Screening for Substance Use in Pregnancy: Using the 5Ps to Reduce Harm and Increase Equity

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Abstract

Substance use disorder (SUD) affects approximately 19% of Oregonians and 2.7% of pregnant people nationally, yet remains significantly undertreated. This quality improvement project aimed to implement universal screening for prenatal substance use in a collaborative obstetric clinic. Over two 4-week Plan-Do-Study-Act cycles, providers administered an adapted Integrated 5Ps Screening Tool at new obstetric visits. Medical assistants roomed patients alone to ensure confidentiality. Primary outcomes included screening rates, documentation of confidentiality and identification of substance use risk factors. Provider surveys assessed changes in confidence and perceived burden. Providers screened 86.2% of 65 eligible patients (80.7% in cycle 1, 91.2% in cycle 2), exceeding the 80% goal. Medical assistants roomed 81.5% of patients alone. The screening identified substance use risk factors in 38.5% of patients, with parental history being most common (24.6%). Two patients (3.1%) reported current cannabis use. Documentation discrepancies decreased from 51.7% pre-intervention to 8.9% post-intervention. Post-intervention survey results showed increased provider confidence in screening, though response rates were low (19%). Implementation of universal substance use screening using the 5Ps tool was feasible and effective when accompanied by workflow changes emphasizing patient privacy. Success relied on streamlining multiple screening processes into one cohesive workflow while considering stakeholder needs. Future iterations should focus on earlier screening implementation and gathering feedback from medical assistants and patients.

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According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.), a substance use disorder (SUD) is the inability to stop using substances like legal and illegal drugs, alcohol, or medication despite the negative impacts (American Psychiatric Association, 2013). This group of disorders is characterized by symptoms relating to impaired control, physical dependence, social problems, and risky behavior. In Oregon, SUD affects 19.13% of the population, higher than the national average of 17.3% (Substance Abuse and Mental Health Services Administration [SAMHSA], 2023). Substance use impacts people during pregnancy as well, with approximately 13.9% of pregnant people in the 2022 National Survey on Drug Use and Health reporting use of an illicit drug within the past month (SAMHSA, 2023). According to a national retrospective study, an estimated 2.7% of pregnant people met diagnostic criteria for SUD from 2016 to 2018 (Ndanga et al., 2022). Despite its prevalence, SUD among pregnant people and women of reproductive age is significantly undertreated (Martin et al., 2020).

SUD poses a significant threat to both the pregnant person and the fetus, incurring an increased risk of stillbirth, antepartum hemorrhage, premature birth, fetal growth restriction, neonatal abstinence syndrome (NAS), cesarean section and postpartum complications (Ndanga et al., 2022; Ragsdale, 2024). From 2018 to 2020, the most frequent underlying cause of maternal mortality in Oregon was mental health conditions, with SUD contributing to 41% of pregnancy-related deaths (Oregon Health Authority, 2023). Neonates with NAS are also significantly more likely to experience mortality and severe morbidities such as intracranial hemorrhage, sepsis, and necrotizing enterocolitis (Lisonkova et al., 2019). Neonatal abstinence syndrome is also associated with diagnoses of musculoskeletal disorders, feeding difficulties, developmental delays, and adjustment disorder during the first three years of life (Arter et al., 2021). Furthermore, in-utero opioid exposure may increase the risk of cognitive difficulties, behavioral challenges, impaired vision, and increased hospitalizations later in childhood (Arter et al., 2020). Recent animal and placental epigenetic studies also suggest that prenatal opioid

exposure may disrupt development of the fetal endogenous opioid system and metabolic pathways, leading to cardiovascular and metabolic dysfunction (Ahmed et al., 2023; Radhakrishna et al., 2024).

Because prenatal substance use is intimately tied to various social, economic, and legal issues, disentangling the long-term effects of in-utero substance exposure from these confounding factors is difficult (Lee et al., 2023). Interaction between intrauterine substance exposure and possible parental-infant separation, for instance, is associated with long-term consequences for the child, including increased susceptibility to substance dependance, neurocognitive dysfunction, and externalizing disorders (Fadaei-Kenarsary et al., 2024). Importantly, bias, racism, and classism heavily contribute to the experiences of and outcomes for pregnant people with SUD as well, further increasing maternal and child health disparities (Chin et al., 2022; Ndanga et al., 2022).

As a gateway to the broader healthcare system for those who are uninsured or economically oppressed, obstetric clinics have an essential role to play in screening for SUD (Ehrenreich and Kimport, 2022). Yet, many lack the knowledge base and standardized processes to consistently identify pregnant people who use substances. A clinic in a small Pacific Northwestern city has identified this gap in the care they provide to their pregnant patients. The clinic is the result of a relatively new merger between an academic healthcare institution and a non-profit community hospital, consisting of a collaboration between certified nurse-midwives (CNMs) and obstetricians (OBs). Medical assistants (MAs) and registered nurses (RNs) also contribute to patient care. Due to lack of a clear, standardized workflow among these care providers, patients were not consistently and accurately screened for SUD. As a result, diagnosis is either delayed or does not occur at all, leaving pregnant people and their fetuses vulnerable to poor physical and psychosocial outcomes. The clinic seeks to implement an evidence-based, validated instrument to screen for substance use in their pregnant patients as a first step in a pathway to SUD treatment and harm reduction.

Available Knowledge

Screening Instruments

Endorsed by the American Congress of Obstetricians and Gynecologists (ACOG), the U.S. Preventive Services Task Force (USPSTF), SAMHSA, and the World Health Organization (WHO), universal screening for substance use, brief intervention, and referral to treatment (SBIRT) has become the primary evidence-based approach to identifying and managing substance use in pregnancy (Mascola et al., 2017; SAMHSA, 2018; USPSTF, 2020; WHO, 2016). This approach allows stratification of risk based on screening results; those who are at low risk of SUD receive advice, those who are at moderate risk receive a brief intervention, and those who are at high risk receive a referral to treatment (Wright et al., 2016). Several studies have shown SBIRT to be a feasible, effective strategy in the obstetric setting (Hostage et al., 2020; Martino et al., 2018; Ulrich et al., 2021). For instance, a 2018 randomized controlled trial by Martino et al. (2018) found that for both pregnant and non-pregnant reproductive-aged women, SBIRT significantly decreased average substance use at one, three, and six months compared to enhanced usual care. In the context of quality improvement, Ulrich et al. (2021) were able to achieve their goal of screening over 90% of patients prenatally using the SBIRT model, with providers documenting a brief intervention in up to 80% of instances of a positive screen.

While evidence-based recommendations favor the general SBIRT approach, no specific guidance exists regarding which screening tool to utilize. Both the California Maternal Quality Care Collaborative (CMQCC) and ACOG recommend administering a validated screening tool such as the 4Ps Plus or the National Institute for Drug Abuse (NIDA) Quick Screen (Crew et al., 2020; Mascola, 2017). In addition to the 4Ps Plus and the NIDA, the WHO (2014) also lists the Substance Use Risk Profile Pregnancy Scale (SURP-P) as an option for the identification of prenatal substance use disorder. Clinicians may also be familiar with screening instruments such as the CAGE (Cut Down, Annoyed, Guilty, Eye-Opener) and the Alcohol Use Disorders

Identification Test (AUDIT), which only assess alcohol use. Although popular in primary care settings, the CAGE is less effective in females than in males and the literature does not support its use in pregnancy (Chang, 2001; Russel, 1994; WHO, 2014). Similarly, researchers initially studied both the AUDIT and its abbreviated counterpart, the AUDIT-C, exclusively in males, although the AUDIT-C has since demonstrated high sensitivity in pregnancy (Burns, 2010; Bush et al., 1998). Because this improvement initiative focuses on all forms of substance use, the review will exclude alcohol-specific screening instruments.

The 4Ps Plus and the 5Ps

Specifically designed and validated for use in pregnancy, the 4Ps Plus consists of questions regarding substance use in parents, partners, the past, and the present (Chasnoff et al., 2007). This screening tool screens for drug, alcohol, and tobacco use, along with intimate partner violence and mental health concerns. Chasnoff et al. (2007) initially validated the 4Ps Plus against clinical interviews in a sample of 228 medically underserved pregnant women, 80% of whom were Black and 20% of whom were Hispanic. This study found a sensitivity of 87% and specificity of 76% but did not use biological samples to further test validity. A 2019 prospective cross-sectional study, however, used urine and hair testing as references to assess the accuracy of prenatal substance use screening tools (Coleman-Cowger et al.). The authors reported 90.2% sensitivity, 29.6% specificity, 83.0% negative predictive value and 44.1% positive predictive value. The 4Ps Plus demonstrated significantly greater specificity in non-Hispanic Black women (36.8%) compared to non-Hispanic white women (13.3%). Notably, biological sampling does not test for alcohol or tobacco use.

An adapted version of the 4Ps Plus, the 5Ps questionnaire is free and includes a question about peers, unlike the original copyrighted 4Ps (Kennedy et al., 2004). Basic versions of the 5P's do not include questions about tobacco, intimate partner violence or mental health, while others, such as the Institute for Health and Recovery Integrated 5P's Screening Tool, do (Watson, 2010). In their 2019 prospective cross-sectional study, Ondersma et al. validated the

basic 5Ps tool against urinalysis and a 30-day calendar-based recall. In a sample of 1220 pregnant people, of whom 40.1% were non-Hispanic Black and 37.1% were non-Hispanic white, the 5Ps instrument showed 80% sensitivity for illicit drug use and 37% specificity. It had 88% sensitivity for alcohol use and 37% specificity, as well as 81% sensitivity for opioid use and 35% specificity. Like Coleman-Cowger et al.'s (2019) findings, the 5Ps questionnaire was less accurate for white women than for Black women.

