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Increasing use of a Tobacco Cessation Quitline in a Rural Prenatal Population

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Abstract

This paper addresses prenatal smoking rates within in a rural northern Michigan district health department (HD) through a Master of Science in Nursing (MSN) quality improvement project. The paper provides a detailed microsystem assessment of the Maternal Infant Health Program (MIHP) at the district HD describing the clinical problem and identifying a practice gap in care of prenatal smokers. The literature review describes the three most effective prenatal smoking cessation interventions: counseling, incentives, and feedback. The literature review also addresses the effectiveness of and barriers to smoking quitlines. The clinical protocol followed the Model for Improvement framework with the completion of one PDSA cycle. Barriers to Michigan Tobacco Quitline use were identified then addressed by modifying the MIHP referral process to include an educational client handout. MIHP team post-surveys indicated the staff members agree it is easier to encourage prenatal smoker enrollment in the Quitline with the modified referral process. The MIHP team agreed to continue revising their Quitline referral process until the desired affect is achieved.

Keywords: smoking, smoking cessation, pregnant, pregnancy, quitline, barriers, incentives, counseling

Chapter 1: Introduction and Background

No one wishes for premature birth, low birth weight, increased risk of Sudden Infant Death Syndrome, or a higher risk of birth defects for their baby but these are risks for infants of pregnant women smokers (Centers for Disease Control and Prevention [CDC], 2017a). Other complications of prenatal smoking include miscarriage and poor pregnancy outcomes. Despite known risks to smoking while pregnant, many women continue to smoke during this time.

According to the CDC Pregnancy Risk Assessment Monitoring System data (2017b), the national prenatal smoking rate was 10% percent in 2011 with 16.8% of prenatal smokers delivering babies with low birth weight (≤ 2500g). The Michigan 2011 rate of prenatal smoking and corresponding low birth weight was higher than the national average at 15% with 22.4% delivering a low birth weight baby (CDC, 2017b). In northern Michigan, the prenatal smoking rate was ≥10% above the state average from 2010 to 2015 (Swain, 2016). In fact, the prenatal smoking rate in one northern Michigan county was 34% in 2014 (Swain, 2016).

There are many potential complications for newborns born to smoking mothers. Complications include miscarriage, placenta abruption (which can cause severe fetal and maternal adverse outcomes), premature birth, and low birth weight. Prenatal smoking increases the risk of Sudden Infant Death Syndrome and birth defects such as cleft lip or palate (CDC, 2017a). In fact, one in five babies born to mothers who smoke are born with a low birth weight (CDC, 2016) which can have significant financial costs. The hospital cost for a preterm baby is $55,393 according to a study completed for the March of Dimes (2014) compared to $4,400 for an uncomplicated vaginal delivery (Healthcare Cost and Utilization Project, 2017).

Pregnant smokers are subject to social determinants. According to a systematic review, pregnant women who continue to smoke are more likely to be single and utilize free health

insurance for prenatal care, as well as have more children, a low socioeconomic status, inadequate social support, and a lower level of education (Chamberlain et al., 2017). Social determinants are evident in northern Michigan where Swain (2016) found that having Medicaid insurance was the single most significant factor contributing to prenatal smoking.

The American College of Obstetrics and Gynecology, a professional organization of obstetrics and gynecologists designed to improve women's health, states "smoking during pregnancy is a public health problem because of the many adverse effects associated with it" (Committee on Obstetric Practice, 2017, p. e200). The U.S. Preventative Services Taskforce created a practice guideline recommending "clinicians ask all pregnant women about tobacco use, advise them to stop using tobacco, and provide behavioral interventions for cessation to pregnant women who use tobacco" (Siu et al., 2015, p. 622). Chamberlin et al. (2017) completed an updated systematic review of 102 randomized control trials of psychosocial smoking cessation interventions for pregnant women. The systematic review results revealed that counseling, feedback, and incentives are the most effective smoking cessation interventions for prenatal smokers.

It is the role of the clinical nurse leader (CNL) to address patient outcomes by designing and implementing evidence-based interventions (Harris, Roussel, & Thomas, 2014). The CNL improves patient outcomes, as well as patient and staff satisfaction by improving or eliminating practice gaps. The purpose of this paper is to describe a clinical microsystem, determine practice gaps, and design a process change through a quality improvement model to decrease smoking cessation rates in the prenatal Medicaid population served by a district HD in northern Michigan.

The Microsystem

A clinical microsystem is defined as "the place where patients, families, and caregivers meet" (Nelson, Batalden, Godfrey, & Lazar, 2011, p. 2). The clinical microsystem addressed in this MSN quality improvement project is a program within the district HD's Maternal Child division called the Maternal Infant Health Program (MIHP). The district HD serves two rural counties with separate offices in each county. The MIHP is a home visiting program that addresses the needs of pregnant women and infants with Medicaid. It is a support service and does not replace their obstetric visits or pediatric well-child check-ups (Michigan Department of Health and Human Services [MDHHS], 2018a).

The district HD staff members that make up the MIHP team were five bachelor's-prepared nurses, one registered dietician, and one licensed social worker. The MIHP nurses are assigned to a specific county while the registered dietician and social worker address clients in both counties. One of the MIHP nurses also served as the program coordinator to ensure MIHP standards of care were met. She was also the MIHP smoking champion designated to educate the team and answers questions about new and current smoking cessation interventions.

Stakeholders

Key stakeholders related to the smoking intervention at the district HD include the MIHP team and the district HD's Health Director. Since decreasing prenatal smoking was a quality improvement project for all northern Michigan HDs, other northern Michigan HDs outside of the microsystem may also benefit from the MSN quality improvement project. There are seven health departments (including the district HD) that serve thirty-one northern Michigan counties that make up the Northern Michigan Public Health Alliance and collaborate to decrease maternal infant death and mortality. The leaders of the other HDs expressed interest in the quality

improvement project and agreed to participate in data collection. The Michigan Tobacco Quitline is also a key stakeholder as it will gain knowledge from the project for quality improvement. Lastly, the district HD's prenatal smoking clients, their unborn babies, and their families are significant stakeholders. The MSN quality improvement project may directly improve mothers' and infants' health and quality of life which may indirectly enhance entire households' health and quality of life as well.

MIHP Processes

The MIHP is a statewide program directed by the Michigan Department of Health and Human Services (MDHHS). The district HD participating in the MSN quality improvement project must follow MDHHS guidelines provided to all MIHP programs statewide. The guidelines allow for maternal clients to receive up to nine home visits. A client is seen by a MIHP team member once a month for 30 to 60 minutes which allows MIHP team members to build rapport with their clients. The MIHP is a client-based program where clients guide the care provided to them including what topics are discussed at their appointments. Clients are referred to the MIHP by Medicaid health plans and MDHHS programs such as the Women, Infant, Child (WIC) program.

The MIHP enrollment process requires each client to complete a detailed health risk questionnaire. The questionnaire screens for health risks such as tobacco, alcohol, or drug use, insufficient housing, inadequate access to medical care or transportation, mental health concerns, and current maternal health problems such as hypertension or diabetes. With a client's consent, the MIHP team notifies her obstetricians of her enrollment in the MIHP and any health risks identified. MDHHS provides standardized plans of care for each identified risk that includes interventions to be used when appropriate at MIHP appointments (MDHHS, 2018b). The

tobacco plan of care, for example, provides interventions such as supporting the client's decision to quit smoking, utilizing the 5 A's (Ask, Advise, Assess, Assist, and Arrange), discussing how smoking affects the mother and fetus, and referring clients to the Michigan Tobacco Quitline (MDHHS, 2018b). An essential role of the MIHP team is referring clients throughout their care to external resources as needed.

Prenatal Smoking in the Microsystem

The two district HD locations identified for the purpose of this paper as "County A" and "County B" are examples of the data showing the prenatal smoking rate in Michigan is higher than the national average. A review of 166 MIHP charts on October 6, 2017 revealed the prenatal smoking rate for the two district HD counties. County A had 24 maternal clients of which 11 were identified as smoking before and/or during pregnancy (45% smoking rate). County B had 10 maternal clients of which one client was considered a smoker (10% smoking rate). Based on this chart review, the MIHP clients identified as smokers ranged in ages from the early twenties to mid-thirties. Most had limited education, high school completion or less, and many reported concurrent substance abuse.

In accordance with the MIHP tobacco plan of care (MDHHS, 2018b), the Michigan Tobacco Quitline was the main smoking cessation resource available to district HD clients during the MSN quality improvement project. The Michigan Tobacco Quitline referral process as described by the MIHP team was to inform clients of the Quitline and offer to submit a referral form. The chart review on October 6, 2017 revealed that smoking cessation was not addressed at every prenatal smoker's MIHP appointment. Barriers identified during the microsystem assessment indicate that appointment time restrictions, as well as clients' priorities and personal stressors restricted smoking cessation discussions. Due to the client-based nature of

the MIHP, a client may choose to discuss other needs at a MIHP appointment over smoking cessation, or may decline addressing smoking cessation all together.

Addressing the Problem

When addressing a clinical problem such as prenatal smoking, it is important to approach the problem using a quality improvement model. The Model for Improvement (MFI) is the quality improvement model chosen for addressing the clinical problem. The MFI is an appropriate quality improvement framework for prenatal smoking interventions for several reasons. The MFI is advantageous because it is a "nonlinear" pathway and allows for modifications to be made throughout the process (Langley et al., 2009, p. 455). The MFI allows the MIHP team members implementing the process change to provide feedback and make changes accordingly.

The MFI begins with three guiding questions used to assist change agents in determining the goal, outcome measures, and quality improvement changes needed to achieve the objective (Langley et al., 2009). Once these three questions are answered, the PDSA (Plan-Do-Study-Act) cycle is designed and the implementation process begins. PDSA cycles may be repeated as many times as needed to reach the desired results (Langley et al., 2009). Application of the MFI to the clinical problem of prenatal smoking is depicted in Appendix A and will be further discussed in Chapter Three.

Nature of the CNL project

One CNL role is to put evidence-based interventions into practice (Harris et al., 2014). As previously described, the three most effective interventions for prenatal smoking cessation are counseling, incentives, and feedback (Chamberlain et al., 2017). The MIHP team offered all three interventions to prenatal smokers; however the modality for receiving incentives, the

Michigan Tobacco Quitline, was underutilized. The Michigan Tobacco Quitline has a prenatal protocol that offers pregnant smokers up to nine counseling phone calls and up to $65 in incentives for completing counseling sessions. Unfortunately, none of the MIHP pregnant smokers were utilizing the Michigan Tobacco Quitline services according to MIHP team members and Michigan Tobacco Quitline data (National Jewish Health, 2018a). The nature of this CNL project was to determine barriers to Michigan Tobacco Quitline use and implement a process change to overcome the identified barriers.

Barriers were identified through a program evaluation of the Michigan Tobacco Quitline and a survey of women served at WIC offices in the Northern Michigan Public Health Alliance region (thirty-one counties) including the two counties where the MSN quality improvement project took place. The MIHP team was educated on Michigan Tobacco Quitline processes and was provided with a client handout (Appendix B) based on WIC survey results to assist client education and quitline referrals. The MSN quality improvement project included an evaluation of the WIC survey and Michigan Tobacco Quitline program evaluation results, as well as MIHP team pre-process change surveys and post-process change surveys.

Chapter 2: Literature Review

Smoking causes multiple health problems including heart disease, lung disease, and cancer (Centers for Disease Control and Prevention [CDC], 2018). Tobacco smoking cessation can decrease these health problems, yet many women are unable to successfully quit smoking during pregnancy (Siu et al., 2015). Smoking tobacco during pregnancy can also lead to significant health problems for the baby (CDC, 2017a). Prenatal smoking continues to be a significant problem in northern Michigan where the prenatal smoking rate continuously trends higher than the state average (Swain, 2016). The purpose of this literature review was to identify evidence-based interventions to reduce smoking in the prenatal population, as well as barriers to successful implementation of these interventions.

The Clinical Problem

As discussed in Chapter One, the prenatal smoking rate in northern Michigan was ≥10% above the state average from 2010 to 2015 (Swain, 2016). The microsystem addressed in this Master of Science in Nursing (MSN) quality improvement project was the Maternal Infant Health Program (MIHP) at a district health department (HD) that served two counties. County A had a 45% prenatal smoking rate, and County B had a 10% prenatal smoking rate in 2017.

Prenatal smoking can cause complications for babies born to mothers who smoke and lead to significant hospital expenses. Complications may include miscarriage, premature birth, low birth weight, and an increased risk of Sudden Infant Death Syndrome (CDC, 2017a). One in five babies born to prenatal smokers have a low birth weight (CDC, 2016) and may incur hospital expenses of $55,393 on average (March of Dimes, 2014) compared to $4,400 for an uncomplicated vaginal delivery (Healthcare Cost and Utilization Project, 2017).

Methodology

The databases utilized for this literature review included Cinahl Complete, PubMed, and Cochrane Library. The terms searched included "smoking cessation," "pregnancy or pregnant," "barriers," "incentives," "counseling," and "smoking quitline". Additional resources were found via reference lists and suggested related articles. There are limited systematic reviews and randomized control trials regarding the use of a smoking quitline during pregnancy. Therefore, resources about smoking quitlines in general, as well as single studies about smoking quitlines and pregnancy were used. The most current practice guideline from the U.S. Preventative Taskforce was also included in this literature review.

Smoking Cessation Interventions

Pregnancy is an ideal time period in woman's life to quit smoking. Women are often more motivated to change their lifestyle during pregnancy due to a heightened awareness of risk their actions place on the fetus (Chamberlain et al., 2017). It is essential to capitalize this motivation with evidence-based interventions that provide the most impact during this opportune time in a woman's life.

