IMPLEMENTATION OF AN ORAL HEALTH PROGRAM IN A PRENATAL PRACTICE SETTING

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Abstract

Title
Implementation of an Oral Health Program in a Prenatal Practice Setting.

Background
Untreated periodontal disease during pregnancy can contribute to adverse health outcomes involving both oral health and pregnancy. Medicaid has offered full dental benefits in its coverage to pregnant women, but there has been a steady decrease in usage with only 26.8% of women enrolled utilizing this benefit. An oral health program that includes screening and referrals, and partnering with a Medicaid accepting dental provider addresses the barriers that pregnant women with Medicaid benefits encounter.

Local Problem
Prenatal practices have expressed difficulty addressing the oral health care needs of their Medicaid patients. The purpose of this quality improvement project was to implement a dental screening and referral program that would link Medicaid recipients within a prenatal practice to a clinic for oral health care.

Interventions
The structure of the program was based on the Oral Health Delivery Framework, and implementation occurred over fourteen weeks. The screenings consisted of a three-question self-assessment of dental concerns and one question determining if the patient had seen a dentist within the past twelve months. The purpose of the screenings was to assess the acuity of the dental needs and the level of urgency needed for the referral. All patients screened were then referred for dental care to a local Medicaid dental clinic. A pre-printed dental referral form was used to specify safe medical and dental treatments during pregnancy.

Results
All patients screened were referred to the clinic resulting in a 100% referral rate. The goals of having a patient's first appointments scheduled within three weeks of the date of referral (mean time was 3.2 weeks) and subsequently, having treatment plans established within three weeks were not met. Only 7.5% of the women screened had seen a dentist within the past twelve months. The disease burden was found to be high when 70% of those screened had at least one dental concern, and 88.9% of the patients required more than just oral prophylaxis at their dental visit as a treatment plan needed to be established.

Conclusion
Prenatal practices are an optimal location for assisting women with Medicaid benefits to access dental care early in pregnancy. Prior identification of a Medicaid dental clinic was a critical component to the program's success. The screenings provided the opportunity to determine the urgency of the referral. Using a dental referral form was beneficial to communicate safe treatments to the dental provider. Establishing the first scheduled appointment within three weeks of being referred to the dental clinic was the most significant barrier encountered. Expanding this program to include additional providers would potentially address this barrier and assist with increasing access to dental care for this population.

Implementation of an Oral Health Program in a Prenatal Practice Setting

Proper oral health care is a critical aspect of a person's overall health and well-being. However, it is often neglected due to lack of knowledge and difficulty with obtaining dental services (Kloetzel, Huebner, & Milgrom, 2011). For women of childbearing age, pregnancy in conjunction with poor oral health can contribute to the development of periodontal disease. Hormonal changes and conditions that arise during pregnancy, such as gestational diabetes, can worsen existing periodontal disease (Figueiredo, Rosalem, Cantanhede, Thomaz, & Cruz, 2017). Periodontal disease during pregnancy, if left untreated, can lead to adverse health outcomes involving both the patient's oral health and pregnancy (Figueiredo, Rosalem, Cantanhede, Thomaz, & Cruz, 2017).

Gestational diabetes can hasten the development of periodontal disease. The CDC estimates that 2 to 10% of all pregnancies are affected by gestational diabetes (Center for Disease Control and Prevention, 2017). During pregnancy, the hormone progesterone becomes elevated and triggers a systemic inflammatory response resulting in the oral cavity becoming more conducive to bacteria (Moore & Blair, 2017). The resulting inflammatory response that occurs from the hormonal changes can lead to periodontitis during pregnancy (Lachat, Solnik, Nana, & Citron, 2011). Gestational diabetes aggravates this inflammatory response by causing elevated blood glucose levels, creating a favorable environment throughout the oral mucosa for bacteria to grow and ultimately putting the prenatal patient at risk for both oral and systemic infections as a result (Figueiredo et al., 2017).

The hormonal changes that occur during pregnancy in the presence of periodontitis can affect the highly vascular oral mucosa, generating a systemic immune response that has been linked to cardiovascular disease. (Moore & Blair, 2017). One meta-analysis study linked

periodontal disease with an increased risk of developing preeclampsia (Wei, Chen, Yu, & Wu, 2013). In addition to the hormonal changes during pregnancy, the decrease in the salivary pH creates an acidic environment directly contributing to an increased rate of dental caries (Lachat, Solnik, Nana, & Citron, 2011).