The NIDA Quick Screen and ASSIST

Unlike the 4Ps Plus and the 5Ps, the NIDA Quick Screen is not specific to pregnancy, but it does ask directly about substance use in pregnancy, is straightforward, and has been well-validated in primary care settings (Saitz et al., 2014; Smith et al., 2010). The NIDA Quick Screen asks about how often alcohol, tobacco, non-medically indicated prescription drugs, and illegal drugs have been used in the past year. In Ondersma et al.'s 2019 study, the NIDA Quick Screen showed high specificity (99%) but low sensitivity (10%-27%). The authors also found that it had higher accuracy for white women than for Black or Hispanic women. Further trimester-specific analysis revealed lower specificity during the third trimester.

If the patient endorses any use of illegal drugs or prescription drugs for non-medical purposes on the NIDA Quick Screen, the clinician administers the NIDA-modified Alcohol, Smoking, and Substance Involvement Screening Test (NM-ASSIST). While the Quick Screen takes less than five minutes to complete, NM-ASSIST extensively assesses substance type, frequency of use, cravings, functional consequences, and abstinence attempts. Coleman-Cowger et al. (2019) found the NM-ASSIST to be 79.7% sensitive and 82.8% specific, although the specificity for ages 18-25 was significantly lower than for ages 26 and older (70.1% vs 88%). In their 2020 study, Oga et al. validated the NM-ASSIST against hair and urine samples in a sample of 500 pregnant women. Results indicated the following sensitivities: cannabis 82.1%, cocaine 17%, benzodiazepines 20%, prescription opioids 25%, and street opioids 12.5%. Specificity for cannabis was 85.4% and over 98% for all other substances.

The SURP-P

The Substance Use Risk Profile-Pregnancy (SURP-P) is just three questions, does not include a question about tobacco use and was originally validated in a 2010 study by Yonkers et al. The study included 1074 pregnant women and used self-reported drug or alcohol use as the gold standard. For participants deemed "low risk" based on no alcohol or drug use in the month prior, the SURP-P was 91% sensitive and 67% specific. For "high risk" participants, the sensitivity was lower (57%) but the specificity was higher (88%). In their 2019 study using both calendar-based recall and urinalysis, Ondersma et al. found this instrument to be only 49% sensitive and 66% specific. They also report that the SURP-P was less accurate for non-Hispanic white women than for Black and Hispanic women. Alternatively, the SURP-P had a sensitivity of 92% and specificity of 21.8% when compared against biological testing alone in Coleman-Cowger et al.'s 2019 study.

Screening Format and Environment

Despite recommendations to verbally administer one of these tools, evidence regarding verbal vs self-report-based screening for SUD is insufficient. In their 2024 study, Gorfinkel et al. compared self-reported measures of substance use with measures derived from clinician interviews. Eligibility required substance use in the past month or current admission to treatment for SUD. The authors did not report whether the self-report survey was a validated tool and stated that the clinician conducted the Psychiatric Research Interview for Substance and Mental Disorders. Results showed strong concordance between participant responses to the self-report survey and the interview for all substances except prescription painkillers, which participants reported more often in the self-report survey. Many quality improvement projects in the literature have also used self-report questionnaires, as they are more built into clinics' workflows and have the presumed benefit of quasi-anonymity (DiCarlo & Whiffen, 2024; Ulrich et al., 2021).

In their committee opinion, ACOG notes that verbal screening integrates smoothly into history-taking and allows for utilization of the SBIRT model, which involves an immediate

segway into feedback, advice, and motivational interviewing (Mascola et al., 2017). Toquinto et al. (2020) reported that in their study, almost all pregnant women, especially those who used drugs and alcohol, found it acceptable to receive a verbal screening and indicated that they would honestly disclose their substance use. The authors suggest that if they feel safe, pregnant people impacted by substance use may desire the opportunity to have honest, non-judgmental conversations with their health care providers. Accordingly, stigma and fear of punitive consequences or family separation are major barriers to disclosure of substance use during prenatal verbal screening (Faherty et al., 2019; Oni et al., 2022; Wolfson et al., 2021).

In addition to mode of screening and broader contextual factors, creating a confidential space and a trusting patient-provider relationship over time may contribute to more effective SUD screening prenatally. In a 2007 qualitative study by Phillips et al., midwives and patients reported that while presence of family or partners was sometimes supportive and helpful, at other times their presence served as a barrier to disclosure. Participants viewed this lack of privacy to be particularly problematic in the case of intimate partner violence, which is significantly associated with substance use disorder and often impedes treatment efforts (Ogden et al., 2023). Similarly, pregnant people report that shame and stigma lead them to use substances in secret, hiding it from even close family and friends (Oni et al., 2022).

Timing of Screening

Due to these various barriers to disclosing, ACOG and CMQCC both recommend initiating SUD screening at the first prenatal encounter and at regular intervals throughout pregnancy (Crew et al., 2020; Mascola et al, 2017). In a 2021 retrospective cohort study by Boden et al., pregnant people completed a substance screening tool at the first prenatal visit and at subsequent visits throughout pregnancy. After adjusting for demographics and risk factors, the authors analyzed the results based on the trimester during which the first screening occurred. First trimester screening resulted in significantly more screening administrations and

was associated with a significant decrease in substance use, a significant increase in negative UDS, and a significant decrease in need for any infant morphine treatment.

Racism and Urine Drug Screens

Provider bias and systemic racism are additional barriers to disclosure that heavily influence screening for substance use during pregnancy. As early as the 1970's, clinicians administered urine drug screens to Black women more frequently than white women, and hospital staff reported them to Child Protective Services at significantly higher rates, despite the two groups using substances at equal rates (Kravitz et al., 2023). Black pregnant people are still more likely than their white counterparts to be asked about substance use by a healthcare provider and to then receive a urine drug screen, regardless of whether they endorsed any drug use (Byrn et al., 2023; Olaniyan et al., 2023; Patel et al., 2021). American Indian and Alaska Native pregnant people are also subject to disproportionate criminalization related to perinatal substance use disorder (Simon et al., 2020). Despite the ubiquitous recommendation to screen universally, disparities persist, with patients who are younger, less educated, single, and Black receiving substance use screening at the highest rates (Patel et al., 2021). Not only do these discrepancies perpetuate systemic racism and classism, but they also contribute to the issue of substance use disorders going undiagnosed and untreated.

Although difficult, identifying an accurate substance use screening tool for pregnancy is essential due to various pitfalls of urine drug screening (UDS). In addition to being utilized in a biased way, UDS may result in false negatives, as some synthetic drugs escape detection, as do substances used only sporadically (Kapur & Aleska, 2020). Simultaneously, urinalysis can be falsely positive due to certain medications or foods and does not reliably give information regarding timing of substance use. Furthermore, UDS cannot assess the severity or duration of use and cannot diagnose a SUD. For these reasons, both ACOG and the CMQCC recommend that UDS only be performed with the patient's informed consent and reiterate that verbal screening tools are preferred (Crew et al., 2020; Mascola et al, 2017).

Rationale

Substance use disorder is not an isolated disease process; it is a disorder that is inseparable from sociopolitical context. As such, healthcare systems must approach SUD using a sociopolitical lens. Emphasizing the dignity and rights of people who use drugs (PWUD), the theoretical framework of harm reduction is foundational to this quality improvement project. While there is no universally accepted definition of harm reduction, the Academy of Perinatal Harm Reduction (n.d.) describes the approach as the antithesis to punishment, instead extending care to PWUD to minimize risks, recognize their humanity, and promote holistic wellbeing. This theoretical framework is grounded in the principles of safety, autonomy, shared decision-making, informed consent, and do no harm. Clinicians can employ these principles by meeting patients where they are and attempting to mitigate stigma, which serves as a major barrier to disclosure of substance use (Faherty et al., 2019; Oni et al., 2022; Wolfson et al., 2021). Instead of using screening to achieve an end-goal of abstinence for every patient, obstetric providers can use screening as the first step towards *any positive change*, such as safer use, reduced use, or something unrelated to use (Academy of Perinatal Harm Reduction, n.d.).

The Institute for Healthcare Improvement's Model for Improvement is the basis for this quality improvement initiative. The Model for Improvement revolves around three key concepts: identification of an aim, establishment of measures, and determination of interventions to help produce positive change in healthcare systems (Institute for Healthcare Improvement, n.d.). After the accomplishment of these steps, Plan, Do, Study, Act (PDSA) cycles will serve to develop, test, and implement changes. The PDSA cycle emphasizes rapid implementation and problem solving, with small changes incorporated into each iteration. The Model for Improvement with PDSA cycles is an ideal way to put change into practice in a short period of time in a dynamic setting, such as in this evolving obstetric clinic.