The Agency for Healthcare Research and Quality provides a practice guideline for smoking cessation created by the U.S. Preventative Services Task Force (USPSTF). The guideline provides a specific recommendation for the pregnant population. The recommendation is that "clinicians ask all pregnant women about tobacco use, advise them to stop using tobacco, and provide behavioral interventions" (Siu et al., 2015, p. 622). The USPSTF considers this a grade A recommendation meaning "there is high certainty that the net benefit is substantial" (Siu et al., 2015, p. 635). Although the guideline does not define behavioral interventions, the following systematic review provides substantial evidence for behavioral interventions.

A systematic review by Chamberlain et al. (2017) provided the leading evidence in smoking cessation interventions for the pregnant population and is recommended by the Office of Disease Prevention and Health Promotion (ODPHP) to meet Healthy People 2020 goals for maternal, child, and infant health (Office of Disease Prevention and Health Promotion [ODPHP], 2018). The ODPHP (2018) rates the strength of the evidence in this systematic review as "4 out of 4" (Maternal, Infant, and Child Health section). Chamberlain et al. (2017) reviewed 102 randomized control trials including 120 intervention arms and over 28,000 pregnant women. The review found that psychosocial interventions are the most effective smoking cessation interventions in the pregnant population (Chamberlain et al., 2017). Psychosocial interventions improve quit rates in late pregnancy by 35% and lead to a 17% reduction in infants born with low birth weight, a significantly higher mean birthweight, and 22% reduction in neonatal intensive care unit admissions. Results were the same with women of low socioeconomic status. Of the psychosocial interventions reviewed, the most effective are counseling, incentives, and feedback (Chamberlin et al., 2017). It is due to their demonstrated effectiveness that this section focuses on these three psychosocial interventions. Details of reviewed studies can be seen in Table 1 (Appendix C).

Counseling. Counseling sessions motivate, support, and help clients develop problem-solving and coping skills. There are various types of counseling therapies that can be done either in person, over the phone, or with other technological devices such as a computer (Chamberlain et al., 2017). Lancaster and Stead (2017), found no benefit of any one specific type of counseling over another. Counselors include prenatal care providers such as nurses or physicians, as well as professionally trained smoking cessation counselors. Counseling sessions can vary in length from one-time short sessions lasting less than five minutes to multiple, longer sessions lasting up

to an hour each. Thirty studies found counseling to "have a clear effect on stopping smoking compared with providing usual care" (Chamberlain et al., 2017, p. 3).

Pregnant women receiving smoking cessation counseling are 44% more likely to abstain from smoking in the last three months of pregnancy based on 30 studies (Chamberlain et al., 2017). Counseling is rarely studied in isolation from other smoking cessation interventions; therefore, it is unclear if counseling must be combined with other smoking cessation interventions to be effective. It is clear, however, that the outcomes of all other smoking cessation interventions are enhanced when counseling is also provided.

Incentives. Providing incentives for smoking cessation improves smoking cessation rates in the pregnant population at the time of delivery (Chamberlin et al. 2017; Tappin et al., 2015; Cummins, Tedeschi, Anderson, & Zhu, 2016) and postpartum (Cahill, Hartman-Boyce, & Perera, 2015), especially in the low socioeconomic population (Lynagh, Sanson-Fisher, & Bonevski, 2012). Incentives can be a variety of rewards provided for either participating in a smoking cessation program without achieving abstinence known as a 'non-contingent' incentive, or for achieving abstinence called a 'contingent' incentive (Cahill et al., 2015, p. 3). Incentives increase a pregnant woman's chance of cessation at or near the end of pregnancy by 3.79 times (Cahill et al., 2015). One study found that 22.5% of pregnant women quit smoking with incentives compared to 8.6% without incentives (Tappin et al., 2015).

Several studies found that providing incentives for smoking cessation is cost-effective. Cahill et al. (2015) found in their systematic review that incentivized smoking cessation in the pregnant population "produced the highest net cost benefit" at $3,482 (p. 17). A randomized controlled trial by Boyd, Briggs, Bauld, Sinclair, & Tappin (2016) provided up to $563 per participant and found incentives to be "highly cost-effective" (p. 360) at $734 per quality-

adjusted life years which is below the "cost-effectiveness threshold in high-income countries" (p. 365).

Feedback. Feedback is defined as smoking cessation interventions that provide health information to the pregnant woman regarding the health of her unborn child. Examples of feedback include ultrasound results or carbon monoxide readings indicating an effect of tobacco on the mother's and baby's bodies. Chamberlain et al. (2017) reviewed six studies and found there is "a large effect in two trials when combined with other strategies, such as counseling" (p. 48). The results of these studies reveal feedback has a great impact on smoking cessation with a risk ratio of 4.39 where a risk ratio of >1 indicates benefit.

Smoking Quitline

Smoking quitlines became available in 2004 in every state through CDC funding and the National Network of Tobacco Cessation Quitlines. The service is free, doesn't require transportation, and is available in multiple languages (CDC, 2014). Ninety percent of state smoking quitlines offer pregnancy specific interventions with professionals trained to counsel pregnant women (Cummins et al., 2016). The Michigan Tobacco Quitline is currently the only incentivized smoking cessation intervention for pregnant women in rural northern Michigan. The Michigan Tobacco Quitline provides two of the three most effective smoking cessation interventions to pregnant women as indicated by Chamberlin et al. (2017): counseling and incentives. Prenatal smokers can receive up to nine counseling sessions through the Michigan Tobacco Quitline with coaches specifically trained to support pregnant smokers (K. Brown, personal communication, May 11, 2018). The prenatal coaches are college educated with a bachelor's or master's degree (National Jewish Health, 2018c) and provide a type of counseling called motivational interviewing during scheduled phone appointments (K. Brown, personal

communication, May 11, 2018). Coaches guide the smoker "to prepare a quit plan, set a quit date, understand tobacco triggers, manage cravings and address relapses" (National Jewish Health, 2018b, What the Program Offers Participants section). The Michigan Tobacco Quitline provides prenatal smokers with incentives in the form of $5 to $10 gift cards after completing counseling phone calls during the prenatal and postpartum period (K. Brown, personal communication, May 11, 2018).

Research with prenatal smokers using smoking quitlines is limited, yet reveals that pregnant women receiving telephone counseling and self-help material from a quitline were 1.5 times more likely to abstain from smoking at the end of their pregnancies compared to the control group (Cummins et al., 2016). Cummins et al. (2016) found that quitline counseling did not significantly improve the number of quit attempts, but did result in longer smoking cessation without relapse at the end of pregnancy and postpartum period. The telephone counseling group had statistically significant higher abstinent rates compared to the control group in the third trimester (29.6% vs. 20.1.1%) and at two (22.1% vs. 14.8%) and six months postpartum (14.4% vs. 8.2%). These results are substantial because many of the women in this study were of low socioeconomic status, had poor social support, and half of the sample lived with a smoker (Cummins et al., 2016).

Barriers to Smoking Cessation

Pregnant smokers often experience obstacles to smoking cessation. Brief interventions during prenatal care, including advising pregnant women to quit smoking, self-help material, and brief counseling, are not sufficient for the psychosocial stressors that accompany pregnant smokers of low socioeconomic status (Lee et al., 2015). Unfortunately, barriers frequently

outweigh facilitators of smoking cessation in the low socioeconomic population (Flemming, McCaughan, Angus, & Graham, 2015).

There are common themes of barriers to smoking cessation in low socioeconomic prenatal smokers. Flemming et al. (2015) found barriers to include smoking is often used as a coping mechanism and removing it may disrupt mental health, smoking is a social norm for communities, and it is harder to quit smoking when a partner smokes. Furthermore, women may not see smoking cessation as a positive experience as it can disrupt relationships (Chamberlain et al., 2017). Health care professionals have also been identified as a barrier to smoking cessation if they do not provide clear, tangible advice or if they appear "half-hearted" (Flemming, et al., 2015, p. 1218).

Quitline. Despite multiple studies revealing that smoking quitline utilization improves smoking cessation rates and decreases smoking cessation relapse, quitlines are underused (Cummins et al., 2016; Bombard et al., 2013; Stead, Hartmann-Boyce, Perera, & Lancaster, 2013). In the United States, quitline usage varies from 0.01% to 4.28% of smokers (Stead, Hartmann-Boyce, Perera, & Lancaster, 2013). Additionally, half of the pregnant and non-pregnant women in a study who used the quitline chose to only use the provided self-help materials and not counseling (Bombard et al., 2013).

There are various barriers to smoking quitline use. Solomon et al. (2009) researched barriers to quitline use in a population of smokers without a high school diploma. The barriers included a stigma around quitline use, misunderstanding of quitline benefits, and concerns with confidentiality. Additionally, smokers may believe they can quit smoking on their own or possess the adequate support needed to quit. Solomon et al., (2009) found the most significant barrier were uncertainty and distrust of quitline staff motives.

Literature Summary

Smoking cessation during pregnancy can decrease the negative effects of tobacco on a prenatal smoker and her baby. The psychosocial smoking cessation interventions of counseling, incentives, and feedback are highly effective in addressing prenatal smoking. Prenatal smokers utilizing counseling are 44% more likely to abstain from smoking at the end of pregnancy (Chamberlain et al., 2017). Additionally, prenatal smokers are 3.67 times more likely to abstain at the time of delivery with incentives (Cahill et al., 2015). Smoking quitlines provide accessible counseling and incentives to pregnant smokers, even in rural areas. Prenatal smokers utilizing counseling through a smoking quitline are 1.5 times more likely to abstain from smoking at the end of their pregnancies (Cummins et al., 2016). Despite the known success of psychosocial smoking cessation interventions for pregnant women, there are barriers health providers should be cautious of when providing smoking cessation interventions to the low socioeconomic population. Further research is needed related to quitline use by prenatal smokers and how barriers to quitline use can be overcome.

Chapter 3: Conceptual Model

Implementing a change project is best done when organized and addressed through a quality improvement model. According to the Agency for Healthcare Research and Quality, "quality improvement is the framework we use to systematically improve the ways care is delivered to patients" (United States Department of Health and Human Services [USDHHS], 2013, para. 1). Various quality improvement models were available to guide change. This paper explored The Model for Improvement (MFI) and how it can be used to improve prenatal smoking rates.

Model for Improvement

The MFI is a quality improvement tool created by The Institute for Health in 1996. The MFI consists of three identifying questions followed by the Plan-Do-Study-Act (PDSA) cycle as seen in Figure 1. The PDSA cycle was designed to be repeated as many times as needed until the best intervention or process for change was found (USDHHS, 2013).

MFI Concepts. The first components of the MFI are the three leading questions that guide the entire change process (Figure 1, Appendix A). These questions are: "What are we trying to accomplish? How will we know that a change is an improvement? What changes can we make that will result in improvement?" (Langley et al., 2009, p. 24). The first question helps the change agent establish the specific goals of the improvement process. The second question is used to determine how the outcomes will be measured. The third question is used to identify the fundamental changes to be evaluated throughout the improvement process. These questions can be answered in any order and revised as needed throughout the change process.

The next components within the MFI model are plan, do, study, and act which make up the PDSA cycle (Langley et al., 2009). The concept of *plan* is simply to plan the intervention for change. The concept of *do* is to put this plan into motion. The concept of *study* is to "build new

knowledge" (Langley et al., 2009, p. 25) from the previous steps. The final concept, *act* puts what is learned in the *study* phase into action. Together these steps create a "trial-and-learning" approach that allows for testing ideas quicker than if one created an "extensive analysis" first (Langley et al., 2009, p. 454).

MFI Benefits. The MFI is an appropriate quality improvement framework for prenatal smoking interventions for several reasons. The MFI is a "nonlinear" pathway and allows for modifications to be made throughout the process (Langley et al., 2009, p. 455). The MFI allows for the Maternal Infant Health Program (MIHP) team implementing the quality improvement process change at the district health department (HD) to provide feedback and make changes accordingly. As described in Chapter One and Chapter Two, the prenatal smoking population and their motives for smoking were complex; therefore, a change model that allows for modifications throughout the change process was beneficial.

MFI and Prenatal Quitline Enrollment

The MIHP team at a northern Michigan district HD stated their efforts to promote and refer clients to the Michigan Tobacco Quitline were met with resistance. Prenatal smokers consistently declined a referral to the Michigan Tobacco Quitline for various reasons. The Master of Science in Nursing (MSN) quality improvement project identified barriers to Michigan Tobacco Quitline use and implemented a process change to overcome these barriers. The MFI was utilized when determining the best approach for educating and referring clients to the Michigan Tobacco Quitline.

As seen in Figure 1 (Appendix A), the answer to the first MFI question, "What are we trying to accomplish" (Langley et al., 2009, p. 24), was to increase use of the Michigan Tobacco Quitline by rural prenatal smokers served by the district HD. The answer to the second question,

"How will we know that a change is an improvement" (Langley et al., 2009, p. 24), was an increase in enrollments to the Michigan Tobacco Quitline by prenatal smokers served at the district HD. The answer to the third MFI question, "What change can we make that will result in improvement" (Langley et al., 2009, p. 24), was to improve client understanding of the Michigan Tobacco Quitline and remove barriers to enrollment.

One PDSA cycle to improve Michigan Tobacco Quitline enrollment was completed for the MSN quality improvement project. The first component, *plan*, included determining barriers to Michigan Tobacco Quitline use and how to overcome these barriers. Barriers were identified by a program evaluation of the Michigan Tobacco Quitline and a root cause analysis with the district HD MIHP team (Appendix D). The results of the program evaluation and root cause analysis were used to create the client survey (Appendix E), staff educational presentation (Appendix F), and the first version of the client handout and the staff handout in preparation of the *do* phase.

In the next component of the PDSA cycle, *do*, the client survey was implemented and the MIHP team was educated on the Michigan Tobacco Quitline prenatal protocol and the new referral process. The MIHP team was tasked with implementing the new referral process in order to provide feedback during the *study* phase of the PDSA cycle. In the third phase, *study*, the CNL student calculated the results of the client surveys, and the MIHP team provided feedback on the client handout and new Michigan Tobacco Quitline referral process. The results of the client surveys and MIHP team suggestions were used to modify the client handout for the *act* phase. In the *act* phase, the MIHP team was provided with the revised client handout (Appendix B). The MIHP team agreed to continue trialing revisions to the Quitline referral process and client

handout as needed since additional PDSA cycles could not be completed within the time period of the MSN quality improvement project.