Utilization of Dental Services

The American Dental Association (ADA) reports that adults going to the dentist for routine oral health care has been on a steady decline, with only 34.5% of adults receiving dental care in 2012 (Yarbrough, Nasseh, & Vujicic, 2014). Coinciding with the decrease in usage, the number of adults with private dental benefits has decreased (Yarbrough et al., 2014). Enrollment in Medicaid has been on the rise; but, Medicaid does not offer dental benefits except for children and pregnant women (Maryland Department of Health and Mental Hygiene, 2019). The state of Maryland has provided a comprehensive Medicaid dental benefit to pregnant women since 2009; however, it reports a steady decrease in the use of this benefit since it was implemented (Maryland Department of Health and Mental Hygiene, 2015).

As of 2014, only 26.8% of pregnant women enrolled in Maryland's Medicaid program used their dental benefits (MDHMH, 2015). Finding a dentist that accepts Medicaid has been identified as a significant barrier to obtaining care because of the lack of provider participation (Amin & ElSalhy, 2014; Health Policy Institute, 2013). As proof of this barrier is the fact that only 28.6% of dental providers within the United States participate in Medicaid (Health Policy Institute, 2013). Dental providers have also reported hesitation in creating treatment plans for the pregnant patient, especially in prescribing and ordering of medications and treatments that are considered safe during pregnancy (Strafford, Shellhaas, & Hade, 2008). Studies have suggested that a formal referral process between the prenatal and dental provider that specifies

on the referral form what therapies are considered safe during pregnancy would directly address this knowledge deficit for the dental providers (Kloetzel, Huebner, & Milgrom, 2011).

Development of an Oral Health Program for the Prenatal Setting

A structured program within the prenatal office setting that screens for oral health needs and refers the patients to an accepting dental provider is a potential solution to the problems surrounding the low utilization of the prenatal Medicaid dental benefit. Multiple factors such as addressing oral health education, screening for the acuity of dental needs, and access to dental providers were integrated into a program to address this problem. The following components are the major concepts that were identified for the implementation of an oral health program in a prenatal practice setting:

- Identification of oral health providers that participate in Medicaid and establishing a relationship between the prenatal and dental practices.
- Increasing patient access to pregnancy-specific oral health educational materials.
- Developing a referral program that included an accepting dental provider that participated in the Medicaid program.
- Screening for oral health concerns completed upon the initial patient intake.

Project Purpose and Goals

The purpose of this quality improvement (QI) project was to implement a dental screening and referral program focusing on Medicaid recipients in a prenatal practice located in Maryland by fall 2018. The short-term goals identified for this QI project were that by fall of 2018, 100% of prenatal Medicaid patients admitted into this practice were screened for oral health needs, referred to an accepting dentist and provided with pregnancy-specific oral health education in printed form, 100% of those referred get established appointments within three

weeks of the referral, and 100% of patients get treatment plans initiated within three weeks of the referral. The long-term goals for this QI project were that by spring of 2019, an oral health screening and referral program was established in a prenatal office consisting of oral health screening, education, and referrals which result in 100% of the patients obtaining dental appointments to receive oral prophylaxis and to establish treatment plan to address their specific dental needs.

Oral Health Delivery Framework

The framework used to guide and implement this QI project was the Oral Health Delivery Framework. Qualis Health created this framework as a part of the National Interprofessional Initiative on Oral Health, and its purpose was to assist primary care providers in addressing the oral health needs of their patients (Hummel, Phillips, Holt, & Hayes, 2015). Although its original intent was for use in primary care, the concepts used in the framework are simple enough that it could be applied to an oral health program in a prenatal practice office setting.

The Oral Health Delivery Framework was structured to integrate oral health into a non-dental practice through the utilization of five concepts: Ask, Look, Decide, Act and Document. The first step, to “ask,” was done by screening the patient for oral health issues. Positive screenings required the provider to “look” and assess the patient’s risk for an acute condition such as an infection, leading into the third step, which was for the provider to “decide” on the course of action. The final step in the framework is to “document” that the referral was given. Using this framework to implement this project allowed the prenatal provider to identify the oral health needs of their patients and assist them in obtaining the services that are covered with their Medicaid benefit during pregnancy.