As ACOG, USPSTF, SAMHSA, and WHO recommend, this quality improvement project will use SBIRT to implement universal screening, focusing on the first step in the SBIRT approach (Mascola et al., 2017; SAMHSA, 2018; USPSTF, 2020; WHO, 2014). SBIRT is feasible and effective in perinatal settings (Hostage et al., 2020; Martino et al., 2018; Ulrich et al., 2021). The Institute for Health and Recovery Integrated 5Ps Screening Tool is an ideal screening tool due to its ability to screen for not only substance use, including tobacco use, but also IPV (Watson, 2010). With up to 90% of pregnant people with SUD reporting a history of IPV, capturing the two interconnected experiences in a single screening tool enhances the obstetric provider's ability to provide comprehensive care (Morrison et al., 2023). Particularly in an understaffed clinical setting lacking consistency, maximizing efficiency and minimizing clinician burden is essential when introducing a change in practice. Furthermore, due to its high sensitivity, the Institute for Health and Recovery Intregrated 5Ps Screening Tool minimizes instances of clinicians missing patients with SUD (Coleman-Cowger et al., 2019; Ondersma et al., 2019). Quality improvement projects in similar settings have successfully utilized the 5Ps (DiCarlo & Whiffen, 2024; Reese et al., 2023). Clinicians will administer all screening questions from this tool except the question about mental health, as all new patients complete the Edinburgh Postnatal Depression Scale (EPDS).

Specific Aims

Overall, this project aimed to implement universal screening for prenatal substance use in an obstetric clinic.The following specific aims were established at the project outset. By September 27, 2024, all new OB visits in the eight weeks prior will be reviewed to establish the clinic's baseline screening rate. By September 27, 2024, 90% of the OBs, midwives and student midwives rotating at the clinic between September 30, 2024 and December 1, 2024 will view an educational PowerPoint presentation and complete a pre-survey. This presentation will include education about substance use disorder and integration of a validated screening tool into the clinic workflow. By December 1, 2024, OBs, midwives and student midwives will document

administration of the screening tool at 80% of new OB visits, representing a significant increase from pre-intervention screening rates. Furthermore, OBs, midwives and student midwives will document that an MA roomed the patient alone at 80% of new OB visits. The intervention will occur over the course of two PDSA cycles, with the first lasting from September 30, 2024 to October 27, 2024 and the second lasting from November 4, 2024 to December 1, 2024. By the end of both PDSA cycles, 75% of OBs, midwives and student midwives will report increased comfort with perinatal substance use screening, as assessed by pre- and post-surveys.

Context

At the outset of this quality improvement project, the recently established collaborative obstetric practice had no consistent method of universally screening for perinatal SUD. Based on interviews with CNMs, an OB, and a registered nurse (RN) who work there, a cause-and-effect diagram was created (Appendix A). The information gathered during these interviews was combined with available knowledge from the literature to develop the proposed interventions.

Consideration of the context into which the interventions were introduced is essential. From 2021 to 2023, 51% of patients at this clinic identified as Hispanic, Mexican, Mexican-American, Latinx, Puerto Rican, or of Spanish origin. 39% of patients were non-Hispanic white, and the remaining 10% identified as non-Hispanic Black, African-American, Asian, or Pacific Islander. In 2023 the practice attended 469 deliveries, 143 of which were cesarean sections. No quantitative data existed on rates of substance use in this practice, although when interviewed, multiple clinicians were under the impression that substance use was rarely occurring in their patient population.

The first point of contact between patient and provider at the clinic was at the Early Pregnancy Assessment Clinic (EPAC), during which an obstetrician confirmed and dated the pregnancy, and the RN provided initial prenatal education. Before the EPAC visit, patients filled out paperwork, which the RN scanned into the patient chart. While three questions about substance use existed in the paperwork, they were not validated, and a lack of clarity existed

regarding who was responsible for reviewing this paperwork. Furthermore, although the EPAC clinician and the clinic RN were the first to meet the patient, they could not provide the continuity of care that is necessary to address substance use. The new OB visit, however, officially established prenatal care and provided the opportunity to start building a trusting patient-provider relationship.The new OB visit consisted of the clinician taking a detailed history and providing education about pregnancy and the prenatal model of care. When interviewed, most providers endorsed sometimes asking about substance use, though not universally and not in a standardized, validated way. The inconsistency in screening and lack of clear expectations regarding the new patient paperwork reflected an unestablished workflow riddled with communication gaps (see Appendix A).

Interventions

- Educational presentation discussing substance use disorder, instructions for administration of the Institute for Health and Recovery Integrated 5Ps Screening Tool, and instructions for documentation of screening.

- A new OB template that included questions from the Integrated 5Ps Screening Tool in the history-taking portion (see Appendix B). Inclusion of documentation prompts in the assessment and plan portion of the note, where providers could clearly document confidentiality and any positive responses. Inclusion of a brief script for providers to use as a prelude before administering the screening questions.

- In the column for notes on the electronic health record daily schedule, a reminder next to each new OB appointment to conduct the 5Ps Screening Tool.

- The medical assistant roomed the patient alone at the new OB visit so that the provider could conduct history-taking and screening confidentially. After the provider completed this portion of the visit, the medical assistant brought the partner/ support person into the visit.

- After discussion with the patient, the provider added any positive screen to the patient's problem list

Study of the Interventions

Before initiation of the interventions, the intention was to review the new OB visit note for each new patient during the prior eight weeks. After deidentified data was entered into a secure spreadsheet in OneDrive, rates of substance use screening and positive screens during these visits were calculated. Before dissemination of the educational PowerPoint and initiation of the first PDSA cycle, each OB, midwife and student midwife were asked to complete a pre-survey measuring their comfort level with screening patients for substance use. The pre-survey also measured how consistently they asked patients about substance use. Every week during each PDSA cycle, the patient schedule was reviewed and a reminder was written next to each new OB visit to administer the 5Ps Screening Tool. At the end of every week, each new patient's chart was reviewed for screening completion and results, which were subsequently documented in the secure spreadsheet. OBs, midwives and student midwives were also asked to complete a post-survey to identify changes in comfort level with and perception of substance use screening.

Measures

The primary outcome measure for this project was any change in substance use screening rates during new OB visits after each PDSA cycle.This outcome measure was determined based on documentation in the new OB chart notes before and after implementation of an adapted version of the Integrated 5Ps Screening Tool. The secondary outcome measure was, among those screened, any change in the percentage of patients who screened positive for substance use pre- and post-intervention. The primary process measure was the change in scores for each question on the pre- and post- surveys. The secondary process measure was the percentage of new OB patients whom the MA's room alone, as documented in the chart. Balancing measures for this project involved increased clinic workflow burden on midwives and medical assistants, as measured by a relevant question on the post-survey.

Analysis

In order to observe any change, proportions of answers to each pre- and post-survey question were calculated. All new OB patient charts were reviewed weekly to determine whether the provider completed and documented the substance use screening in the new OB template. At the same time, documentation was kept regarding whether the medical assistant roomed each patient alone, as noted in the new OB chart note. All information regarding screening and rooming alone were recorded in a secure spreadsheet. At the end of both PDSA cycles, the spreadsheet was used to calculate rates of screening and positive screens with the aim of comparing them to pre-intervention rates. Rates of rooming alone were calculated from the spreadsheet as well. All pre-intervention and post-intervention data were plotted into a run chart to visualize any changes.

Ethical Considerations

Approval was obtained from the institutional review board, verifying that this quality improvement project was not human subject research and conveyed minimal risk. To maintain the confidentiality of patients and the midwife practice, the reporting of this project did not contain any identifying information. All information obtained from the electronic health record was de-identified and stored in a secure spreadsheet. Before administration of the screening tool, the providers explicitly comunicated the limits of confidentiality to the patient based on mandated reporting requirements. No conflicts of interest existed in this project.

Results

Over the course of eight weeks, 65 eligible pregnant patients were identified. Of the 65 eligible patients, 69.2% were white, 4.6% were Black/African American, 3.1% were Indian, 3.1% were other Asian, and 1.5% were American Indian/Alaska Native. Patients identifying as Hispanic, Latino/a/x, or of Spanish Origin comprised 32.3% of the sample. Questions regarding race and ethnicity were not answered by 12.3% and 16.9% of eligible patients, respectively. The

majority spoke English as a primary language, while 13.8% primarily spoke Spanish. The mean age was 31 years old, and 63.1% had Medicaid.

CNMs, OBs, and student midwives administered the adapted Integrated 5Ps Screening Tool to 86.2% of eligible patients (Figure 1). During the first PDSA cycle, 80.7% of eligible patients received the screening, while 91.2% received it during the second PDSA cycle, after provider feedback was incorporated into the project. During the final two weeks of the project, providers achieved a 100% screening rate (Figure 2). Of the nine visits during which the provider did not administer the screening, two-thirds occurred during the first PDSA cycle. While the provider documented that the patient was not seen confidentially in two of these instances, the other seven had no confidentiality documentation.

Figure 1

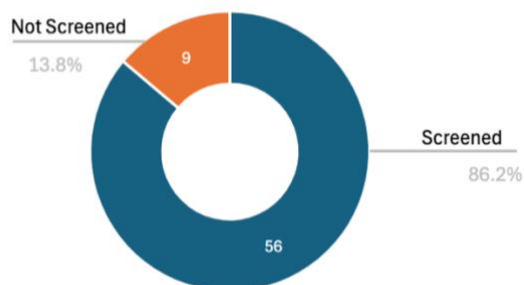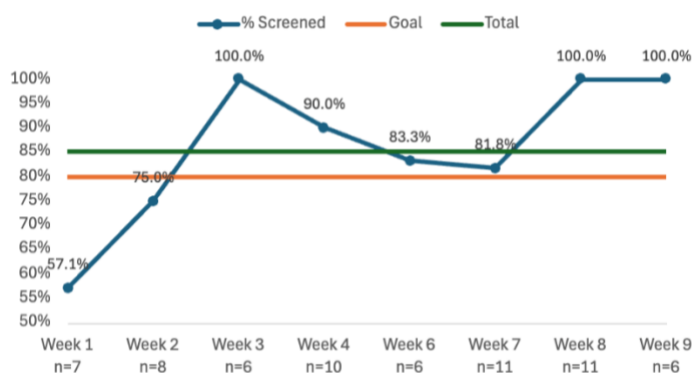*Proportion of Patients Screened*

Figure 2

Weekly Screening Rates

Eight of the nine (88.9%) failures to screen were due to use of an incorrect charting template that did not contain the 5Ps tool. Three of these were transfers of care later in pregnancy, for which some providers used an alternative note template. Four cases of incorrect template use included documentation that the patient previously received screening during the RN intake, but no evidence of this screening existed upon chart review. In the single instance of failure to screen despite correct template use, the patient needed to leave early, so the provider documented a reminder to administer the screen at the following visit.