Conclusion

The MFI is a quality improvement framework utilizing three initial questions to determine the project's goal, the measurements of change, and the process change needed for improvement followed by as many PDSA cycles as necessary. This framework was beneficial to improving Michigan Tobacco Quitline use because the cycle is "nonlinear" (Langley et al., 2009, p. 455) and flexible for change efforts. One PDSA cycle was achieved during the MSN quality improvement project time frame yet more PDSA cycles were needed to achieve the optimal process change for referring and enrolling clients to overcoming barriers to Michigan Tobacco Quitline use. The district HD MIHP team planned to continue PDSA cycles for optimal referral results and increased Michigan Tobacco Quitline enrollment among prenatal smokers.

Chapter 4: Clinical Protocol

The Clinical Nurse Leader (CNL) role includes implementing evidence-based interventions into current practice (Harris, Roussel, & Thomas, 2014). As a leader in healthcare, the CNL improves health outcomes by creating a process change. Implementing a change project is best done when organized and addressed through a quality improvement model. This Master of Science in Nursing (MSN) quality improvement change project followed the Institute of Health's Model for Improvement (MFI). The purpose of this paper was to describe the change project protocol through the lens of the MFI framework, to describe the project measures, and address project challenges.

Purpose of Project

The Office of Disease Prevention and Health Promotion (ODPHP) identifies Chamberlain et al.'s (2017) systematic review as best evidence to meet Healthy People 2020 goals for maternal, child, and infant health (2018). Chamberlain et al. (2017) describes the three most effective prenatal smoking interventions to be counseling, incentives, and feedback. The district health department (HD), where this project occurred, had processes in place for all three interventions; however, the modality in which pregnant smokers receive incentives, the Michigan Tobacco Quitline, was underutilized. It was unclear why clients were not enrolling in the Quitline. The purpose of the change project was to complete a program evaluation of the Michigan Tobacco Quitline, identify barriers to Michigan Tobacco Quitline use, and implement a process change to increase Michigan Tobacco Quitline enrollment at the district HD.

The MFI assisted the CNL in identifying the aim of a change project, the measures of the change project, and the actions needed to achieve improvement, respectively. The long term aim of the change project was to decrease prenatal smoking cessation rates in a rural, northern

Michigan district HD. The specific goal of this project was to increase Michigan Tobacco Quitline enrollment in the prenatal smoking population at the district HD. Improvement was identified through process measures. Specifically, improvement was measured by how many Maternal Infant Health Program (MIHP) staff members utilized the new educational tool during the referral process for the Michigan Tobacco Quitline. The following section describes the project protocol to achieve the goal of the project and how it applies to the plan-do-study-act (PDSA) cycle of the MFI as seen in Figure 1 (Appendix A).

Project Protocol

Plan. The first step of the PDSA cycle is the *plan* phase (Langley et al., 2009), which laid the groundwork for the project. A program evaluation of the Michigan Tobacco Quitline was completed. The goal of the evaluation was to learn what a pregnant smoker experiences when using the Michigan Tobacco Quitline and determine barriers to quitline use. The program evaluation included reviewing the Michigan Tobacco Quitline website and patient portal, and interviewing Michigan Tobacco Quitline representatives locally and from the Michigan Department of Health and Human Services (MDHHS). Additionally, with the permission of the MDHHS Michigan Tobacco Quitline representative, the CNL student contacted the Michigan Tobacco Quitline simulating a pregnant smoker and completed the Michigan Tobacco Quitline enrollment via phone call and three coaching sessions with a prenatal smoking cessation coach. The goal of this action was to understand the full experience of a pregnant client when interacting with the Michigan Tobacco Quitline staff. Knowledge gained from the program evaluation was used to develop MIHP staff education regarding the exact process a client goes through when calling the Michigan Tobacco Quitline including any obstacles that may present.

The data collected from the MIHP organizational assessment described in Chapter One, the literature review in Chapter Two, and the Michigan Tobacco Quitline program evaluation were used to create a client survey (Appendix E), as well as the first draft of a client educational handout. The client survey was created to collect data regarding barriers to Michigan Tobacco Quitline use by women of low socioeconomic status in northern Michigan. The educational handout about the Michigan Tobacco Quitline described the steps for enrollment and was created to facilitate MIHP team members during the Quitline referral process. The MIHP team members were asked to provide feedback for modifications to the client handout during a MIHP team meeting. Modifications of the client handout were made prior to its implementation in the *do* phase.

Do. The second phase of the PDSA cycle is *do* in which the plan was put into action (Langley et al., 2009). The client survey and MIHP staff implementation of the new referral process were conducted simultaneously due to project time constraints. The client survey was conducted over three weeks at seven health departments in northern Michigan including the district HD of focus for this project. Pregnant and non-pregnant women completed the survey in the Women, Infant, Child (WIC) waiting rooms as they waited for their or their child(ren)'s WIC appointments. Surveying the entire rural northern Michigan region provided more data in a shorter amount of time and was requested by the Health Director of the district HD.

The MIHP team members were trained on the new Michigan Tobacco Quitline referral process at a MIHP team meeting in June 2018. The MIHP team training included education on the Michigan Tobacco Quitline processes for pregnant women and its barriers as determined by the organizational assessment. The team training educated the MIHP team on the new Michigan Tobacco Quitline referral process, which included using the client handout to educate prenatal

smokers about Quitline enrollment and the prenatal protocol with coaching and incentives. The new referral process also included the MIHP team identifying and addressing any barriers a client has to Quitline enrollment. An example of how to assist clients in overcoming enrollment obstacles was provided during the training. The example was for the MIHP team member to facilitate the enrollment process by either calling the Michigan Tobacco Quitline with the client or enrolling the client on the Michigan Tobacco Quitline website. Although assisting the client in enrollment over the phone or online was the preferred method, the secondary option (and the district HD's current referral method) was for MIHP staff to fax a referral form to the Michigan Tobacco Quitline.

The *do* phase also consisted of the MIHP team trialing the new Michigan Tobacco Quitline referral process during their MIHP appointments with prenatal smokers. Due to time constraints, the MIHP team had two weeks before the follow-up MIHP team meeting to refer a prenatal smoker using the new referral process. The MIHP team was invited during the Quitline referral training to attend a follow-up team meeting to discuss and provide feedback on their new Quitline referral experiences.

Study. The next phase of the PDSA cycle is *study,* which consists of learning from the *do* phase (Langley et al., 2009). Feedback regarding implementation of the new Michigan Tobacco Quitline referral process and results were discussed at a follow-up MIHP team meeting in July 2018. The goal of the meeting was for MIHP team members to describe any barriers experienced while implementing the new referral process, how clients responded to the process change, and the number of clients successfully enrolled in the Michigan Tobacco Quitline program, if any. Data from completed client surveys was also studied during this phase.

Act. The final phase of the PDSA cycle is *act,* which consists of implementing any changes needed based on the *study* phase (Langley et al., 2009). It was during this phase that alterations were made to the client educational handout and any modifications to the referral process were made. These changes were based on the client survey results and MIHP team feedback of the client handout and referral process.

The PDSA cycle may be repeated as often as needed; however, due to time constraints, this process change went through one PDSA cycle. If time had allowed, the referral process and client handout could have been studied and refined in a second PDSA cycle based on the results of the first PDSA cycle. The *plan* phase of this project was completed May through June 2018, while the *do, study,* and *act* phases were completed from June 25, 2018 to July 13, 2018.

Resources Needed, Costs, and Benefits

Minimal resources were needed for the change project. Necessary resources included a phone and computer for the program evaluation and creation of the handout, as well as other supplies already used by MIHP team members. The MIHP team members' supplies included a vehicle for transportation to home visits, a cell phone to call the Michigan Tobacco Quitline for enrollment, and a computer with internet to enroll clients via the Michigan Tobacco Quitline website. These items are already provided to MIHP staff through the district HD. Additionally, the individual northern Michigan health departments participating in the client WIC survey printed their own surveys and faxed completed surveys through a secure, confidential fax line to the district HD Health Director who secured them and gave the surveys to the CNL student.

The MSN quality improvement project costs included 60 minutes of seven MIHP team members' time for education at $60 per hour including benefits (Health Director, personal communication, June 2018) equaling $420. Costs also included the cost of time for HD staff

members administering the client surveys, which equated to approximately $5000, according to the district HD Health Director, and the cost of printing surveys and handouts, at approximately $0.05 per sheet of paper with approximately 300 printed. The team's time and the cost of black and white surveys and handouts were absorbed by the district HD. The cost of printing client surveys was absorbed by the district HD and the other HDs in the region that administered the survey.

In comparison to costs, there is significant cost avoidance when extensive medical care is prevented. Each preterm, low-birth weight newborn costs about $55,393 in neonatal intensive care unit charges (Mach of Dimes, 2014). This is $50,993 more than the cost of an uncomplicated vaginal delivery costing $4,400 (Healthcare Cost and Utilization Project, 2017). The MSN quality improvement project cost approximately $5,425, yet if only one prenatal smoker quits smoking, it could prevent $50, 993 in healthcare costs.

Measures

Measurements were needed to determine the project effectiveness and whether or not improvements to the project protocol were needed. Baseline data included the number of prenatal smokers at the district HD and the number of current prenatal smokers enrolled in the Michigan Tobacco Quitline. Baseline prenatal smoking data was collected during the microsystem assessment described in Chapter One. Michigan Tobacco Quitline pregnant smoker enrollment rates were collected from the Michigan Tobacco Quitline representative at MDHHS for the months of October 2017 to April 2018. Additional baseline data was collected via the pre-process change MIHP staff survey (Appendix G) which was distributed during the MIHP team Quitline referral process training in June 2018. Each MIHP staff member completed the survey anonymously and placed their completed survey in a folder to maintain confidentiality.

Post data collected included the number of prenatal smokers enrolled in the Michigan Tobacco Quitline at the district HD. One outcome goal for the project was for 50% of the MIHP nurses to complete the new Michigan Tobacco Quitline referral process with at least one client. A successful referral included discussing the handout with the client, addressing individual client barriers with each client, and assisting the client's enrollment by calling the Quitline with the client or enrolling the client on the Michigan Tobacco Quitline website, if applicable. This data was collected from the MIHP team through the post-process change survey (Appendix H) as enrollment data from the Michigan Tobacco Quitline has a two-month delay according to the MDHHS Quitline representative (K. Brown, personal communication, May 11, 2018). The post-process change survey was completed at the follow-up MIHP team meeting by each MIHP team member that completed the pre-process change survey.

Project Challenges

A challenge for the MSN quality improvement project was the short time period available for the MIHP team to complete the *do* phase of the project. Due to time constraints, the team had two weeks to trial the new Michigan Tobacco Quitline referral process before the *study* phase. The challenge could not be overcome during the MSN quality improvement project time period, but the MIHP team agreed to continue PDSA cycles until the desired referral outcomes were achieved.

Another project challenge was clients' lack of motivation to stop smoking. MIHP team members expressed that some clients have other priorities during their pregnancy, such as finding stable housing or quitting opioid use, or they do not want to quit smoking because they smoke to cope with stress. In future PDSA cycles, this challenge could be addressed by the MIHP team either assisting clients in developing new coping mechanisms, or the MIHP team

educating clients that coping mechanisms can be addressed during Michigan Tobacco Quitline coaching calls. It is also important that the MIHP team utilize their previously trained motivational interviewing techniques when addressing tobacco use with clients.

Conclusion

A CNL can effectively implement a change project with the guidance of a quality improvement model. This MSN project applied the Institute of Health's Model for Improvement to the project protocol and completed one PDSA cycle. The purpose of the change project was to complete a program evaluation of the Michigan Tobacco Quitline, determine barriers to its use, and implement a process change to improve Michigan Tobacco Quitline enrollment in the prenatal smoking population served at a rural district HD. Client survey results, as well as MIHP team feedback guided any changes needed for the *act* phase of the PDSA cycle. Although there were potential challenges to the MSN quality improvement project, actions to overcome these obstacles were identified for future PDSA cycles.

Chapter 5: Clinical Evaluation

The purpose of this quality improvement project was to increase Michigan Tobacco Quitline prenatal enrollments at the district HD of focus by determining barriers to registration and modifying how the Maternal Infant Health Program (MIHP) team educates and refers clients to the Quitline. A microsystem assessment and review of literature were completed and reported in Chapters One and Chapter Two, respectively. Chapter Three identified the Model for Improvement (MFI) as the quality improvement model this Master of Science in Nursing (MSN) quality improvement project was modeled after. Chapter Four described the implementation process for the project through the lens of the MFI. Once a clinical nurse leader (CNL) implements a change project, it is important to evaluate the project, not only to assess outcomes but to determine how the change project affects nursing practice. The purpose of this chapter was to report the evaluation of the CNL project, including successes and strengths, difficulties and weaknesses, sustainability, outcomes, and implications for practice.

CNL Project Protocol

As previously described in Chapters Three and Four, the CNL project was modeled after the MFI, and one plan-do-study-act cycle was completed. In the *plan* phase, baseline data was collected and a program evaluation of the Michigan Tobacco Quitline was completed. In the *do* phase, the WIC client survey and MIHP staff implementation of the new Michigan Tobacco Quitline referral process were implemented simultaneously. In the *study* phase, feedback from the MIHP team members and data collected from the WIC survey were analyzed to glean knowledge of barriers to Michigan Tobacco Quitline enrollment. In the final stage, *act*, information gathered from the study phase was used to make modifications to the client education tool and referral process resulting in the final product of the CNL project.