Literature Review

The literature was examined for the barriers that prevent pregnant women from seeking dental care during pregnancy. In addition to barriers, the evidence of the effectiveness of oral health screening tools in the literature will be discussed. The literature review will conclude with a discussion of newly published clinical practice guidelines created to increase access to oral health care during pregnancy.

Accessing Oral Health Care During Pregnancy.

There is evidence in the literature that suggests that pregnant women face barriers to obtaining oral health care services during pregnancy. The study by Singhal et al. (2014) collected data from the Pregnancy Risk Assessment Monitoring System (PRAMS) of women who delivered a live infant in the state of Maryland between the years of 2001-2003. This study found that less than half of the women had any dental care during their pregnancy and concluded that the lack of understanding of the importance of oral health care was compounded by inaccurate information regarding the safety of dental procedures for pregnant women. The research determined that interventions to increase utilization of dental health services should be focused on integrating oral health screenings and education in the prenatal setting.

Amin and ElSalhy (2014) study also addressed the factors that affected the utilization of oral health care services and their perceived barriers to receiving dental services during their pregnancy. Amin and ElSalhy (2014) agreed that three significant factors directly contributed to the utilization of dental services during pregnancy: understanding of the need for oral health care, the history of regular dental care before pregnancy and having dental benefits.

Oral Health Screening Tools.

The first of the two studies by George et al. (2014) focused on the version of the MOS tool which comprised of three questions. The first question focused on if the patient had any current oral health needs such as bleeding gums, broken or sensitive teeth, or dental pain. The second questions focused on if there was a history of yearly dental visits and the third question asked if they had seen a dentist in the prior twelve months. A referral was initiated if the patient responded “yes” to having oral health needs. Similarly, a referral would also be triggered if the patient responded “no” to having a history of yearly dental visits or if a dentist had not seen her in the prior twelve months.

It was found that a combination of the first and second or the first and third question had a 98% sensitivity for oral health issues and indicated a strong need for a dental referral. In comparison, if all three questions were asked of the patient, the sensitivity of the findings decreased to 76%. Combinations of two of the three questions asked scored specificities ranging from 30% to 40% respectively.

The second study by George et al., (2016) examined the two-question version of the MOS screening tool. The first question in the survey focused on if the patient’s awareness of any broken, loose or sensitive teeth or if experiencing any dental pain, and the second question inquired if she had seen a dentist within the last twelve months. The results of the two question approach to the MOS screening tool showed a high sensitivity (88-94%) for detecting periodontal disease but had an even lower specificity (14-21%) than the first study involving the three-question MOS tool. The high sensitivity score of this study implied that it was an appropriate screening tool to use in this setting to identify patients in need of a dental referral.

The last study examining screening tools reviewed is by Chatzopoulos et al. (2016), and its purpose was to validate the accuracy of self-reported answers on an oral health screening tool. The study consisted of a questionnaire given to men and women that addressed two domains: First, if the patient has ever had a diagnosis of periodontal disease and second, if the patient could self-report any dental issues such as loose teeth or receding gums. The questions on the survey that addressed the patient's awareness of being diagnosed with periodontal disease had a low sensitivity that ranged from 5.3% to 72.6%. However, the specificity of the self-reporting of dental issues was much higher at a range of 78.2% to 99.5%. Although this research was conducted on both men and women, this study is basic enough that it could be applied to a subset of the general population and in this case, pregnant women. This research concluded that the patient's ability to self-report dental needs was accurate.

Clinical Guidelines for Prenatal Providers.

The state of Maryland's Office of Oral Health published clinical guidelines titled Oral Health Care During Pregnancy: Practice Guidance for Maryland's Prenatal and Dental Providers in February of 2018. The clinical guidelines include a review of oral health conditions that can occur as a result of pregnancy and a dental referral form that has medications and dental procedures that are considered safe during pregnancy. The guidelines stress five concepts for the prenatal providers to incorporate into their practice: to assess the patient's oral health history, advise them about their oral health needs, develop a collaborative partnership with local dental providers, provide case management as needed, and to assist in improving community health services. The clinical guidelines stress that the prenatal provider should initiate a referral to a dental provider early in the pregnancy to facilitate establishing a treatment plan.

Evidence Synthesis

The studies by Chatzopoulos et al. (2016) and George et al. (2014; 2016) both agree that screenings consisting of self-assessment of dental issues and identifying if the patient has seen a dentist in the prior twelve months are both valid methods to screen for periodontal disease. These findings suggest screenings that are positive for dental concerns should be referred for care. All three screening studies, along with the clinical guidelines, recommend that pregnant women be referred for dental care.