Among those screened, 44.6% of patients were at increased risk for SUD, based on answering "yes" to any of the substance use questions in the screening tool (Table 1). Eighteen percent of patients screened indicated that they either currently or previously had issues with alcohol or drug use, or had smoked in the past three months. The most common risk factor for SUD was problematic drug or alcohol use in parents, with more than one out of four patients answering "yes" to the relevant screening question (Table 2). Both of the two patients who screened positive for current substance use were white, nulliparous individuals who endorsed cannabis use in pregnancy and had a family history of substance use disorder. Of the nine patients who screened positive for current or past IPV, eight had at least one risk factor for substance use in pregnancy. Broken down by question type, positive screens were as follows: 45.7% yes to "parents", 11.4% yes to "peers", 5.7% yes to "partner", 11.4% yes to "past", 5.7% yes to "present", and 20% yes to "smoking."

Table 1

*Patient responses to the 5Ps screening by question*

Group	Yes	%	No	%	Declined	%	Not screened	%
Q1	Did any of your parents have a problem with alcohol or other drug use?							
Eligible patients (n=65)	16	24.6	40	61.5	0	0.0	9	13.9
Screened patients (n=56)	16	28.6	40	71.4	0	0.0		
Q2	Do any of your friends have a problem with alcohol or other drug use?							
Eligible patients (n=65)	4	6.2	51	78.5	1	1.5	9	13.9
Screened patients (n=56)	4	7.1	51	91.1	1	1.8		
Q3	Does your partner have a problem with alcohol or other drug use?							
Eligible patients (n=65)	2	3.1	53	81.5	1	1.5	9	13.9
Screened patients (n=56)	2	3.6	53	94.6	1	1.8		
Q4	In the past, have you had difficulties in your life due to alcohol or other drugs, including prescription medications?							
Eligible patients (n=65)	4	6.2	51	78.5	1	1.5	9	13.9
Screened patients (n=56)	4	7.1	51	91.1	1	1.8		
Q5	In the past month, have you drunk any alcohol or used other drugs, including cannabis?							
Eligible patients (n=65)	2	3.1	54	83.1	0	0.0	9	13.9
Screened Patients (n=56)	2	3.6	54	96.4	0	0.0		
Q6	Have you smoked any cigarettes or vaped any nicotine in the past three months?							
Eligible patients (n=65)	7	10.8	49	75.38	0	0.0	9	13.9
Screened patients (n=56)	7	12.5	49	87.5	0	0.0		

Table 2

Patient risk level based on 5Ps screening responses

Group	Increased risk[a]	%	High risk[b]	%	Any risk[c]	%
Eligible patients (n=65)	20	30.8	10	15.4	25	38.5
Screened patients (n=56)	20	35.7	10	17.9	25	44.6

[a]"Increased risk" refers to an affirmative response to any questions 1-3 in the 5Ps. [b]"High risk" refers to an affirmative response to any questions 4-6 in the 5Ps. "Any risk" refers to an affirmative response to at least one question, accounting for five patients who responded "yes" to both "increased risk" and "high risk" questions in the 5Ps.

During the entirety of the quality improvement project, providers saw 81.5% of eligible patients confidentially, per chart documentation (Figure 3). Providers documented a lack of confidentiality in 3.1% of cases and failed to document anything relating to confidentiality for 15.4% of patients. Two-thirds of documentation failures were associated with incorrect note template use. PDSA Cycle II demonstrated a confidentiality rate of 82.4%, comparable to the first cycle's rate of 80.7%. Importantly, only 3 of 56 (5.4%) screened patients lacked any confidentiality documentation, and providers did not administer the 5Ps screening to anyone with a documented absence of confidentiality.
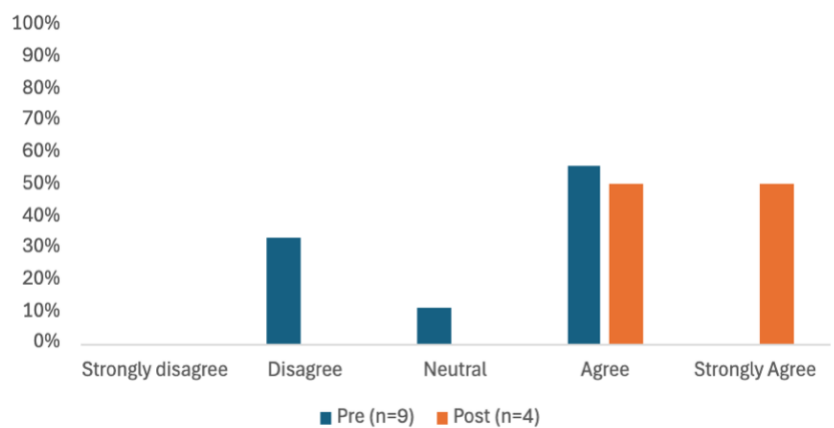
Figure 3

Proportion of Patients Seen Confidentially
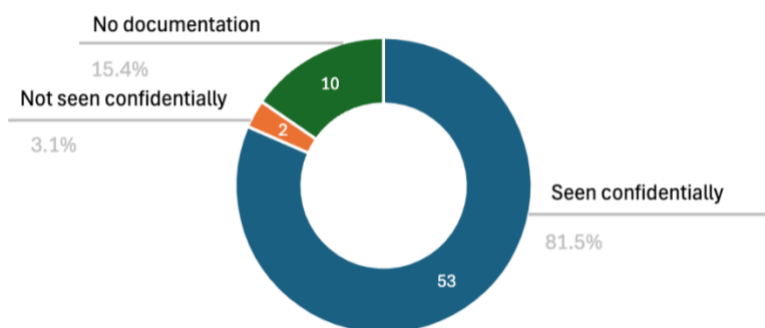
During each PDSA cycle, weekly reminders were sent to providers via email along with an invitation to provide feedback. These emails also served as opportunities to inform providers of any changes being made. For 8.9% of patients screened during the first PDSA cycle, discrepancies existed between answers documented in the 5Ps screening and those documented in the assessment and plan portion at the beginning of the note template. In response, the assessment and plan documentation questions were moved to directly below the screening tool for the next PDSA cycle. No additional discrepancies were identified during the second PDSA cycle. Another change occurred in response to provider feedback regarding another new OB note template in use. During week 6, the 5Ps screening was inserted into this other template to avoid future missed screenings due to incorrect template use.

Before project initiation, 21 physicians, CNMs, and students were asked to complete a pre-survey evaluating consistency and comfort with screening pregnant patients with substance use. Nine of the 21 recipients (42.9%) ultimately completed the survey. An educational presentation was sent to the same 21 providers. Twelve of these 21 providers, or 57.1%, viewed the presentation. After project completion, four out of 21 (19%) completed the post-survey. At the start of the project, 55.6% of respondents agreed with the statement "I feel confident screening patients for substance use during pregnancy," while 33.3% disagreed. In the post-survey, no one reported disagreement with the statement, 50% strongly agreed, and the other half agreed (Figure 4). Similarly, 55.6% of respondents agreed and 11.1% strongly agreed with the statement "I consistently ask about substance use at every new OB visit" before the intervention. These proportions shifted to 25% agreement and 75% strong agreement after the intervention (Figure 5). No one agreed with the statement "substance use during pregnancy is not an issue for our patient population" before or after the project. In the pre-survey, 22.2% of participants agreed with the statement "I feel well-educated on the topic of substance use during pregnancy," while 75% indicated agreement in the post-survey.
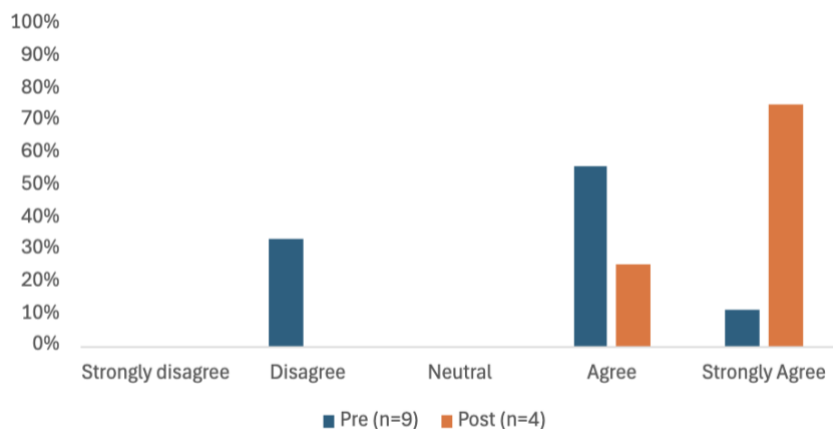
Figure 4

Provider Confidence Screening for Substance Use Before and After Intervention

Note. Rates and degrees of provider agreement with the statement "I feel confident screening patients for substance use during pregnancy" on the pre- and post-surveys.
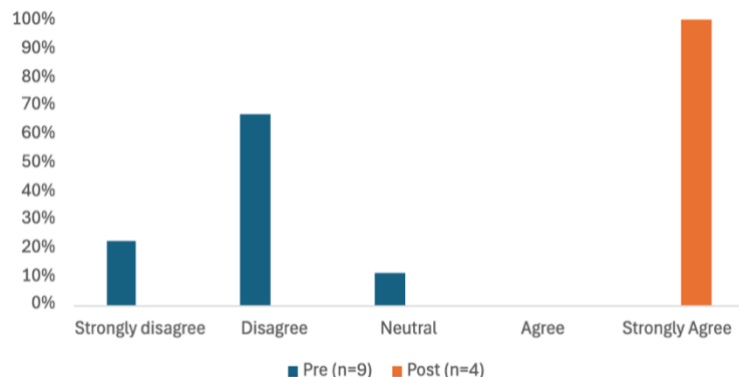
Figure 5

Provider Consistency in Screening for Substance Use Before and After Intervention

Note. Rates and degrees of provider agreement with the statement "I consistently ask about substance use at every new OB visit" on the pre- and post-surveys.