Project Successes and Strengths

There were several successes during the implementation process. One great success was stakeholder buy-in. The district health department (HD) Health Director, MIHP team members, and Michigan Tobacco Quitline representatives were all supportive of the change project and willing to assist the CNL student as needed. They all expressed value in improving prenatal Michigan Tobacco Quitline enrollment rates and their participation contributed to successful implementation. Additional buy-in came from leaders of other northern Michigan HDs that often collaborate with the district HD of focus. These regional HD leaders facilitated the implementation of the WIC client survey (Appendix E) at their WIC clinics. This CNL project would not have the breadth it had without the support of the stakeholders.

One strength of the CNL project was the relationships that MIHP team members have with their clients. MIHP team members see clients for a 30 to 60-minute monthly office appointment or home visit. Staff members build rapport with clients and create a safe environment for clients to openly discuss their health needs. This rapport allows more opportunity for MIHP team members to address the client's health concerns including prenatal smoking in greater depth. Another strength is that one of the MIHP nurses serves as the MIHP Coordinator, as well as the smoking champion. The MIHP Coordinator is the team leader directly below the district HD Health Director. The MIHP Coordinator has the ability to motivate the team, place value on the change project, and impact sustainability.

Project Difficulties and Weaknesses

There were several project challenges related to collecting baseline data. First, the district HD's electronic health record system could not run reports; therefore, the district HD's baseline prenatal smoking rates were collected manually during a chart audit by the CNL student. Second,

due to the small prenatal population size at the district HD, the CNL student was unable to observe MIHP team members interact with pregnant smokers because there were few opportunities to do so. This resulted in baseline data regarding current MIHP Michigan Tobacco Quitline referral processes and client responses being collected from MIHP team verbal descriptions.

Time limitation was a reoccurring theme for this project. The timeframe to complete the project was a challenge, first because as a student project there was additional approval processes required prior to implementation. Second, due to the involvement of multiple health departments, prior approval from the Michigan Department of Health and Human Services IRB was sought which resulted in the *do, study,* and *act* portions of the project being completed in three weeks. Due to the timing of staff meetings, the MIHP team had two out of the three weeks to refer prenatal clients to the Michigan Tobacco Quitline resulting in insufficient opportunities to utilize the client handout. Several months were needed for the MIHP team to have adequate opportunities to discuss smoking cessation and refer clients to the Quitline since a MIHP client is seen once a month and smoking cessation may not be addressed at each appointment due to other client needs.

Project Protocol Changes

Due to the time constraints, the project protocol was modified. As a result, the WIC survey and utilization of the client education handout by the MIHP team were conducted simultaneously. The WIC survey was initially intended to be completed in the *plan* phase to enable the creation of a client handout with knowledge of the identified barriers from the WIC survey. Instead, the client handout was created based on smoking quitline utilization barriers presented in Solomon et al.'s (2009) article and a MIHP team root cause analysis exercise

(Figure 2, Appendix D). Additionally, one PDSA cycle was completed as part of the project instead of repeated PDSA cycles until optimal outcomes were achieved.

Project goals were also modified as a result of limited time. Initially, the goal was to conduct the new district HD Quitline referral process for several months to see Quitline enrollments rates increase. Since the MIHP team had two weeks for implementation, the goal was changed to half the MIHP team members using the client handout and new referral process with at least one client.

Project Outcomes

Project outcomes include WIC survey results, MIHP staff pre-survey and post-surveys, and the Michigan Tobacco Quitline program evaluation. Additional project results included handouts provided to the district HD for continued use by MIHP staff. These handouts included the client handout describing the Michigan Tobacco Quitline enrollment process for prenatal smokers (Appendix B) and a reference sheet for MIHP team members describing Michigan Tobacco Quitline processes for pregnant smokers (Appendix I).

WIC client survey. Two hundred and one women completed the WIC client survey (Appendix E) at northern Michigan WIC clinics. Fifty-one percent of women surveyed reported as *never smoked* without any further data collected from their surveys. Data analysis focused on the survey results of the 35 (17%) non-pregnant current smokers, 14 (7%) pregnant current smokers, and 49 (24%) previous smokers. Figure 3 (Appendix J) displays this demographic data. Two smokers responded “unsure” if she was pregnant and was placed in the non-pregnant category. Three women did not respond to the smoking status question and were placed in the *never smoked* category so the data would not be counted. The majority, 44.9%, of previous and current smokers surveyed were aged 20-29 as seen in Figure 4 (Appendix J). Pareto analysis

revealed the top barriers to Michigan Tobacco Quitline use for all previous and current smokers and for all pregnant women surveyed as seen in Figure 5 and Figure 6, respectively (Appendix J). Among the 98 previous and current smokers surveyed, the most frequent barrier to Michigan Tobacco Quitline use was they were not knowledgeable about the Michigan Tobacco Quitline. The remaining top 20% of barriers in the Pareto analysis for all previous and current smokers included not wanting to quit smoking, not being offered the Quitline, not needing help with smoking cessation, and having others who will help them quit smoking, respectively.

The top twenty percent of barriers identified by pregnant smokers were: lack of knowledge about the Quitline, perceiving they did not need help with smoking cessation, having others to help them quit smoking, and not having time to call the Quitline as seen in Figure 6 (Appendix J). All four of these barriers were addressed in the client handout (Appendix B). Analysis of the likelihood of smokers to use the Michigan Tobacco Quitline in Figure 7 (Appendix J) reveals that 50% of pregnant smokers responded "3" on a Likert scale of one to five with five being "most likely." This indicated that a majority of pregnant smokers are not opposed to using the Michigan Tobacco Quitline; therefore MIHP staff members have an opportunity to successfully educate and encourage pregnant women to use the Michigan Tobacco Quitline. The conclusions drawn based on pregnant smoker responses would have been stronger if the sample size were greater than 14 pregnant women. Future studies would benefit from a larger sample size.

Seventeen pregnant women categorized themselves as *previous smokers*. Due to limitations of the client survey, it is unknown if the women quit smoking prior to getting pregnant or if they quit smoking because they became pregnant. Future surveys could classify previous pregnant smokers into categories based on how long they have been smoke-free. The

barriers of pregnant previous smokers were not specifically analyzed due to the absence of this classification. Since pregnant women who have recently quit smoking are eligible to enroll in the Michigan Tobacco Quitline prenatal protocol, this data could help healthcare professionals specifically address their barriers to quitline use.

Three women, including one pregnant and one non-pregnant smoker, responded to question five on the client survey that they had previously used the Michigan Tobacco Quitline. The non-pregnant smoker responded that the Quitline "did not help." The pregnant smoker responded that she was able to quit smoking for three months but then her stresses worsened and she started smoking again. It is difficult to draw conclusions based on these responses due to the nature of the survey. The survey did not ask when these clients used the Quitline services and if they were enrolled in the prenatal protocol that would provide them counseling and incentives. Therefore, conclusions about the effectiveness of the prenatal protocol for the survey participants cannot be drawn based on the data collected.

MIHP team pre-survey. MIHP pre-implementation surveys (Appendix G) were conducted to determine baseline data. The survey was completed by all five MIHP nurses, as well the MIHP dietician and social worker. This is a 100% completion rate. The survey results seen in Table 2 (Appendix K) revealed that all MIHP team members discuss the Michigan Tobacco Quitline with all their maternal smoking clients. Responses to question two regarding how staff refers clients to the Quitline show that 28% of staff refer by providing the Quitline phone number only, 28% of staff refer by providing the Quitline phone number and submitting a referral form, and 43% refer based on individual client needs. A majority of staff, 57%, responded with "3" to question four regarding the ease of referring clients indicating there is room for improvement. Question five of the survey asked MIHP staff to provide ways a prenatal

smoker may be encouraged to enroll in the Quitline. Of the answers provided that indicate a change the MIHP staff can make, two staff members responded that providing clients more information about the Quitline could encourage enrollment. The results of this survey indicated an opportunity for improvement in the Michigan Tobacco Quitline referral process.

After completion of the pre-survey, the CNL student described the Michigan Tobacco Quitline prenatal protocol processes with a PowerPoint presentation (Appendix F) based on the role-play experience enrolling in the Michigan Tobacco Quitline as a pregnant client. The MIHP team provided positive feedback at the end of the staff training. The team expressed gratitude toward learning what happens once a pregnant smoker calls the Quitline. Several MIHP team members noted the excellence of the resources provided to Quitline users which they had not known existed.

MIHP team post-survey. MIHP post-implementation surveys (Appendix H) were conducted during the follow-up MIHP team meeting lead by the CNL student two weeks after the completion of the pre-survey and staff education. The post-survey evaluated the CNL student staff training and the MIHP team members first two weeks utilizing the client handout in their referral process. The survey was completed by all five MIHP nurses, as well as the MIHP dietician and social worker. There was little variance between the responses for questions one through three on the pre-survey and post-survey as seen in Table 2 (Appendix K). Responses to question four, asking the team members to rate the ease of encouraging clients to enroll in the Quitline with their current knowledge on a scale of one to five, with five being "very easy," improved from the pre-survey to the post-survey as seen in Figure 8 (Appendix K). The results shifted from a majority responding "3" to a majority responding "4" indicating the team overall felt the referral process was easier with their increased knowledge of the Quitline processes.

Question six was not on the pre-survey but was included on the post-survey to evaluate the team members' ability to refer clients to the Quitline with their increased knowledge and the client handout to assist them. Six out of seven (86%) answered "5" meaning "definitely increased" indicating the staff education and client handout was successful at enhancing the team member's ability to refer clients.

After the post-surveys were completed and submitted, the MIHP team and the CNL student discussed the Michigan Tobacco Quitline referral process and client handout. The MIHP team reported they did not have the opportunity to refer pregnant smokers to the Quitline or use the client handout in the past two weeks. The goal of half the MIHP team using the client handout to refer one pregnant smoker to the Michigan Tobacco Quitline was not achieved. However, the CNL student asked the MIHP team to provide feedback on the second version of the client handout that the CNL student revised based on WIC client survey results. Their feedback of the client handout contributed to the CNL student's final version of the client handout; future versions may be created under the guidance of the MIHP Coordinator and district HD Health Director. Since no MIHP team members were able to test the referral process, there were limited modifications made to the referral process itself. The only modification made was due to the CNL student learning through the program evaluation that staff can refer clients to the Michigan Tobacco Quitline through an online form. The new referral process for the *act* phase included MIHP team members completing the online referral form during MIHP home visits eliminating the extra steps of the MIHP team member faxing the form upon returning to the office.

Program evaluation. The program evaluation of the Michigan Tobacco Quitline began in the *plan* phase with interviews of the Quitline state representative at MDHHS. The Michigan

Tobacco Quitline enrollment reports provided by the MDHHS representative reveal that an average of seven pregnant women enrolled for Quitline services each month in the state of Michigan from October 2017 to April 2018 (National Jewish Health, 2018a). The enrollment reports did not specifically indicate which counties the pregnant enrollees lived in, however the MDHHS representative clarified that the prenatal enrollment rate for the district HD was zero enrollments from October 2017 to May 2018 (K. Brown, personal communication, May 11, 2018). The MDHHS representative suggested the CNL student conduct a role-play experiment and enrolls in the Michigan Tobacco Quitline as a pregnant smoker to provide feedback for Quitline quality improvement. The role-play experience continued through the project's *do* and *study* phases as the CNL student completed three coaching calls and identified several barriers to prenatal Quitline use. The results provided to the MDHHS representative included Quitline strengths, weaknesses, and barriers to use (Appendix L).

Project Sustainability

A project sustainability plan was needed for the process change to continue at the district HD. The sustainability of the project lies heavily on the district HD Health Director. She had the most interest and investment in this change project, and in her leadership position, was also able to influence what the MIHP team implements and what was discussed at all staff meetings. As part of the handoff plan, the HD Health Director received all pertinent materials including a digital copy of the client handout which she intended to share with the leaders at the other northern Michigan HDs. This ensured that the client handout was available for use by all MIHP staff members across northern Michigan to be utilized with prenatal smokers. A MIHP staff information sheet (Appendix I) describing the Michigan Tobacco Quitline prenatal protocol

based on the Quitline representative interviews and the role-play experience was also digitally provided to the district HD Health Director to make available for MIHP teams at other HDs.

The *act* component of the PDSA cycle (Figure 1, Appendix A) consisted of the MIHP team members referring pregnant smokers to the Michigan Tobacco Quitline using the finalized client handout and their new knowledge of Quitline processes. Although one PDSA cycle was completed during the MSN student quality improvement project, the MIHP team can continue to complete additional PDSA cycle for continued referral process improvement. The MIHP nurse that served as the MIHP Coordinator and smoking champion agreed to continue making modifications to the referral process until the MIHP team sees better enrollment rates. She planned to continue discussing referral process improvements at MIHP team meetings which she leads each month.

Project Implications

Healthcare trends. As noted in Chapter One, prenatal smoking is a public health problem identified in northern Michigan (Swain, 2016). The gap between evidence-based best practices to decrease prenatal smoking in prenatal women (Chamberlain et al, 2017) and current practices at the district HD was brought to light. Although the Michigan Tobacco Quitline provides counseling and incentives, there was minimal use by Michigan prenatal smokers (K. Brown, personal communication, May 11, 2018). Since the Michigan Tobacco Quitline serves clients living in all regions of Michigan, providing client education about Quitline processes to improve enrollment is an efficient and cost-effective healthcare intervention to improve the health of pregnant smokers and their babies in rural populations.

MSN essentials. The American Association of College of Nursing (AACN) created *Competencies and Curricular Expectations for Clinical Nurse Leader Education and Practice*

(2013) which describes requirements for CNL education as they pertain to the Master of Nursing in Science (MSN) competencies. The experiences gained during this CNL project meet many of these competencies. One vital CNL student experience to meet MSN competencies was creating and implementing a quality improvement project to improve client outcomes and safety based on an analysis of microsystem baseline data.

