores as part of their knowledge base to treat adult patients. While pediatric physicians are more familiar with ACEs scores to treat children, family physicians will now have the opportunity to do the same with their adult patients.

The results of ACEs are manifested not only in a person's physical health but also spill over into their mental health. Exploring the different dimensions of childhood trauma can aid physicians who work with patients and their chronic health issues. It is thought by bringing to the forefront a better understanding of past trauma, patients can leverage the good and the bad from their lives and become more resilient.

Approximately 60 percent of the American population experiences one trauma before the age of 18, while 17 percent of the population have four or more traumatic experiences during their childhood. Research shows individuals with an ACEs score of four or more have poorer health outcomes. In addition, it appears that it's the higher number of traumatic experiences, not the type of trauma that correlate with chronic health issues. For example, a child may experience a short span of homelessness and no further trauma. Another child may have been emotionally and physically abused, lived through their parents divorcing, and grown up with alcoholism in their home. The child with the greater number of traumatic events during their childhood will most likely experience more health issues throughout their life. (To determine your own ACEs score, go to: acestoohigh.com/got-your-ace-score/)

The purpose of Vaughn's study is not to dissect patients' previous trauma but instead to determine the likelihood physicians will use the ACEs screen to inform their practice and whether continued use of the screen is sustainable. It's hoped ACEs screening ultimately leads patients to take beneficial steps toward a healthier life through initial recognition of past trauma, and possible treatment.

This study project has just started. Results will be shared in April. It is hoped providers will incorporate the ACEs screen into their repertoire of tools thereby closing the gap between what research says and what current practices are.



ST. LUKE PHOTO

David Vaughan, a nurse practitioner with St. Luke Community Clinic in St. Ignatius, has brought an ACEs screening tool to St. Luke physicians in an effort to gain a more comprehensive picture of patient health.

**Understanding ACEs also helps physicians address health equity issues.**

Sarah Teaff, COO of St. Luke Community Healthcare, said that social inequities lead to health disparities.

St. Luke physicians currently screen for depression, basic needs, anxiety and substance abuse on a yearly basis and more often if necessary. Screening helps healthcare workers connect clients with needed resources. In some cases, clients require assistance just to navigate through the red tape that surrounds access to many resources. Social aspects of health include issues of housing, safety, education, transportation, and healthcare.

Teaff explained that St. Luke seeks to "meet patients where they are at and attend to the needs of our population." Assisting clients with their social issues improves their health outcomes.

Vaughn's project to encourage family physicians to use the ACEs screen and its results may lay the groundwork for St. Luke to become an ACEs Trauma Informed Care facility in the future.