Figure 6

Provider Consistency in Meeting with Patients Confidentially

Pre (n=9) Post (n=4)

Note. Rates and degrees of provider agreement with the statement "I am consistently able to meet with new OB patients alone to ask about substance use and intimate partner violence" on the pre- and post-surveys.

Reflecting a relevant process outcome, 66.7% of respondents disagreed and 22.2% of respondents strongly disagreed with the statement "I am consistently able to meet with new OB patients alone to ask about substance use and intimate partner violence" in the initial survey. After the intervention, 100% of respondents strongly agreed (Figure 6). To evaluate the balancing measure of increased workflow burden after project completion, providers rated their level of agreement with the statement "using the 5P's Integrated Screening Tool at new OB visits has created a burden for clinic staff." While two out of four disagreed and one out of four strongly disagreed, one respondent agreed that the screening was burdensome. Similarly reflecting a balancing measure, half of respondents strongly disagreed and one out of four disagreed that "rooming patients alone at the new OB visit has created a burden for clinic staff," with one respondent indicating neutral sentiment.

Discussion

Throughout both four-week PDSA cycles, a total of 65 pregnant patients participated in this improvement project. By the project's end date, implementation of an adapted Integrated

5Ps Screening tool, alongside changes in clinic workflow, resulted in successfully screening 56 patients for substance use in pregnancy at the new OB visit. During the first four weeks (PDSA I), providers achieved a screening rate of 80.7%, already meeting the goal established prior to project initiation, which aimed to screen 80% of eligible patients. The fifth week, occurring between the first and second PDSA cycles, served as an opportunity for providers to give feedback and for the student leaders to implement changes. Over the course of weeks six through nine (PDSA II), providers documented screening 91.2% of eligible patients for substance use, contributing to an overall screening rate of 86.2% from project start to end, surpassing the 80% screening rate goal. Similarly, providers documented meeting with 81.5% of eligible patients confidentially, achieving the specific aim to meet with 80% of patients alone. No documentation existed regarding confidentiality in 15.4% of cases, creating the possibility that the confidentiality rate was actually higher than 81.5%.

Provider participation in viewing educational materials and completing the pre- and post-surveys was less robust. While the specific aim was for 90% of providers to view the educational presentation and complete the pre-survey, only 57.1% viewed the presentation and 42.9% completed the pre-survey. Completion rates for the post-survey were lower at 19%, with only 4 respondents. Despite response rates lower than the initial goal, survey results demonstrated increased confidence among providers in screening for substance use; increased provider-perceived consistency in screening for substance use; increased feelings of being adequately educated regarding perinatal substance use; and increased ability to meet with patients privately. Furthermore, most providers did not associate the screening tool or rooming patients alone with an increased workflow burden.

While any quality improvement project encounters unforeseen obstacles, this initiative had several strengths that aided in its overall success. To ease the burden on providers, three unique projects were merged into one cohesive initiative that successfully used SBIRT to identify and respond to IPV and substance use. This intentional collaboration relied on the use

of a screening tool that covered both issues and a framework by which to respond. Instead of needing to learn and integrate three separate changes into their practice, providers only needed to familiarize themselves with one streamlined process. Additionally, balancing and process measures were not only considered, but centered throughout the improvement initiative. Specifically, the ability of medical assistants to room patients alone was essential to the success of the project and adhered to evidence-based recommendations (Ogden et al., 2023; Phillips et al., 2007). This model allowed for the harm reduction principles of safety, dignity, and stigma mitigation by establishing confidentiality and normalcy of screening (Academy of Perinatal Harm Reduction, n.d.).Privacy and verbal administration by a provider opened the door for deeper conversations, engaging with the social context of patients' lives.

Interpretation

Early screening and identification of people at risk for substance use in pregnancy is essential for improving the physical, mental, and social outcomes of birthing parents and their children (The Association of Women's Health, Obstetric and Neonatal Nurses, 2019). Screening is the first step in SBIRT, which ultimately engages patients in motivational interviewing and connects them to resources. Early screening, such as at the new OB visit, is associated with significantly increased screening throughout pregnancy, increased negative UDS, decreased substance use, and decreased newborn morphine treatment (Boden et al., 2021). Universal early screening not only facilitates timely treatment of SUD in pregnancy, but also identifies those at risk of developing SUD before their substance use behaviors escalate. Importantly, when compared to untreated SUD, treated SUD is associated with better birth outcomes, including fewer cases of low birth weight and prematurity (Kotelchuck et al., 2016).

This quality improvement initiative established a validated, standardized method of screening for prenatal substance use in a collaborative obstetric clinic, successfully initiating the SBIRT process. Using an adapted Integrated 5Ps Screening Tool, accompanied by evidence-based workflow changes like rooming patients alone, obstetric providers were able to identify

current substance use along with risk factors for problematic substance use. These improvements starkly contrast the pre-existing approach to substance use screening, riddled with inconsistent administration, documentation discrepancies, and missed opportunities for intervention.

Over the course of two four-week PDSA cycles, clinicians administered an adapted 5Ps Integrated Screening Tool to 56 of 65 eligible patients, resulting in a screening rate of 86.2%. This screening rate surpassed the goal of 80% and is consistent with the results of similar quality improvement projects, such as the 84% rate seen in Ulrich et al. (2021). At the same time, this project achieved a screening rate almost twice as high as DiCarlo & Whiffen (2024). Their quality improvement initiative, however, involved three clinic locations with extremely variable screening rates, with one location achieving a more comparable screening rate of 82.8%. These results reflect the previously noted observation that "universal screening" recommendations do not necessarily ensure 100% screening rates, and all quality improvement initiatives must account for unforeseen barriers and human error.

Overall, the screening tool identified 25 people at risk of SUD, or 38.5% of all eligible patients. Breakdown of positive responses by question type revealed both differences and similarities between the study population and the general population. For instance, 24.6% of eligible patients endorsed a parent history of problematic substance use, a rate 8% higher than national estimates (ASPE, 2022). Two people (3.1% of those eligible) screened positive for current cannabis use, concordant with national estimates of 2% to 5% (ACOG, 2017). Seven people (10.8% of those eligible) smoked or vaped nicotine in the past three months, falling within the range of national estimates of 10.7% to 16.7% (ACOG, 2020). These statistics suggest that the adapted Integrated 5Ps Screening Tool accurately captured substance use rates and risk factors, assuming the clinic population is similar to the general population. Furthermore, clinician feedback indicated that even in the absence of current substance use,

the screening questions enhanced patient-provider relationship by creating the opportunity for discussion surrounding patients' families, values and lived experiences.

While the initial intent of this project was to compare baseline screening and substance use rates with post-intervention rates, completion of baseline chart review did not occur until after the project end date. Once completed, the lack of clear screening documentation prior to project initiation became apparent, making useful comparison challenging. Unclear, conflicting documentation was present in over half (51.7%) of baseline charts, compared to 8.9% of the post-intervention charts. Consequently, understanding the timing, context, and results of screening became significantly more straightforward after project implementation, minimizing the likelihood of missing opportunities for intervention. For instance, a total of 10 individual patients (15.4% of those eligible) screened positive for either past or current high-risk substance use during both PDSA cycles. In contrast, based on "substance use" documented under the history review portion of the new OB note, four people (6.9%) screened positive for alcohol, drug, or nicotine in the pre-intervention phase, less than half the proportion of positive screens during the intervention period. Even with limited analyzable baseline data, this difference in substance use identification demonstrates the failure of previous screening practices to capture substance use accurately.

Continuously monitoring for challenges and incorporating feedback contributed to the overall success of the initiative. The first piece of feedback came during the third week of the first PDSA cycle, from a provider reporting that she only uses the specific new OB template for patients who have already undergone intake with the RN. For patients who have not completed that intake, providers use a more comprehensive new OB template that does not contain the 5Ps. As a solution, an attempt was made to duplicate the screening intervention in the alternative template, but multiple barriers were encountered. Firstly, the provider who gave the feedback communicated that when the patient has not completed an intake with the RN, the provider becomes responsible for significantly more history-taking during the new OB

appointment. Due to the increased workload, it would thus be impossible to make time for the 5Ps screening. At the same time, another provider was asked to input the screening into the alternative template, as this provider had exclusive editing privileges. This provider, however, reported that her colleagues should only be using the original template. Due to the discrepancy between the two providers' understanding of current charting practices, the introduction of the 5Ps into the alternative template faced a multi-week delay.