The CNL project described in this paper meets many ACCN MSN competencies. CNLs function to improve outcomes at the microsystem level, thus the CNL student completed a microsystem assessment of the district HD's MIHP program where the student identified a public health need that could be improved through a nursing process change. The CNL student designed the project based on current best evidence and practice guidelines while utilizing a quality improvement theory, the Model for Improvement. The CNL project was tailored to improve women and infant health and safety outcomes at the prevention level. The CNL student demonstrated effective communication skills through professional conversations and emails with the multidisciplinary MIHP team, as well as public health leaders from across northern Michigan. The CNL student developed leadership skills to lead the process change project in the microsystem successfully.

This CNL project incorporated many CNL roles described by Harris, Roussel, and Thomas (2014). Of the CNL roles, two of the most important roles demonstrated by this project are client advocacy and client-centered care. The prenatal smokers cared for by the MIHP team at the district HD needed someone to advocate for their needs as they pertain to the Michigan Tobacco Quitline. The WIC client survey and the role-play experience allowed the CNL student to understand prenatal smoking clients' needs and advocate for them at the microsystem level, as well as to the Michigan Tobacco Quitline representative at MDHHS. The goal was for this

advocacy to lead to successful process changes within the microsystem and, potentially, within Michigan Tobacco Quitline processes. The CNL client advocacy led to additional patient-centered care delivered by MIHP team members as they educate prenatal smokers about the Quitline, and assess for and help prenatal smokers overcome barriers to Quitline use.

Conclusion

Premature birth, low birth weight, increased risk of Sudden Infant Death Syndrome, and a higher risk of birth defects are possible outcomes for prenatal smokers (Centers for Disease Control and Prevention, 2017a). Evidence-based practice interventions were available to improve prenatal smoking rates through the Michigan Tobacco Quitline, yet efforts to refer clients by the MIHP team at the district HD were either limited due to addressing other client needs or futile due to lack of Quitline knowledge. The number of prenatal smokers enrolling in the Quitline remained dismal. A MSN quality improvement project was implemented to, first, determine barriers to Quitline enrollment by prenatal smokers, and, second, to lead a process change based on the identified barriers. Project outcomes revealed barriers to Michigan Tobacco Quitline use in a rural prenatal population and equipped the MIHP team to educate prenatal smokers and address barriers to Quitline use. Although there may be obstacles for pregnant smokers to overcome when using the Michigan Tobacco Quitline, educating the clients in advance may help them successfully use the counseling and incentives to quit smoking during pregnancy. This paper introduced a microsystem, identified a clinical problem, identified best practice interventions to address the problem, and designed and implemented a process change project to improve maternal and fetal health outcomes using a change theory.

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Appendix A

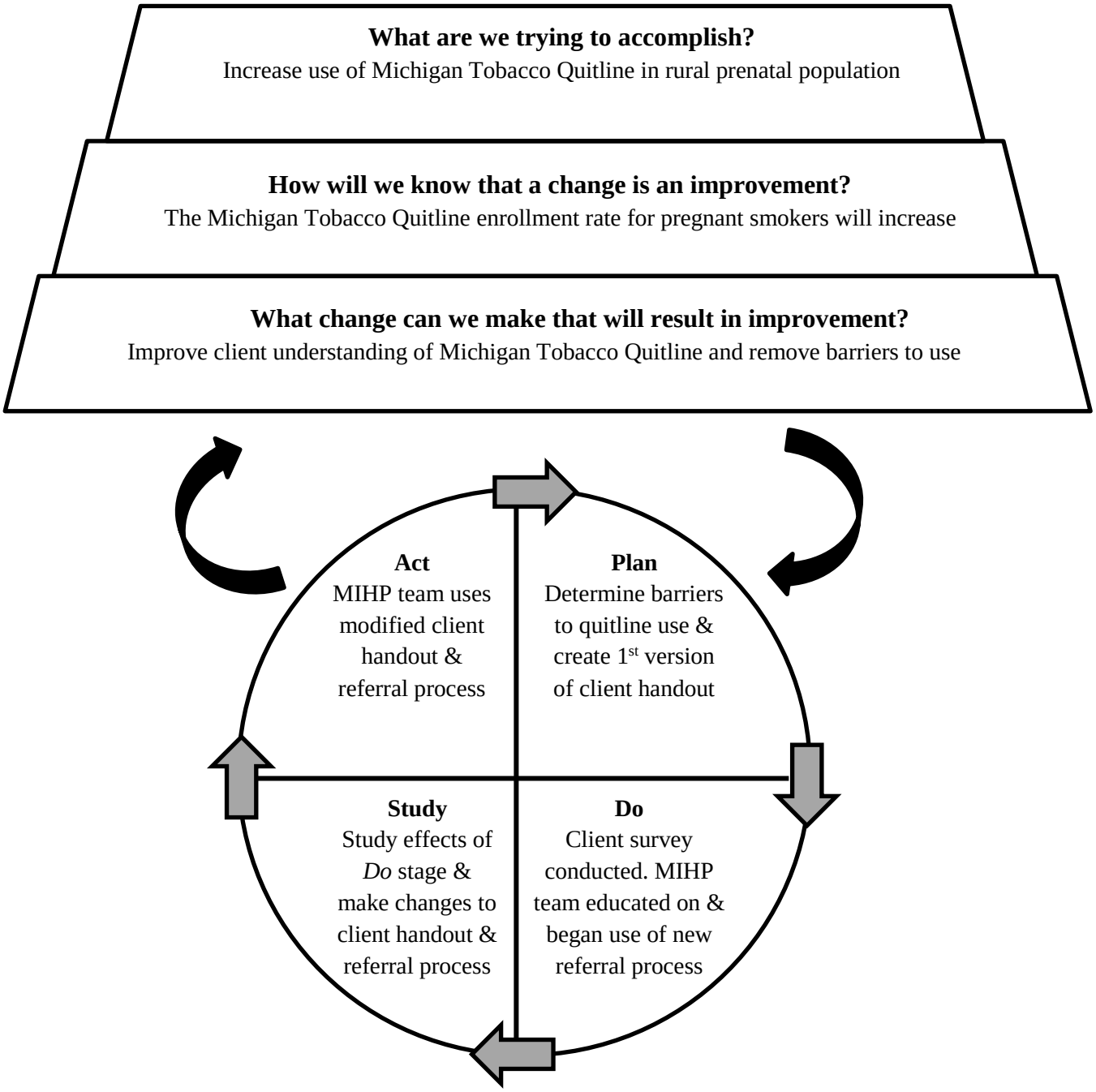


Figure 1. Model for Improvement and prenatal Quitline enrollment. This figure illustrates how the Model for Improvement was applied to the MSN quality improvement project to improve Michigan Tobacco Quitline enrollment rates in the prenatal smoking population. Figure modified from Langley et al. (2009).

Appendix B

Client Handout

Pregnant & Smoking?
Michigan Tobacco Quitline
1-800-Quit-Now
1-800-784-8669

Enrollment… Simple as 1, 2, 3!

Whether you are ready to quit smoking, or not

1 Enroll

Call 1-800-784-8669
Or visit Michigan.quitlogix.org

- Typically no wait time, but if you have to leave a message an enrollment specialist will call you within 24 hours
- Enrollment takes 15-20 minutes or save time by starting your enrollment online
- Incoming calls from the Quitline may appear as "unknown" or a 1-800 number

Enrollment includes a workbook, a personal coach & optional tips via text and email

"As my pregnancy progressed, I knew I couldn't quit & remain quit without some support"

2 Get Connected

- Receive a personal coach & support for up to 1 year postpartum
- Make appointments to meet with the same coach over the phone
- Coach calls are 10-15 minutes
- Coaches are female & specially trained to support pregnant smokers

3 Earn Rewards

- Earn a $5 - $10 gift card for each call with your coach, up to $65
- Receive a gift card in the mail after each coaching call. Look for the envelope from "National Jewish Health," the Quitline administrator

"It feels great to be able to spend money on my son, rather than on cigarettes"

Appendix C

Table 1

Evidence Grid

Citation: Author(s) Date of Publication & Title	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables Studied and their definitions	Measurements of Major Variables	Data Analysis	Study Findings	Appraisal of Worth to Practice Strength of the Evidence
Chamberlain et al., 2017, Psychosocial interventions for supporting women to stop smoking in pregnancy (Review)	Search of Cochrane Pregnancy and Childbirth Group's Trial Registry through 11/2015	Systematic Review	102 RCT with 120 intervention arms; over 28,000 women involved in all trials	(IV) Counseling= motivation, support to problem solve or increase coping skills, 'transtheoritical' models of change; Health Education= info. Provided regarding risks of smoking while pregnant; Feedback= mother is provided feedback about fetal health status or biproducts of smoking (ultrasound, carbon monoxide, urine cotinine; Incentives= receive financial reward for	Desired result= smoking abstinence in late pregnancy either self-reported or validated by biochemical tests	Direct comparison with meta-regression	Counseling, feedback, & incentives interventions= effective. Psychosocial interventions improve quit rates in late pregnancy by 35% and lead to 17% reduction in infants born with low birth weight, a significantly higher mean birthweight, & 22% reduction in neonatal intensive care unit admissions. “Pooled effects were similar in interventions provided for women classified as having predominantly low socioeconomic status, compared to other women” (p.2)	*Only RCT, cluster-randomized trials, quasi-randomized included with moderate to high strength evidence * "Risk of bias" (p. 16) assessment completed for each trial reviewed & examined * Missing data was re-entered assuming that women who dropped out of the trial continued smoking

				cessation; (DV) varies based on study				*Minimized heterogeneity
Lancaster & Stead, 2017, Individual behavioral counseling for smoking cessation (Review)	Search of Cochrane Tobacco Addiction Group Specialized Register in May 2016	Systematic Review	49 RCT or quazi-randomized trials with at least one trial arm including face-to-face counseling; 19,000 participants from various settings and SES, excluding pregnant women.	IV: Individual counseling vs. no treatment, brief advice, or self-help materials, more intensive counselling vs less intensive, counseling plus pharmacotherapy (nicotine replacement therapy). Counseling contact time. Individual counseling is one-on-one counseling with smoking cessation counselor, not physician or nurse during routine care. Various counseling methods also compared. DV: smoking cessation at 6 month follow-up	Individual counseling must by face-to-face & last at least 10 minutes. Minimal contact time intervention group = up to 15 minutes. Higher intensity intervention groups had more contact time than lower intensity groups. Smoking cessation identified by self-report with our without biochemical validation	RR for number of quitters, meta-analysis for pooled RR, estimated statistical heterogeneity	Individual counseling may increase the chance of smoking cessation by 40-60% without pharmacotherapy compared to minimal support, RR 1.57 (high quality of evidence). With pharmacotherapy, RR 1.24 (moderate evidence quality). More intensive therapy vs brief counseling had "small benefit," RR 1.29, moderate evidence quality (p. 13). No difference in types of counseling methods found.	*Excludes pregnant population *Sensitivity analysis done to compare self-report cessation & biochemical validation *27 trials are low risk selection bias, 5 are high risk selection bias, overall low attrition bias, & detection bias determined based on biochemical validation
Lee et al., 2015, Cognitive-	Cognitive-Social Health Information	Prospective RCT	277 pregnant smokers	IV: cognitive behavioral counseling (CBC) with 5As = 3 face-to-face sessions (2	Nicotine addiction level using Fagerstrom Test, average	Chi square tests & t tests for	No difference in cessation rates at 3 follow-up points in intent to treat analysis possibly due to best	*5As counseling model not described *participants received $20-

behavioral intervention to promote smoking cessation for pregnant and postpartum inner city women	Processing (C-SHIP) model			prenatal & 1 postpartum), 1 postpartum session via phone. Sessions targeted women's "cognitive-affective barriers" (p. 934). DV: mediating variables & smoking cessation	number of cigarettes, & intention to quit. Mediating variables: Quitting self-efficacy, pros/ cons of quitting, affective distress about quitting. Smoking cessation measured by self-report & cotinine level.	potential baseline differences. Binary logistic regression for quit rate. Non-parametric bootstrapping for mediation analysis	practice group (BP) received same intervention as CBC except for shorter sessions & less personalized. At 5 months postpartum, the CBC group was 37.3% more likely to still be abstaining. Those in CBC group who completed at least 3 of 4 sessions had 30.5% quit rate compared to BP group. Women in CBC group had greater decrease of perceived cons to quitting at 5 month postpartum. Significant indirect effect on self-efficacy and cons of quitting in CBC group. Those in CBC group who only completed 1-2 sessions had high school or less education p=.007	$30 for completing follow-up assessments. *High rate of attrition for follow-up data collection *Lack of participant demographic description. Generalizability is questionable. * Possible sample bias due to low-income women typically do not initiate prenatal care until 2nd trimester & women were excluded if >25 weeks gestation
Cahill, Harman-Boyce, & Perera, 2015, Incentives for	Tobacco Addiction Group Specialized Register in 2015 plus MEDLINE, EMBASE,	Systematic Review	21 RCTs with 8,400 participants from various settings called the 'mixed-population	IV: providing incentives to quitters. Incentives included lottery tickets, prize drawings, cash, vouchers, or the return of money forfeited by	DV: smoking cessation confirmed with biochemical testing for most studies	Odds ratios	Pregnancy trials: At or near end of pregnancy, women in incentive group were 3.79 times more likely to have confirmed abstinence. Women who received rewards contingent on smoking cessation were	Pregnant trials: *All included an additional cessation method- 4 provided a form of counseling, 5 provided self-help material. *5