The study by Amin and ElSalhy (2014) and the study by Singhal et al. (2016) both highlighted the importance of patients understanding the need for dental care during pregnancy. As Singhal's research further suggested, incorporating oral health education into the prenatal setting would be a way to address any misinformation the expectant mother had regarding the safety of dental care during pregnancy. Amin and ElSalhy (2014) identified that patients being uninformed regarding their dental insurance benefit was also a barrier for patients obtaining dental services. The clinical practice guidelines also address this knowledge barrier through recommendations for incorporating case management into the prenatal setting to advise the patient regarding her dental benefits.

Relationships between the prenatal and dental practices need to be developed to help facilitate the referrals in a timely fashion, especially in the case of Medicaid recipients. Prenatal practices should provide education regarding the importance of oral health from the first point of contact and to correct any misinformation patients have regarding its safety during pregnancy. Oral health education should also include information regarding the patients' dental benefits to ensure that they understand that dental care is not only safe and necessary, but as in the case of patients with Medicaid, it is a covered service during pregnancy.

Implementation of a Quality Improvement Project

As earlier identified, only 26.8% of prenatal women in the state of Maryland utilize their dental benefits. Both prenatal providers and pregnant women have expressed frustration in locating a dental provider who participates in Medicaid. A quality improvement project that consisted of an oral health screening and referral program for Medicaid recipients was implemented within a prenatal practice, and its goal was to address these problems associated with the underutilization of the Medicaid dental benefit.

Population and Setting

The setting for the implementation of this project was a prenatal/women's health care practice that is affiliated with a community-based hospital in Maryland. The population of the county where this project was implemented is estimated to be approximately two-hundred and fifty thousand (U.S. Census Bureau, 2018). As of 2016, there are just over twenty thousand women county residents who receive Medicaid benefits, and of those women receiving benefits, approximately 35% of those women are of average childbearing years (ages 18-44). (Data USA, 2016).

Procedure and Timeline

Prior to the implementation of the project, there were meetings held to coordinate the logistics of the referral program between the prenatal office and the dental clinic. Two months before the implementation of the project, a meeting with the deputy head of the county health department was held to review the project proposal and establish the needed buy-in with the stakeholders from the health department and dental clinic. One month before the start date, a meeting was held at the dental clinic with the office manager, front desk staff and social worker in attendance to review the project's goals, structure, and plans for implementation.

One month before the implementation, a meeting was held at the prenatal office and was attended by the office manager, admitting nurse and the principal investigator occurred to review the project. The admitting nurse was going to be the primary individual who would be implementing the practice change, and her role was reviewed at that time. One week before the "go-live" date, all materials (screening tools, referral forms, and printed educational brochures) were reviewed for any last minute changes at the prenatal site.

Implementation at the Prenatal Practice Site

All prenatal patients who received Medicaid benefits were to be screened at the intake appointment by the admitting nurse. Educational materials were given to the patient with a brief overview of the content (Appendix H). The screening tool (Appendix F) consisted of five questions: one regarding knowledge of benefits, three self-assessment questions and one identifying her last dental visit. The admitting nurse relayed the results of the screening to the provider. Any concerns required the provider to determine the acuity of the patient's oral health status and the level of urgency needed in the referral. The provider signed the referral form (Appendix G), the admitting nurse faxes the referral to the dental clinic, and the next course of action is dependant upon the level of urgency.

Depending on the level of urgency, one of three possible outcomes could result from the screening and referral. Low-level urgent referrals were faxed, and the patient was instructed to call the dental clinic for an appointment. Urgent referrals were also faxed but a phone call was placed by the prenatal office staff to expedite an appointment for the patient to be seen in the next twenty-four hours. The patient was told when an appointment was scheduled and given instructions for oral care in the interim. If there were an emergency referral (ex., suspicion of an oral abscess or infection that needed attention immediately), the patient would be sent directly to

the emergency room but referred to the dental clinic as well for follow up care. The admitting nurse and the provider both documented in their narrative notes any pertinent information regarding the screening and referral.

The completed screening tool and a copy of the faxed referral were placed into a binder located in the admitting nurse's office. The binder was audited on a biweekly basis. The next step of the project's implementation was to ensure that the dental appointments were scheduled within three weeks of the date the referral was received.