This unforeseen dilemma highlights the broader issues of communication and standardization at not only an inter-provider level, but at a systems level as well. The RN intake is a recent change in practice that began only months before this initiative. Ideally, every patient should undergo an intake with the RN prior to the new OB visit, making the alternative template obsolete. In reality, the clinic has not yet reached 100% adherence to this new workflow, and thus clinicians continue to rely on the alternative template for select patients. Moreover, the OB providers work within a system that imposes time constraints alongside increased workload. As a result, clinicians report having inadequate time to complete both history-taking and SUD screening.

Reflecting another documentation-related barrier, chart review revealed documentation discrepancies in 8.9% of new OB notes. A discrepancy was defined as a difference between the answers documented for each question in the screening and the documentation of overall screening results in the assessment and plan portion of the chart note. In response, the relevant documentation prompts were moved to the space directly underneath the 5Ps screening in order to visually remind providers to input answers that corresponded with those in the screening. After the implementation of this change, no further cases of documentation discrepancies were identified. One provider, however, expressed concern with the change, noting that clinicians rely on quickly reading the assessment and plan portion of chart notes and may miss important information if it is not included in this section. While the time constraints of this project did not allow for follow-up regarding the location of this documentation, future

initiatives should focus on increasing the readability of the new OB note template and ensuring follow-up of positive screens.

Documentation discrepancies impacted confidentiality tracking, as well. In the baseline chart review, providers did not document whether they saw the patient privately, but did sometimes note partner presence. Providers specifically documented that the partner was present in 12 of 58 (20.7%) baseline cases. After the intervention, chart review revealed a lack of confidentiality in only 3.1% of cases, along with an 81.5% rate of seeing patients in private. The decrease in lack of privacy and existence of confidentiality documentation demonstrates an improvement from previous practices. Of the 10 (15.4%) post-intervention eligible patients without confidentiality documentation, 6 (60%) were cases in which the provider used the incorrect note template. No patients with a documented absence of confidentiality completed the 5Ps screen, and only three patients without any documentation received the screening. These results reinforce the critical role of patient privacy in successfully screening for substance use. Similar to the barrier of incorrect template use, further investigation into the impacts of workflow and systemic factors is necessary to understand why MAs and providers may struggle to room patients alone and accurately document.

Concerning provider impact, post-survey results showed increased provider confidence and consistency with limited negative effects. Providers reported screening for substance use consistently, in private and with confidence. Feelings regarding balancing measures were mixed, with one provider indicating that screening administration created a burden for clinic staff. In the area for feedback, this provider pointed to the length of the screening as problematic. They requested a shorter, modified version that the EPAC provider could administer earlier in pregnancy. These survey results must be interpreted with caution, however, due to imprecise respondent tracking. The pre- and post-surveys were anonymous and sent to 21 OB providers who were scheduled in the clinic during the study period. While the pre-survey received nine responses, the post-survey received only four, with no way of verifying the identity

of respondents. Presumably not all 21 providers conducted new OB visits during the initiative, and thus did not complete the post-survey, but may have completed the pre-survey. Future initiatives should more carefully track participating providers to avoid extraneous pre-survey responses and increase the comparability of survey responses.

Limitations

Despite the overall success of this improvement initiative, several limitations and barriers exist regarding study design. During the project planning phase, interviews with various stakeholders revealed conflicting opinions about when to administer the screening. Simultaneously, clinic workflow and staffing were in a state of flux, specifically regarding EPAC and new patient intake. After considering provider perspectives and the ongoing transition period, it was determined that that providers should verbally administer the screening during the new OB visit. This study design potentially delayed substance use identification by multiple weeks. Considering that early pregnancy represents a particularly vulnerable window, EPAC would be the optimal time for substance use identification and harm reduction (Beeley, 1986). Despite a clear consensus from ACOG and CMQCC that screening should occur as early as possible, some providers resisted the recommendation, arguing that many EPAC patients have not yet decided whether they would continue the pregnancy (Crew et al., 2020; Mascola et al, 2017). While clinic-level and provider-level factors limited adherence to professional recommendations in this initiative, future projects should address barriers to screening implementation earlier in pregnancy.

Similarly, time and resources necessitated screening only at a single time point, as opposed to multiple timepoints throughout pregnancy, as perinatal organizations recommend (Crew et al., 2020; Mascola et al, 2017). The best perinatal outcomes occur when providers screen for substance use serially, starting in the first trimester (Boden et al., 2021). Considering the aforementioned systems-level and provider-level challenges present at this clinic, providers may not be able to administer repeat screens for every patient. As an alternative harm reducing

strategy, however, providers could instead focus on those with risk factors. While this improvement initiative did not create a follow-up plan for patients who endorsed substance use in their parents, peers, or partner, future iterations could track such patients and screen them throughout pregnancy. Not only are these patients at increased risk for developing substance use disorder in pregnancy, but they also may require an established, trusting relationship before disclosing.

In addition to constraints surrounding screening administration, lack of MA and patient feedback limits how one can interpret the impact of this quality improvement initiative. MAs played a vital role in the success of this initiative by altering their typical workflow to room patients alone. Their input was incorporated while planning the interventions, but no follow-up feedback was sought after completion of the PDSA cycles. As such, no data exists regarding barriers to rooming patients alone, or whether the intervention caused undue burden for MAs. Similarly, this project did not seek feedback about patient experience or impact. Understanding patient perspectives on the verbal administration of the 5Ps would enhance future PDSA cycles. With no consistent evidence about the most effective method of screening for substance use, the preference for verbal versus written self-report may be population-dependent.

Conclusion

The implementation of universal substance use screening at new OB visits is both feasible and effective when accompanied by workflow changes and provider education. Through the use of an adapted Integrated 5Ps Screening Tool and emphasis on patient confidentiality, the project achieved screening rates of 86.2% and identified substance use risk factors in 38.5% of eligible patients. Beyond identifying substance use risk factors, administration of the 5Ps created an opportunity for discussion about interconnected factors that impact pregnant people, such as interpersonal relationships and family dynamics. Success of this initiative relied not only on the screening tool itself, but on the collaborative nature of the

project, which streamlined multiple screening processes into one cohesive workflow while considering the needs and roles of various stakeholders.

The sustainability of this improvement project depends on continued provider buy-in and system-level support. While the initiative successfully established a new norm of rooming patients alone and achieved high screening rates, challenges remain regarding optimal timing of screening, consistent documentation and effective interprovider communication. To further refine the process, future iterations should focus on implementing serial screening early in pregnancy; decreasing redundancy and length in documentation templates; and gathering feedback from medical assistants and patients. Despite these limitations, this project created a strong foundation for evidence-based, universal prenatal substance use screening that enhances patient wellness, prioritizes whole-person care and bolsters patient-provider relationships.

References

Ahmed, N., Kassis, A., Malone, J., Yang, J., Zamzami, E., Lin, A.-H., Gordon, S. M., Gong, M. C., Bardo, M., Dalmasso, C., & Loria, A. S. (2023). Prenatal morphine exposure increases cardiovascular disease risk and programs neurogenic hypertension in the adult offspring. *Hypertension, 80*(6), 1283-1296. https://doi.org/10.1161/hypertensionaha.122.20262

American College of Obstetricians and Gynecologists. (2020). Tobacco and nicotine cessation during pregnancy: Committee opinion no. 807. *Obstetrics & Gynecology, 135*(5), e221-e229.

American College of Obstetricians and Gynecologists. (2017). Marijuana use during pregnancy and lactation: Committee opinion no. 722. *Obstetrics & Gynecology, 130*(4), e205-e209.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Association of Women's Health, Obstetric and Neonatal Nurses. (2019). Optimizing outcomes for women with substance use disorders in pregnancy and the postpartum period. *Nursing for Women's Health*, *23*(5), 455-457.

Arter, S., Lambert, J., Brokman, A., & Fall, N. (2021). Diagnoses during the first three years of life for children with prenatal opioid exposure and neonatal abstinence syndrome using a large maternal infant data hub. *Journal of Pediatric Nursing*, *61*, 34-39. https://doi.org/10.1016/j.pedn.2021.03.011

Arter, S., Tyler, B., McAllister, J., Kiel, E., Güler, A., & Cameron Hay, M. (2021). Longitudinal outcomes of children exposed to opioids in-utero: a systematic review. *Journal of Nursing Scholarship, 53*(1), 55-64. https://doi.org/10.1111/jnu.12609

Academy of Perinatal Harm Reduction. (n.d.). *Why choose harm reduction.* https://www.perinatalharmreduction.org/why-choose-harm-reduction

Beeley, L. (1986). Adverse effects of drugs in the first trimester of pregnancy. In *Clinics in Obstetrics and Gynaecology* (Vol. 13, No. 2, pp.177-195).

Boden, S. L., Jones, C. W., & Cabacungan, E. T. (2021). Improved maternal and infant outcomes with serial, self-reported early prenatal substance use screening. *Maternal and Child Health Journal*, *25*, 1118-1125. https://doi.org/10.1007/s10995-021-03127-1

Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., Bradley, K. A., & Ambulatory Care Quality Improvement Project (ACQUIP. (1998). The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. *Archives of Internal Medicine*, *158*(16), 1789-1795.

Byrn, M. A., Bxuys, E. A., Mujahid, M., & Madsen, K. (2023). Disparities in the provision of perinatal care based on patient race in the United States. *Birth*, *50*(3), 627-635. https://doi.org/10.1111/birt.12717

Chang, G. (2001). Alcohol-screening instruments for pregnant women. *Alcohol Research & Health*, *25*(3), 204.