smoking cessation (Review)	CINAHL, & PsycINFO		trials' Pregnancy trials included 9 studies with 1783 women	participant prior to intervention. Pregnancy trial incentives= vouchers for goods or groceries. They were sometimes increased due to length of cessation. DV: smoking cessation at 6 month follow-up			6.26 times more likely to quit.	trials had low attrition bias. *Some randomization bias, limited blinding due to nature of trials
"Tappin et al., 2015, Financial incentives for smoking cessation in pregnancy: randomised controlled trial"	NA	RCT, blinded until after recruitment, randomization & consent	612 women in a specific UK health organization at least 16 years old, < 24 weeks pregnant, carbon monoxide (CO) breath test= 7 ppm or greater	(IV) Control group: routine care with face to face appointments, free nicotine replacement therapy for 10 weeks if set quit date; Intervention group: routine care + incentives. Incentives in shopping vouchers= £50 ($66) for attending first meeting & setting quit date, £50 if CO monitor proves quit after 4 weeks, £100 ($132) if CO monitor confirmed quit after 12 weeks, £200 ($264) if CO	Outcomes measured by CO breath test. Outcome at 34-38 weeks gestation measured by cotinine in saliva urine. Secondary outcome measurements: birth weight, engagement, self-report quit at 4 weeks	Continuity corrected chi-square test at 5% significance, t-test/ Fisher's exact test to compare groups, logistic regression models used to control baseline smoking depende	Statically significant result of 69 women (22.5%) quit smoking in intervention group vs 26 (8.6%) in control group, "relative risk of not smoking at end of pregnancy was 2.63, P<0.001" (p. 4)	*Strengths= RCT with 306 women in control and 306 women in intervention group; recruitment expanded to reach target sample size; study explained in great detail *Weaknesses: Sample is narrow: 1 UK health system/ 98-99% white/ SD of age 27-28/ high loss to follow/ no postpartum assessment/ no validity or

				proved quit at 34-38 weeks gestation; (DV) CO & cotinine test		nce		fidelity information provided
Boyd, Briggs, Bauld, Sinclair, & Tappin, 2015, Are financial incentives cost-effective to support smoking cessation during pregnancy?	NA	RCT	609 participants	IV: Participants received incentives up to $609 total for participating in the intervention, setting a quit date, and quitting smoking. DV: cost per quality-adjusted life years (QALY)	QALY determined by cost-effectiveness analysis	Cost effectiveness analysis based on United Kingdom values	Financial incentives are "highly cost-effective" at $734 per quality-adjusted life years which is below the "cost-effectiveness threshold in high-income countries" (p. 360, 365)	*Study is specific to the United Kingdom but attempts to generalize to other high-income countries such as USA
Lavender, Richens, Milan, Smyth, & Dowswell, 2013, Telephone support for women	Search of Cochrane Pregnancy and Childbirth Group's Trials Registry on January 23, 2013	Systematic Review	27 RCTs with 12,256 women that assessed telephone support vs usual care. Pregnant women and women 6	IV: telephone support via phone call or text message. Most trials used phone calls, 2 included text messaging. Seven assessed smoking cessation and relapse, others breastfeeding, & general advise DV: infant and	IV: no details provided. DV: Not described for every type of outcome. Various anxiety and depression screeners. Urine cotinine validation for 4 out of 7	*RR with 95% confidence interval, *mean difference, standardized mean differen	More research is needed. No strong evidence that TS increased smoking cessation rates or improved breastfeeding rates at 6 weeks postpartum. Women with TS breastfed on average 7.6 days longer than control group. Maternal satisfaction with prenatal care is increased with TS pre &	*Unable to determine reporting bias. Unable to blind participants or staff due to type of study. * Low attrition in 7 studies

during pregnancy and the first six weeks postpartum (Review)			weeks postpartum	maternal outcomes-varied based on study (p. 4).	smoking cessation studies.	ce for trials with outcome measured the same way. * Statistical heterogeneity	postnatal. Postpartum depression scores improved with TS. No significant difference in trials for maternal anxiety, health service utilization, preterm birth, low birthweight. No trials were found to compare calls vs. texts.	
Stead, Hartmann-Boyce, Perera, & Lancaster, 2013, Telephone counseling for smoking cessation (Review)	Search of Cochrane Tobacco Addiction Group Specialized Registry	Systematic Review	77 random or quasi-randomized trials including trials where participant called into quitlines or participant were called by counselors or other health professionals. Participants were smokers or recent quitters, 3	IV: proactive and reactive TS via helplines. Proactive group received multiple 'proactive' counseling sessions DV: smoking abstinence	DV: abstinence= biochemical validation when available	RR for smoking at 6+ months follow-up, statistical heterogeneity, meta-regression	*Participants who called helpline and received additional TS calls compared to those who only completed one call or only received self-help material, RR= 1.37 *Utilizing several counseling modalities in one TS call did not have statistically significant results. *TS counseling calls not initiated by participant had RR of 1.27. There is greater effect when more calls are offered. *There was less counseling benefit in participants also receiving pharmacotherapy	*Overall low risk of bias *Not specific to pregnant population *All trials provided TS in addition to other cessation interventions *Trials varied in whether or not participants were trying to quit smoking

			trials for pregnant women					
Cummins, Tedeschi, Anderson, & Zhu, 2016, Telephone intervention for pregnant smokers: A randomized controlled trial	NA	Two-group RCT	1, 173 pregnant smokers who called a smoking quitline between September 2000 & May 2003. Smokers (97.4%) or recent quitters (2.6%), pregnant < 27 weeks gestation. Mental health and substance abusers in treatment <6 months excluded. 58% white, mean age of 26.3, 66% had high school	IV: counseling via telephone & self-help smoking cessation material DV: smoking abstinence at 30, 90, 180 days & quit attempt rate. Quit attempt must last over 24 hours.	IV: Telephone counseling followed a pregnancy protocol and included 9 counseling sessions. DV: self-report of abstinence validated with saliva cotinine levels in third trimester. Relapse was defined as smoking on 2 consecutive days	Pearson chi-square for baseline characteristic equality. Chi-Square tests compared intervention & control group	*The group receiving counseling compared to those only receiving self-help material had 29.6% vs 20.1% 30-day abstinence, $p<0.001$. *22.1% vs 14.8%, $p<0.001$ at 2 months postpartum *14.4% vs 8.2%, $p<0.001$ at 6 months postpartum *No significant difference in baseline characteristics	*Ethnic variety *Saliva samples submitted by mail. Return rate of 24.1%. Possibility of over reporting cessation. *Cotinine measured to 0.1 ng/mL *counselors initiated calls *large sample size

			education					
Song, Landau, Gorin, & Keithly, 2014, Real-world impact of quitline interventions for provider-referred smokers	NA	Retrospective analysis	2,737 provider referred clients & 530 self-referred clients to Massachusetts Helpline who completed follow-up evaluation	IV: self-referred or provider-referred DV: differences in demographics, utilization of quitline, quit rates	Self-referred= participant enrolled by calling national quitline number. Provider referred= health provider submitted referral via fax or website	Pearson chi-square, t-tests, Wald chi-square tests, multivariate logistic regression models	Provider-referred clients were more likely to be age 35-54, have high school or lower education, non-white, have public insurance. Likely to take a month to be ready for quit attempt. Self-referred clients: were mostly age 18-34, no or private insurance. Likely to be ready for a quit attempt within a week of referral. Self-referred clients were less likely to use the interventions provided. 20% of provider-referred quit smoking vs 26% self-referred.	*higher rate of provider-referred clients completed follow-up evaluations but inverse probability of treatment weights was completed *Those who did not follow-up were more likely to have a high school education or less and have public or no insurance.

Note. The evidence grid evaluates current research in evidence-based interventions for the prenatal smoking population.
RCT= randomized control trial
SES= socioeconomic status
RR= risk ratio; RR > 1 for smoking cessation outcomes indicates the intervention is beneficial. For undesirable outcomes such as low birth weight, RR < 1 indicates the interventions is beneficial (Chamberlain et al., 2017)
TS= telephone support
SMD= Standardized Mean Difference

Appendix D

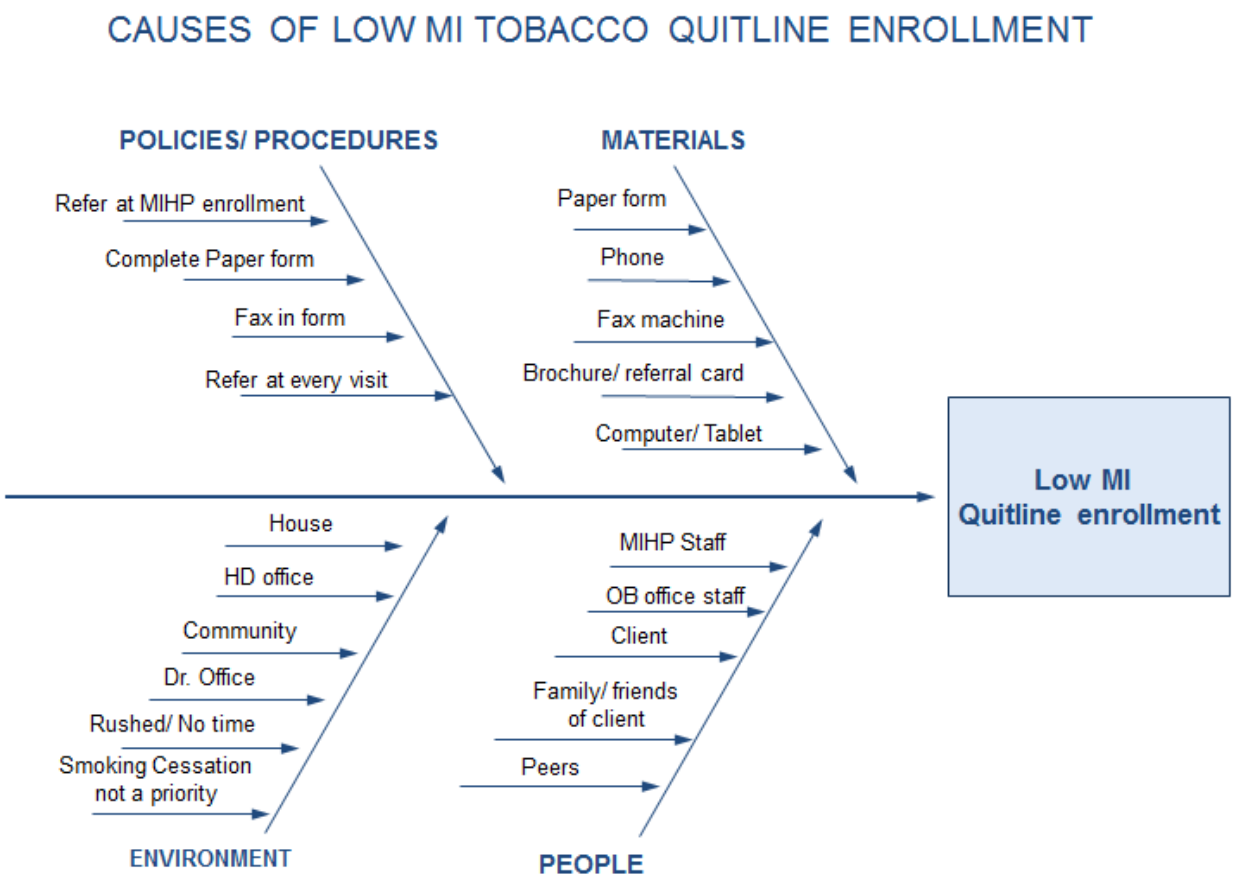


Figure 2. Root cause analysis of low Quitline enrollment for prenatal smokers. Fishbone diagram was developed with MIHP team members.

Appendix E

Client Survey

You are invited to complete this 3-minute survey about the Michigan Tobacco Quitline. The results will be used to better assist clients with the Michigan Tobacco Quitline. Your participation is voluntary and you may stop the survey at any time. This survey is confidential and will only be used to collect total responses to each question. Please do not put your name on the survey.

If you have any questions about the survey please contact Rachel Schleenbaker, Grand Valley State University Student, at schleenr@mail.gvsu.edu.

Please Answer the following questions:

Are you:
Pregnant ☐ Not Pregnant ☐ Unsure ☐
Current smoker ☐ Previous Smoker ☐ Never Smoked ☐

What is your age: (select one)
- ☐ 19 and younger
- ☐ 20 – 29
- ☐ 30 and older

1. What are (or were) your obstacles to using the Michigan Tobacco Quitline? **Check all that apply:**

- ☐ I have never smoked.
- ☐ I do not know what the Michigan Tobacco Quitline is.
- ☐ I have never been offered the Michigan Tobacco Quitline number.
- ☐ I do not want to quit smoking at this time.
- ☐ I do not need help quitting smoking.
- ☐ I have others who will help me quit smoking.
- ☐ I am unsure what will happen when I call the Michigan Tobacco Quitline.
- ☐ I do not know if I can trust the Michigan Tobacco Quitline workers.
- ☐ I am concerned about privacy.
- ☐ I do not have time to call.
- ☐ I do not have a phone or I have limited phone call minutes.
- ☐ Other _____

2. I have used the Michigan Tobacco Quitline in the past. Yes ☐ No ☐
If answered "yes", how was your experience? _____

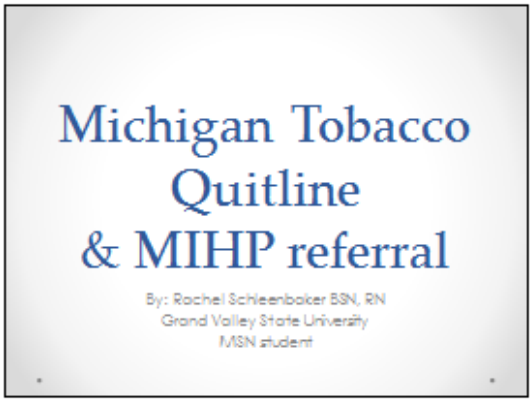
3. If you are a smoker, how likely are you to use the Michigan Tobacco Quitline? Please circle the number that applies.