Chasnoff, I. J., Wells, A. M., McGourty, R. F., & Bailey, L. K. (2007). Validation of the 4P's Plus© screen for substance use in pregnancy validation of the 4P's Plus. *Journal of Perinatology*, *27*(12), 744-748.

Chin, J. M., Chen, E., Wright, T., Bravo, R. M., Nakashima, E., Kiyokawa, M., Karasaki, K., Estrada, P., Ghatnekar, R., Lee, M.-J., & Bartholomew, M. L. (2022). Urine drug screening on labor and delivery. *American Journal of Obstetrics & Gynecology MFM, 4*(6), 100733. https://doi.org/10.1016/j.ajogmf.2022.100733

Coleman-Cowger, V. H., Oga, E. A., Peters, E. N., Trocin, K. E., Koszowski, B., & Mark, K. (2019). Accuracy of three screening tools for prenatal substance use. *Obstetrics and Gynecology*, *133*(5), 952-961. https://doi.org/10.1097/aog.0000000000003230

Crew, E., Chowfla, A., DuPlessis, H., Lee, H., Main, E., McCormick, E., Oldini, C., Smith, H., Robinson, R., Waller, C., & Wong, J. (2020). *Mother and Baby Substance Exposure*

Toolkit. Stanford, CA: California Maternal Quality Care Collaborative and California

Perinatal Quality Care Collaborative.

DiCarlo, K., & Whiffen, L. (2024). Implementation of a perinatal substance use screening

protocol in the outpatient setting. *Nursing for Women's Health, 28*(2).

Ehrenreich, K., & Kimport, K. (2022). Prenatal care as a gateway to other health care: a qualitative

study. *Women's Health Issues, 32*(6), 602-606. https://doi.org/10.1016/j.whi.2022.08.006

Fadaei-Kenarsary, M., Esmaeilpour, K., Shabani, M., & Sheibani, V. (2024). Maternal substance

use and early-life adversity: Inducing drug dependence in offspring, interactions,

mechanisms, and treatments. *Addiction and Health, 16*(1), 51-66.

https://doi.org/10.34172/ahj.2024.1478

Faherty, L. J., Kranz, A. M., Russell-Fritch, J., Patrick, S. W., Cantor, J., & Stein, B. D.

(2019/11/01). Association of state policies related to substance use in pregnancy with

rates of neonatal abstinence syndrome. *JAMA Network Open, 2*(11).

https://doi.org/10.1001/jamanetworkopen.2019.14078

Ghertner, R. (2022). US national and state estimates of children living with parents using

substances, 2015-2019. *Assistant Secretary for Planning and Evaluation*.

Gorfinkel, L., Stohl, M., Shmulewitz, D., & Hasin, D. (2024). Self-reported substance use with

clinician interviewers versus self-administered surveys. *Journal of Studies on Alcohol

and Drugs. 85*(1), 92-99. https://doi.org/10.15288/jsad.23-00004

Hostage, J. C., Brock, J., Craig, W., Sepulveda, D., Hostage, J. C., Brock, J., Craig, W., &

Sepulveda, D. (2020). Integrating screening, brief intervention and referral to treatment

(SBIRT) for substance use into prenatal care. *Maternal and Child Health Journal, 24*(4).

https://doi.org/10.1007/s10995-020-02892-9

Institute for Healthcare Improvement. (n.d.). *How to improve: Model for improvement.*

https://www.ihi.org/resources/how-to-improve

Kapur, B. M., & Aleksa, K. (2020). What the lab can and cannot do: Clinical interpretation of drug testing results. *Critical Reviews in Clinical Laboratory Sciences*, *57*(8). https://doi.org/10.1080/10408363.2020.1774493

Kennedy, C., Finkelstein, N., Hutchins, E., & Mahoney, J. (2004). Improving screening for alcohol use during pregnancy: the Massachusetts ASAP program. *Maternal and Child Health Journal*, *8*, 137-147.

Kotelchuck, M., Cheng, E. R., Belanoff, C., Cabral, H. J., Babakhanlou-Chase, H., Derrington, T. M., ... & Bernstein, J. (2017). The prevalence and impact of substance use disorder and treatment on maternal obstetric experiences and birth outcomes among singleton deliveries in Massachusetts. *Maternal and Child Health Journal*, *21*, 893-902.

Kravitz, E., Suh, M., Russell, M., Ojeda, A., Levison, J., & McKinney, J. (2023). Screening for substance use disorders during pregnancy: a decision at the intersection of racial and reproductive justice. *American Journal of Perinatology, 40*(6). https://doi.org/10.1055/s-0041-1739433

Lee, J. J., Saraiya, N., & Kuzniewicz, M. W. (2023). Prenatal opioid exposure and neurodevelopmental outcomes. *Journal of Neurosurgical Anesthesiology, 35*(1), 142-146. https://doi.org/10.1097/ANA.0000000000000876

Lisonkova, S., Richter, L. L., Ting, J., Muraca, G. M., Wen, Q., Mehrabadi, A., Mitchell-Foster, S., Oviedo-Joekes, E., & Lyons, J. (2019). Neonatal abstinence syndrome and associated neonatal and maternal mortality and morbidity. *Pediatrics*, *144*(2). https://doi.org/10.1542/peds.2018-3664

Martin, C. E., Scialli, A., & Terplan, M. (2020). Unmet substance use disorder treatment need among reproductive age women. *Drug and Alcohol Dependence*, *206*, 107679. https://doi.org/10.1016/j.drugalcdep.2019.107679

Martino, S., Ondersma, S. J., Forray, A., Olmstead, T. A., Gilstad-Hayden, K., Howell, H. B., ... & Yonkers, K. A. (2018). A randomized controlled trial of screening and brief

interventions for substance misuse in reproductive health. *American Journal of Obstetrics and Gynecology*, *218*(3), 322-e1.

Mascola, M. A., Borders, A. E., & Terplan, M. (2017). Opioid use and opioid use disorder in pregnancy. *Obstetrics and Gynecology*, *130*(2), 488-489.

Morrison, P. K., Pallatino-Trevelline, C., Fusco, R., Fitzpatrick, E., Chang, J. C., Kotha, A., ... & Krans, E. (2023). Co-occurring substance use and intimate partner violence in pregnant and postpartum women: a systematic literature review. *Journal of Family Violence*, 1-15. https://doi.org/10.1007/s10896-023-00609-4

Ndanga, M., Sulley, S., & Saka, A. K. (2022). Trend analysis of substance use disorder during pregnancy. *Cureus*,*14*(3). https://doi.org/10.7759/cureus.23548

Oga, E. A., Mark, K., Peters, E. N., & Coleman-Cowger, V. H. (2020). Validation of the NIDA-modified ASSIST as a screening tool for prenatal drug use in an urban setting in the United States. *Journal of Addiction Medicine*, *14*(5). https://doi.org/10.1097/ADM.0000000000000614

Ogden, S. N., Dichter, M. E., & Bazzi, A. R. (2022). Intimate partner violence as a predictor of substance use outcomes among women: a systematic review. *Addictive Behaviors*, *127*. https://doi.org/10.1016/j.addbeh.2021.107214

Olaniyan, A., Hawk, M., Mendez, D. D., Albert, S. M., Jarlenski, M., & Chang, J. C. (2023). Racial inequities in drug tests ordered by clinicians for pregnant people who disclose prenatal substance use. *Obstetrics and Gynecology*, *142*(5), 1169-1178. https://doi.org/10.1097/AOG.0000000000005385

Ondersma, S. J., Chang, G., Blake-Lamb, T., Gilstad-Hayden, K., Orav, J., Beatty, J. R., ... & Yonkers, K. A. (2019). Accuracy of five self-report screening instruments for substance use in pregnancy. *Addiction*, *114*(9), 1683-1693.

Oni, H. T., Drake, J. A., Dietze, P., Higgs, P., & Islam, M. M. (2022). Barriers to women's disclosure of and treatment for substance use during pregnancy: a qualitative study. *Women and Birth*, *35*(6), 576-581.

Oregon Health Authority. (2023). *Oregon maternal mortality and morbidity review committee: Biennial report 2023*. https://www.oregon.gov/oha/PH/HEALTHYPEOPLEFAMILIES/DATAREPORTS/MCHTITLEV/Documents/January2023BiennielReportMMRCFinal.pdf

Patel, E., Bandara, S., Saloner, B., Stuart, E. A., Goodman, D., Terplan, M., McCourt, A., White, S., & McGinty, E. E. (2021). Heterogeneity in prenatal substance use screening despite universal screening recommendations: Findings from the Pregnancy Risk Assessment Monitoring System, 2016-2018. *Am J Obstet Gynecol MFM*, *3*(5), 100419. https://doi.org/10.1016/j.ajogmf.2021.100419

Phillips, D., Thomas, K., Cox, H., Ricciardelli, L. A., Ogle, J., Love, V., & Steele, A. (2007). Factors that influence women's disclosures of substance use during pregnancy: a qualitative study of ten midwives and ten pregnant women. *Journal of Drug Issues*, *37*(2), 357-375.

Ragsdale, A. S., Al-Hammadi, N., Loux, T. M., Bass, S., Keller, J. M., & Chavan, N. R. (2024). Perinatal substance use disorder: Examining the impact on adverse pregnancy outcomes. *European Journal of Obstetrics & Gynecology and Reproductive Biology: X*, 100308. https://doi.org/10.1016/j.eurox.2024.100308

Reese, S. E., Glover, A., Fitch, S., Salyer, J., Lofgren, V., & McCracken III, C. T. (2023). Early insights into implementation of universal screening, brief intervention, and referral to treatment for perinatal substance use. *Maternal and Child Health Journal*, *27*(Suppl 1), 58-66.

Russell, M. (1994). New assessment tools for risk drinking during pregnancy: T-ACE, TWEAK, and others. *Alcohol Health and Research World*, *18*(1), 55.

Saitz R., Cheng D. M., Allensworth-Davies D., Winter M. R.,Smith P. C. (2014). The ability of single screening questions for unhealthy alcohol and other drug use to identify substance dependence in primary care. *Journal of Studies on Alcohol and Drugs*, *75*(1), 153-157.

Simon, R., Giroux, J., & Chor, J. (2020). Effects of substance use disorder criminalization on American Indian pregnant Individuals. *AMA Journal of Ethics*, *22*(10). https://doi.org/10.1001/amajethics.2020.862.

Smith P. C., Schmidt S. M., Allensworth-Davies D., Saitz R. (2010). A single-question screening test for drug use in primary care. *Archives of Internal Medicine*, *170*(13), 1155-1160.

Substance Abuse and Mental Health Services Administration. (2023). *Key substance use and mental health indicators in the United States: Results from the 2022 National Survey on Drug Use and Health* (HHS Publication No. PEP23-07-01-006, NSDUH Series H-58). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/report/2022-nsduh-annual-national-report

Substance Abuse and Mental Health Services Administration. (2018). Clinical guidance for treating pregnant and parenting women with opioid use disorder and their infants. *Vol HHS Publication No.(SMA) 18-5054*.

Toquinto, S. M., Berglas, N. F., McLemore, M. R., Delgado, A., & Roberts, S. C. (2020). Pregnant women's acceptability of alcohol, tobacco, and drug use screening and willingness to disclose use in prenatal care. *Women's Health Issues*, *30*(5), 345-352.

Ulrich, M., Memmo, E. P., Cruz, A., Heinz, A., & Iverson, R. E. (2021). Implementation of a universal screening process for substance use in pregnancy. *Obstetrics and Gynecology*, *137*(4). https://doi.org/10.1097/AOG.0000000000004305

US Preventive Services Task Force. (2020). Screening for unhealthy drug use: US preventive

   services task force recommendation statement. J*AMA, 323*(22), 2301-2309.

   https://doi.org/10.1001/jama.2020.8020

Watson, E. (2010). The evolution and application of the 5 P'S behavioral risk screening tool.

   The Source, *20*(2), 27-29.

Wolfson, L., Schmidt, R. A., Stinson, J., & Poole, N. (2021). Examining barriers to harm

   reduction and child welfare services for pregnant women and mothers who use

   substances using a stigma action framework. *Health & Social Care in the*

   Community, *29*(3), 589-601.

World Health Organization. (2014). *Guidelines for the identification and management of*

   substance use and substance use disorders in pregnancy. World Health Organization.

Wright, T. E., Terplan, M., Ondersma, S. J., Boyce, C., Yonkers, K., Chang, G., & Creanga, A.

   A. (2016). The role of screening, brief intervention, and referral to treatment in the

   perinatal period. *American Journal of Obstetrics and Gynecology*, *215*(5), 539-547.

Yonkers, K. A., Gotman, N., Kershaw, T., Forray, A., Howell, H. B., & Rounsaville, B. J. (2010).

   Screening for prenatal substance use: Development of the Substance Use Risk Profile-

   Pregnancy Scale. *Obstetrics and Gynecology*, *116*(4).

   https://doi.org/10.1097/AOG.0b013e3181ed8290
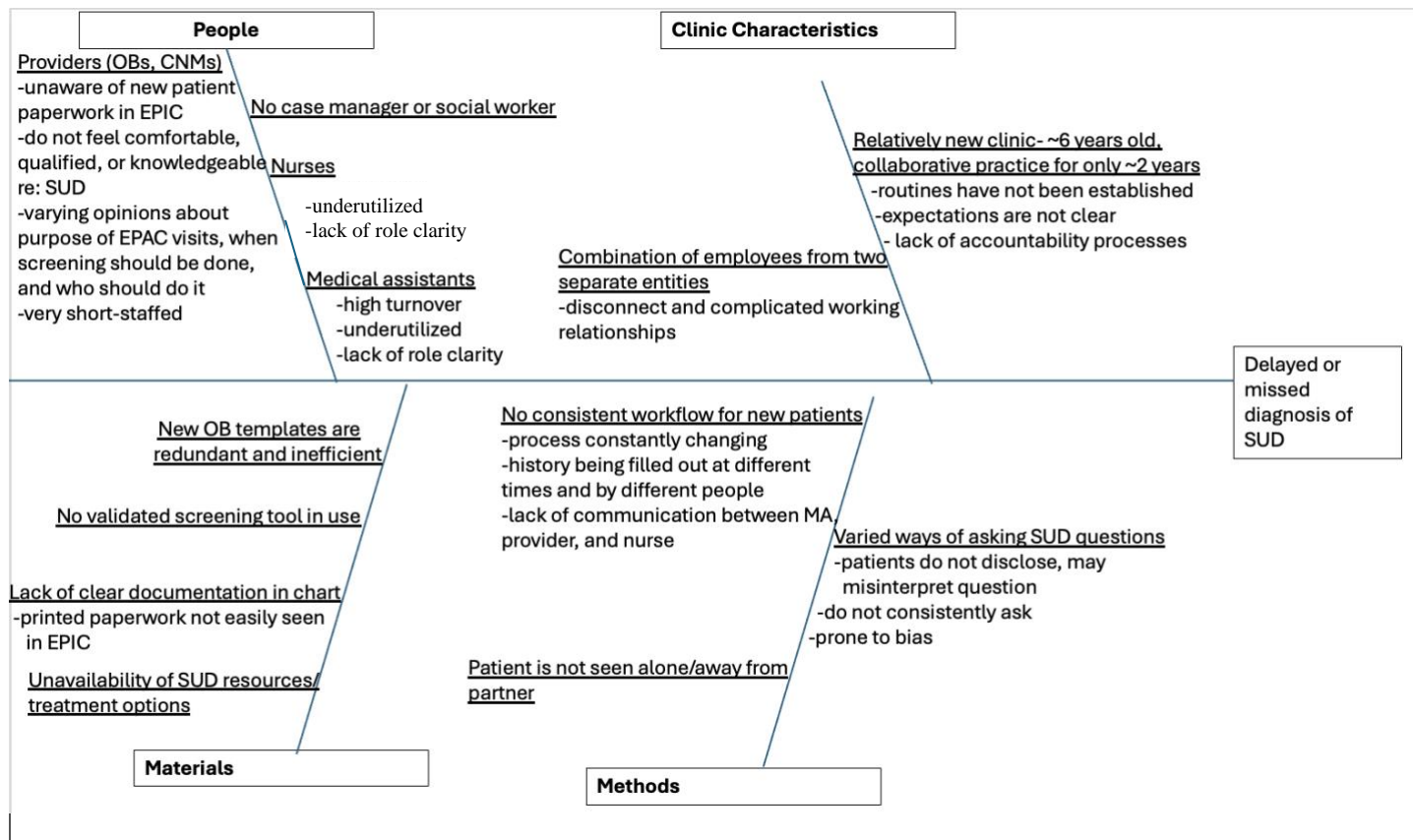
Appendix A

Appendix A. Fishbone diagram of contributing factors to delayed or missed diagnoses of SUD.

Appendix B

<u>5 P's Screening for Substance Use & Intimate Partner Violence</u>
We know pregnancy is an important time for you. We want to address anything that can be harmful to you or your baby and help make your pregnancy as healthy as possible. We've started asking all of our patients about some things that can have a big impact on our health.
Before we get started, I want you to know that everything here is confidential, meaning that I won't talk to anyone else about what is said unless you tell me about abuse or neglect involving children, elderly or people with disabilities.

Parents: Did any of your parents have a problem with alcohol or other drug use? | YES***/NO ▾ |
Peers: Do any of your friends have a problem with alcohol or other drug use? | YES***/NO ▾ |
Partner: Does your partner have a problem with alcohol or other drug use? | YES***/NO ▾ |
Past: In the past, have you had difficulties in your life due to alcohol or other drugs, including prescription medications? | YES***/NO ▾ |
Present: In the past month, have you drunk any alcohol or used other drugs including cannabis?
| YES***/NO ▾ |

        How many days per month do you drink? | *** |
        How many drinks on any given day? | *** |
        How often did you have 4 or more drinks per day in the last month? | *** |

Smoking: Have you smoked any cigarettes or vaped any nicotine in the past three months? | YES***/NO ▾ |
Violence: Are you currently or have you ever been in a relationship where you were physically hurt, threatened, controlled, emotionally abused or made to feel unsafe? | YES***/NO ▾ |

Screening for intimate partner violence and substance use:
Was patient seen confidentially? | YES/NO*** ▾ |
Universal IPV education provided (safety cards given to patient)? | YES/NO*** ▾ |

Did the patient screen positive for **Violence**?
| Yes/No ▾ |

Did the patient screen positive for **Parents, Peers or Partner**?
| Yes/No ▾ |

Did the patient screen positive for **Past, Present or Smoking**?
| Yes/No ▾ |

Appendix B. New OB template with an introductory script, questions from the Integrated 5Ps Screening Tool, and documentation prompts.