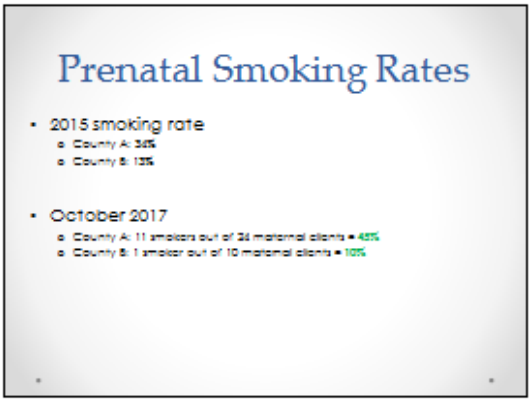
1 2 3 4 5
Least likely Most Likely

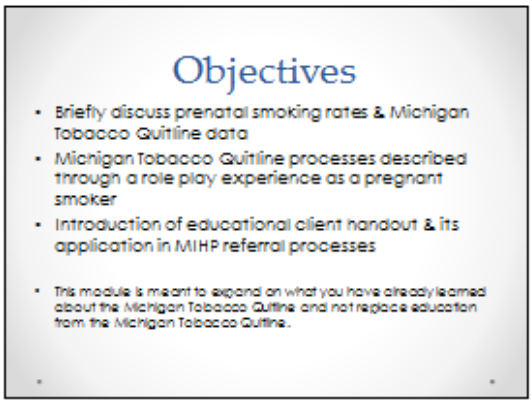
Thank you for your participation. Please fold survey in half and return to staff.

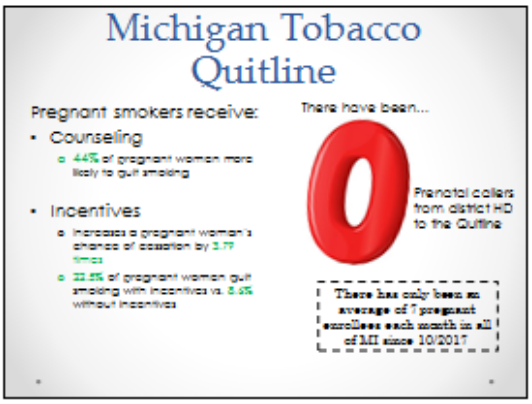
Appendix F

MIHP Educational PowerPoint Presentation









Pregnant Smoker Role Play Experience

- With permission from MDHHS, I played the role of a pregnant smoker to learn the processes and barriers of the Michigan Tobacco Quitline.
- I enrolled once as myself online and once as a pregnant smoker via phone call. I completed one coaching call.

Steps for a pregnant smoker:

- Enrollment
- Counseling, online program, texts
- Rewards

Counseling

- Coaches are women, college educated, and have completed a special training to work with pregnant women.
- Coaches use motivational interviewing.
- My coach was nice and did not pressure me to answer questions or set a quit date.
- Coaching sessions are scheduled Monday through Friday in 2 hour increments
- Calls last about 15 minutes

Enrollment

- If enroll online, the client will be called within 24 hours
- Typically no wait. Maximum wait time is 7 minutes, then it goes to voicemail.
- Must enroll while pregnant to get coaching calls and incentives.
- Client does not have to be ready to quit or set a quit date. May enroll if recently quit.
- Staff are nice, informative, and read from a script
- Need a doctor consent for NRT. That can be sent directly to the doctor office during enrollment.

Online Program

- michigan.quitlogix.org/en-US/
- Personalized dashboard
- Can update preferences such as program options
- Can see when the next coaching appointment is
- Online forum. No online chat feature at this time

Rewards

- Incentives for completing coaching calls- visa gift card, may take 2-6 weeks to receive in mail.
  - $5 for prenatal coaching sessions
  - $10 for postpartum coaching sessions
- Envelope will have "National Jewish Health" as the return address

Text Messages

- Optional
- May come everyday
- May be stopped at any time
- Includes tips & may be interactive
- Computer generated/ not texting a real person

Congratulations! By quitting tobacco you are improving the health of you and your baby. Your coach is here to support you through the process.

QuitNowMI: Quitting can be hard but it is a decision you will not regret. Keep getting the support you need and remind yourself of your reasons for quitting.

QuitNowMI: Tell a friend or try quitting with someone else. You will have a friend to talk to about how you feel and this support will help keep you on track.

Barriers to Michigan Tobacco Quitline use

- WIC client survey
  - Unaware of what the quitline is or they have never been referred
  - Do not want help or they have others to help them quit
- The quitline number appears on the caller ID as "Unknown" or a 1-800 number. The number the coaches call from is NOT the 1-800-QUIT-NOW number.
- The online forum boards are not very interactive. No online chat option.
- Once when I called, the intake staff member had a strong accent and it was difficult to understand what he was saying.
- Coaching calls are scheduled in two hour increments.
- There is no option online scheduling option.

Client Handout

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MIHP Referral Process

- Current Process
  - Brief introduction of the Quitline
  - Complete referral form and fax once return to the office
  - Follow-up on referral
- New Process
  - Introduce the Quitline
  - Use the client handout to describe enrollment & what she can expect
  - Assess and address barriers to enrollment if possible
  - Complete the fax or online referral form
  - Follow-up on referral

Appendix G

MIHP Team Pre-Survey

The purpose of this survey is to assess Michigan Tobacco Quitline referral practices to be used for a graduate nursing quality improvement project.

1. Do you currently refer clients to the Michigan Tobacco Quitline?
   - ☐ Yes, I refer all smoking clients.
   - ☐ Yes, I refer most smoking clients
   - ☐ No, I do not refer clients.

2. If you refer clients, do you
   - ☐ Provide the quitline number.
   - ☐ Provide the quitline number and *also* offer to send the referral form to the quitline via fax (with client's consent).
   - ☐ It varies depending on the client
   - ☐ Other (specify) _____

3. In the past 2 months, how many of your clients have enrolled in Michigan Tobacco Quitline? ____

4. Encouraging women to enroll in the Michigan Tobacco Quitline with your current knowledge of the Michigan Tobacco Quitline is: (circle response)

1	2	3	4	5
Not easy			Very Easy	

5. What do you think would encourage more women to enroll in the Michigan Tobacco Quitline?

_____

Appendix H

MIHP Team Post-Survey

The purpose of this survey is to assess Michigan Tobacco Quitline referral practices to be used for a graduate nursing quality improvement project.

1. Do you currently refer clients to the Michigan Tobacco Quitline?
   - ☐ Yes, I refer all smoking clients.
   - ☐ Yes, I refer most smoking clients.
   - ☐ No, I do not refer clients.

2. If you refer clients, do you
   - ☐ Provide the quitline number.
   - ☐ Provide the quitline number and *also* offer to send the referral form to the quitline via fax (with client's consent).
   - ☐ It varies depending on the client
   - ☐ Other (specify) _____

3. In the past 2 months, how many of your clients have enrolled in Michigan Tobacco Quitline? _____

4. Encouraging women to enroll in the Michigan Tobacco Quitline with your current knowledge of the Michigan Tobacco Quitline is: (circle response)

1	2	3	4	5
Not easy			Very Easy	

5. What do you think would encourage more women to enroll in the Michigan Tobacco Quitline?

_____

6. Has your new knowledge about the Michigan Tobacco Quitline and the informational handout increased your ability to inform clients about the quitline? (circle response)

1	2	3	4	5
Not increased			Definitely increased	

Appendix I

Michigan Tobacco Quitline Prenatal Protocol Informational Sheet

Michigan Tobacco Quitline Prenatal Protocol

(Based on first-hand experience)

Provider Referral

- Providers can fax a referral form & should receive a client update from the Quitline.
- An online referral form may be completed if a pregnant client doesn't want NRT.
- Clients receive an enrollment phone call within 3 days of referral.

Enrollment

- A client must enroll while pregnant to be eligible for coaching calls and incentives.
  - All pregnant women are eligible regardless of insurance.
  - A client does not have to be ready to quit and may enroll if she recently quit smoking.
- Enrollment by phone takes 15-20 minutes.
- Clients may start their enrollment online then receive a call within 24 hours to complete the enrollment. Enrolling online decreases the enrollment phone call by 10 minutes.
- There is typically no wait when calling the Quitline.
  - The maximum wait is 7 minutes, and then she is sent to voicemail. The Quitline will return call within 24 hours.
- Clients receive a welcome packet via email including a workbook. Clients must request a paper copy.
- Clients schedule their first coaching appointment at the end of the enrollment phone call.

Program Options

- Clients choose any or all three main program options. She can make changes to program options and personal information in the online portal.
  - Coaching phone calls with incentives
  - Online only: create a quit plan, calculate money saved, and member forum. There is no online chat feature at this time, but may be available in the future.
  - Educational material only: welcome packet with workbook.
- Additional program options:
  - Texts with helpful tips, motivation, and reminders for coaching appointments. Clients are not able to text with coaches. Texts may come daily and can be stopped at any time.
  - Client may receive free nicotine replacement therapy (NRT) via the mail. Doctor approval necessary. The Quitline can request physician approval directly.

Coaching

- Clients receive up to 9 coaching calls: 5 prenatal & 4 postpartum.
  - Calls are 10-15 minutes.
  - Coaching sessions are usually scheduled Monday through Friday 7am – 9 pm, in 2-hour windows.
  - Clients get the same coach for each counseling session.
  - The caller ID may read "unknown" or a 1-800 number.
  - If the client calls back due to a missed call or for extra support without an appointment, and her coach is not available, she may speak with a different prenatal coach or be scheduled a new appointment time with her coach.

- Clients can receive continued prenatal coach support for up to one year postpartum without incentives.
- Coaches are female, college educated, have completed special training to work with pregnant women, and use motivational interviewing.

Incentives

- 2-6 weeks after each coaching call, clients receive a MasterCard gift card totaling up to $65
    - $5 per prenatal coaching sessions
    - $10 per postpartum coaching sessions
- The envelope comes from "National Jewish Health," the Quitline administer.

Appendix J

WIC Client Survey Results

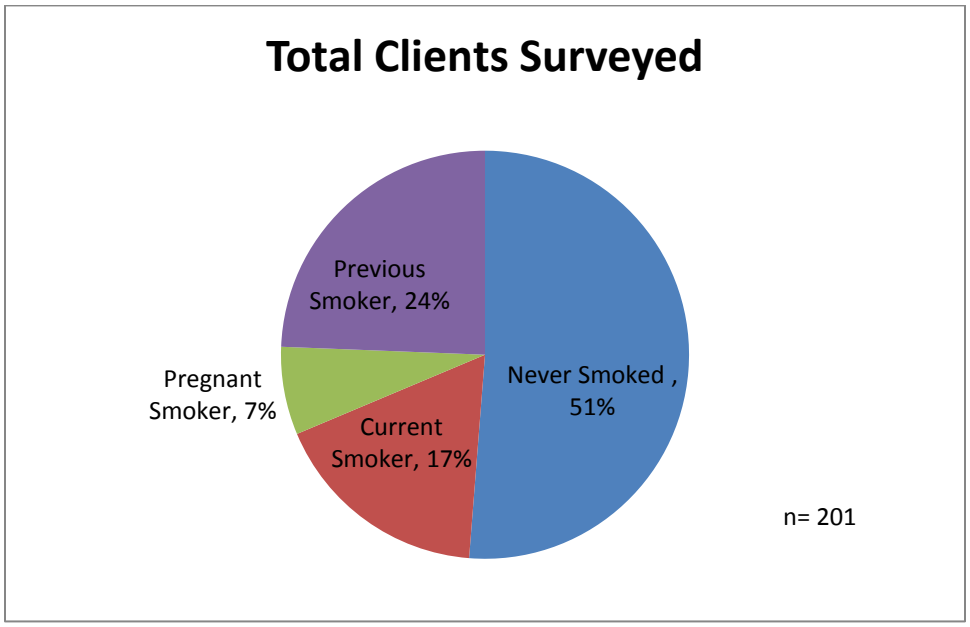

Figure 3. Pie chart of total clients surveyed. The chart shows the percentage of clients surveyed that identified themselves as a never smoker, previous smoker, current non-pregnant smoker, or a pregnant smoker.

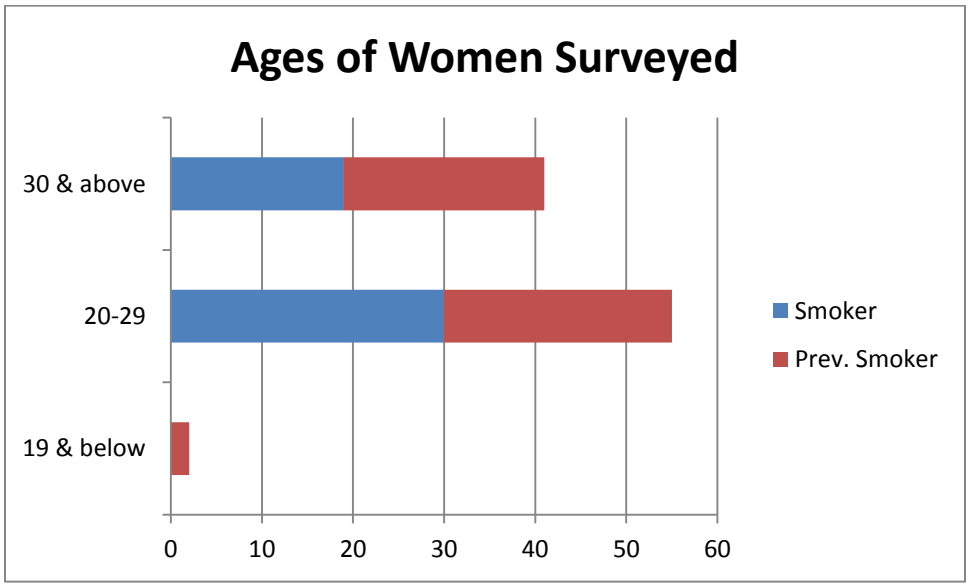

Figure 4. Ages of women surveyed.

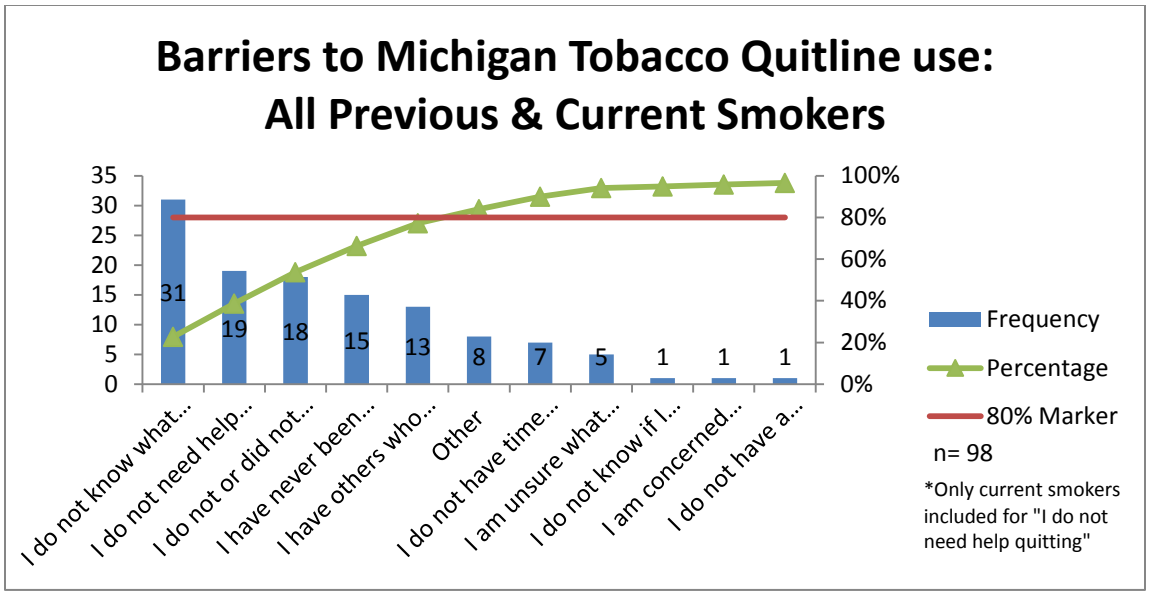

Figure 5. Barriers to Michigan Tobacco Quitline use: All previous and current smokers. A Pareto chart describing the top 20% of barriers identified by all previous and current smokers.

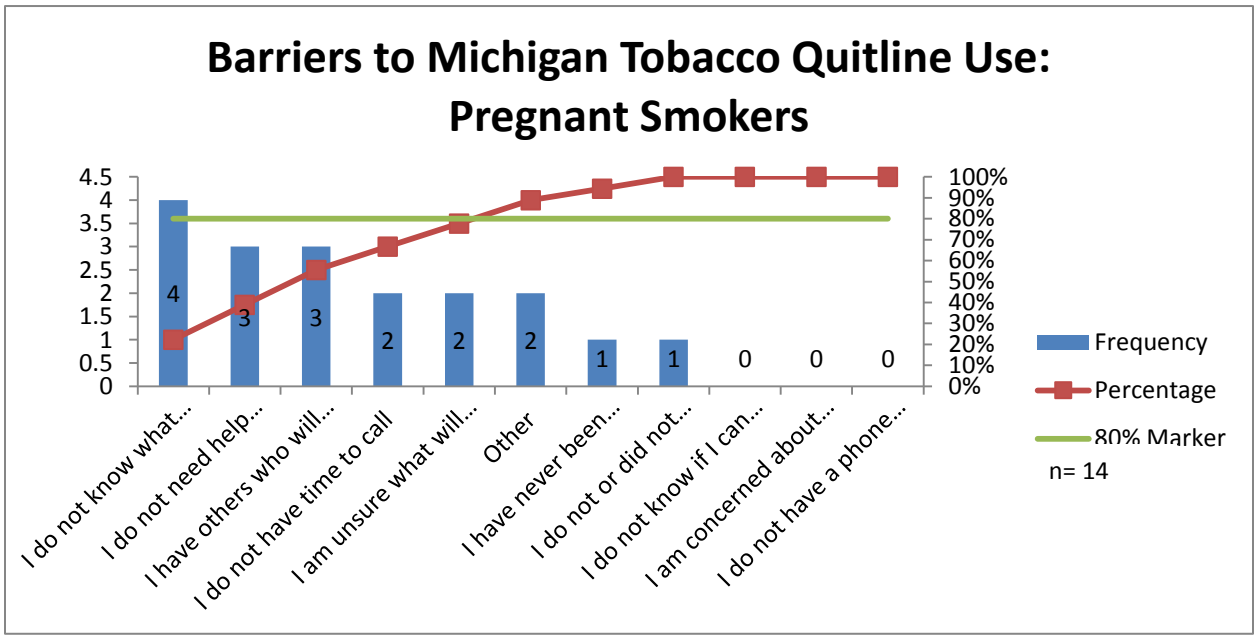

Figure 6. Barriers to Michigan Tobacco Quitline use: Pregnant smokers. A Pareto chart describing the top 20% of barriers identified by pregnant smokers.

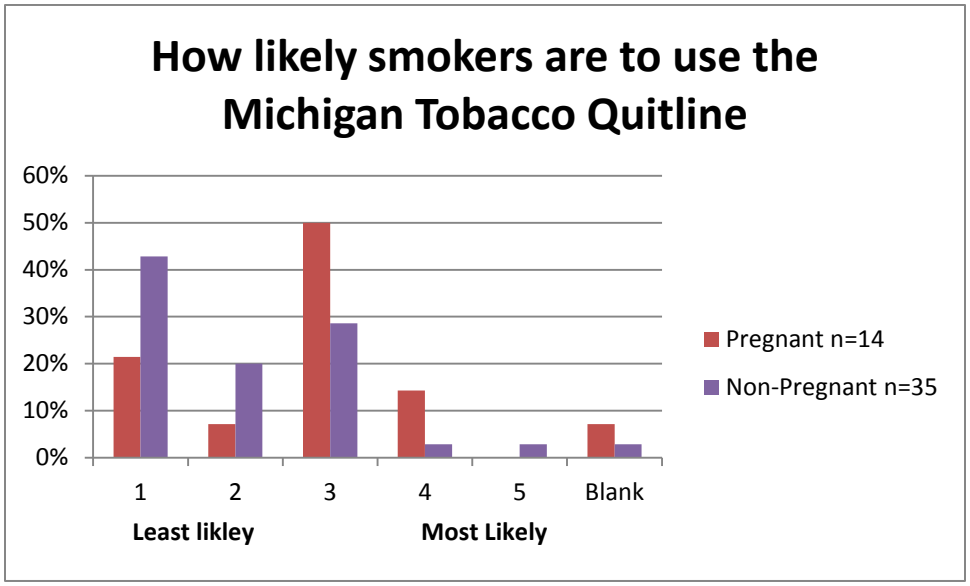

Figure 7. How likely pregnant and non-pregnant smokers are to use the Michigan Tobacco Quitline.

Appendix K

Staff Survey Results

Table 2

MIHP staff pre-survey and post-survey results

Survey Questions	Pre-Survey	Post-Survey n=7
	n=7	n=7
1. Currently refer clients to the quitline		
Yes, I refer all smoking clients	7	5
Yes, I refer most smoking clients	0	2
No, I do not refer clients	0	0
2. If you refer clients, do you		
Provide the quitline number	2	3
Provide the quitline number & also offer to send referral form	2	1
It varies depending on the client	3	3
Other	0	0
3. In the past 2 months, how many of your clients have enrolled in the Michigan Tobacco Quitline	0	0
4. Encouraging women to enroll in the quitline with your current knowledge of the Michigan Tobacco Quitline is:		
1 Not easy	0	0
2	1	0
3	4	1
4	2	5
5 Very Easy	0	1
5.What do you think would encourage women to enroll in the Michigan Tobacco Quitline	Learn more about the quitline, more incentives, easier enrollment process, if MIHP staff completed referral form for all smokers, if calling the quitline didn't use minutes	Less steps, RN assisting & handholding through enrollment, client's motivation, 2 left blank
6. Has your new knowledge of the Michigan Tobacco Quitline & the informational handout increased your ability to inform clients about the quitline?		
1	NA	0
2	NA	0
3	NA	0
4	NA	1
5	NA	6

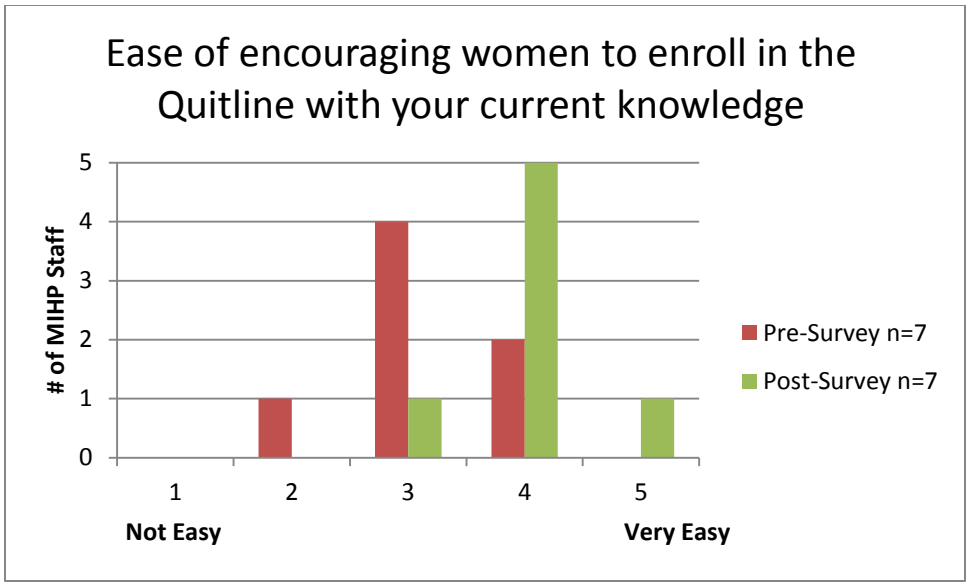

Figure 8. Responses to question #4 on staff pre-survey and post-survey.

Appendix L

Michigan Tobacco Quitline Program Evaluation Letter

Dear MDHHS Representative,

Thank you for supporting my MSN project and assisting my program evaluation of the Michigan Tobacco Quitline to identify potential barriers for pregnant smokers using the Quitline. Your assistance has contributed to the development of a client and staff handout describing the Quitline prenatal enrollment processes. Educating prenatal smokers about the prenatal protocol and addressing their barriers during the enrollment process will increase clients' ability to utilize Quitline services and quit smoking. I have presented what I have learned to the health department staff who will then educate prenatal smokers.

Thank you for suggesting I enroll in the Quitline as a pregnant client. The experience was valuable to understand the prenatal client experience fully. As you requested, here are the results of my role-play experience including strengths and potential barriers for prenatal clients.

Enrollment process:

- There was no wait time the six times I called the Quitline.
- The enrollment process and length of phone conversations occurred how I expected.
- The Quitline staff members were friendly and informative, however, once I spoke with an intake specialist with an accent that made him difficult to understand. This may be a barrier for some clients.
- The health department team was happy to learn that the Quitline can send the NRT consent form directly to the OB provider eliminating a potential obstacle for clients.

Coaching:

- I completed three coaching calls and called once late in the evening for additional support.
- As you are already aware of, when the coaches called me, a 1-800 appeared on my caller ID. I knew to answer it because I was expecting the call, but others may not.
- The two-hour appointment time slot is a potential barrier for some pregnant clients, especially for those with other children.
- When my coach scheduled my next appointment with her, she was able to give me a shorter time frame within the two-hour window that would be realistically calling me which was extremely helpful.
- My coach was friendly and informative, did not push me to set a quit date, and supported me where I was at.
- When I asked to wait to schedule my next appointment, she said I need an appointment, or my case would be closed, and I would need to re-enroll. After questioning her about it, I came to realize she meant my name would be removed from her call list until my due date and if I wanted support before then, I would have to call and get my account reactivated. A client who does not ask what is meant by "your case will be closed" may decide it is not worth using Quitline services anymore.

- Upon completion of each coaching calls, the gift card arrived in the mail approximately two weeks later. This was unexpected as I was told by my coach it could take 3-6 weeks to receive. I had to ask my coach when the gift card would arrive; however, it would be valuable for clients if the coaches inform them of the delivery time after the first coaching session.

Resources:

- I received my enrollment materials via email and not in the mail as I thought I would. When I spoke to my coach, I was told that I needed to request printed materials be sent. This is unfortunate since the health department staff agreed the workbook is an excellent resource for our clients, but that our clients may not be able to print the book out. It would be helpful if the booklet was automatically sent in the mail or if the Quitline intake personnel asked whether or not the client would like the packet mailed during enrollment.
- The online member portal provides useful resources for clients; however, the forum is minimally helpful. It appears there is not a Quitline staff member monitoring the forum to ensure member posts receive responses.
- It is helpful that the enrollment specialists offer local resources. I called the three provided, and the two local resources are no longer available and could be removed from the database.
- An interactive, online chat feature with real-time responses from a Quitline staff member would greatly benefit Quitline clients. An interactive chat feature could also provide extra support to struggling clients. For instance, once I called the Quitline at 9 pm on a Wednesday night looking for support and was disappointed with the response I received. I was told I could not talk to a coach other than my pregnancy coach because they don't want to "step on any toes." I was also informed the Quitline is not a hotline and to "hang in there" and that my coach would call me back the next day. My coach did not call me until Monday.
- It would also be helpful for the young population we serve to have an online or texting option, such as an online chat feature, for scheduling coaching calls if an appointment is missed.

I am happy to provide additional feedback if needed. Please inform me if I misinterpreted any of my experiences.

Thank you,

Rachel Schleenbaker BSN, RN
Grand Valley State University MSN student