Management of Referrals at the Dental Clinic

The office manager was the primary person responsible for the initiating the scheduling of appointments from new referrals. The project went live at the dental clinic at the same time as the prenatal practice site. The office manager received referrals via a fax machine at her desk. The referrals received would be contacted within 1-2 business days for scheduling an appointment. Three attempts at contacting were made by the office staff for scheduling patient appointments.

Data Collection

Data was collected over the a course of fourteen weeks from the screening tools at the prenatal site. The data collected reflected the following performance measures:

- The number of first-time prenatal visits for Medicaid recipients per week.
- The number of referrals to the dental clinic.
- The number of referrals given to existing dental providers per week.
- Gestational age in weeks at the time of screening.

Data was collected from the dental clinic to evaluate the following performance measures:

- The number of dental referrals received from the prenatal site.
- The number of referrals resulting in an established appointment.
- The number of referrals that resulted in oral prophylaxis.
- The number of referrals resulting in an established treatment plan.
- The number of referrals that resulted in an urgent dental need at first appointment.

Protection of Human Subjects

The project was submitted to the University of Maryland Office of Human Research Protections Office and was approved as Non-Human Subjects Research. The principal investigator of this project abided by the Health Insurance Portability and Accountability Act of 1996 (HIPPA) which protects patient privacy and information. All information that was collected for this project was de-identified and protected. Screening tools had no identifiable patient information and were kept in a secured, locked location. This information was only accessible by the principal investigator of the project.

Data Analysis

The data obtained from both the prenatal office and the dental clinic was both quantitative and nominal and was analyzed using descriptive statistics. The data collected was analyzed to determine if the performance measures were met for this quality improvement project.

Results

All patients screened were referred to the clinic resulting in a 100% referral rate (Table 1). The goal of having 100% of admitted Medicaid patients in this prenatal practice being

screened for oral health needs, referred to an accepting dentist, and provided with oral health education in printed form was accomplished. The second goal of having dental appointments scheduled three weeks from the date of the referral was not achieved due to the mean time to schedule an appointment was 3.2 weeks. The third goal of having a treatment plan established three weeks from the date of the referral was subsequently not met as a result of not meeting the second goal of having appointments established within the specified timeframe.

The patients were screened for their perception of any dental issues or concerns, dental pain, or bleeding gums (Table 2). Fifty-one percent reported having general dental concerns, and 44.4% stated dental pain and 37% of those screened reported bleeding gums. Those screened could choose more than one concern, but 70.4% of those who participated did mark having at least one of the selections. Sixteen patients (59.3%) indicated that they were not aware of having dental coverage during pregnancy as a part of their Medicaid benefits.

No appointments were needed on an emergency basis (Table 3). Of the twenty-seven referrals received by the dental clinic, 44.4% obtained an appointment, 33.3% had a completed visit by the end of the data collection period, and 3.7% resulted in cancellation by the patient. There were no “no-shows” during the data collection period.

Nine patients (33.3%) who were referred to the dental clinic by the prenatal provider had a completed visit with the dentist by the end of the data collection (Table 4). Of those nine patients, eight patients (88.9%) required oral prophylaxis and had treatment plans established by the dentist for further interventions. One patient required only oral prophylaxis and recommendations for regular cleanings.

It should be noted that all patients who are recipients of Medicaid were given a dental referral regardless of the outcomes of their screenings. The rationale is that these patients did not

have any dental coverage until their pregnancy; therefore, getting them into dental care was a priority and this needed to be expedited due to the time-sensitive nature of the dental benefit. The dental referral is in line with the frameworks step of “decide” and choosing the level of urgency for the referral. The referral forms were printed with dental procedures, treatments, and medications that are considered safe to prescribe during pregnancy and to offer guidance to prevent delays in care from the dental provider being unsure of what treatment would be safe during pregnancy.

Changes in Implementation Plan

Overall, the implementation occurred as planned and there were no unintended consequences or problems that were associated with the execution of the QI project. The only change to the structure of the project was the creation of a small business sized reminder card (Appendix I) with the contact information of the dental clinic printed on one side. A nominal cost was incurred because of the printing. It was felt that the card would be an additional reminder tool to help facilitate the patient to remember to make an appointment for her dental visit.

Discussion

The project’s primary objective to assist a prenatal practice by referring newly admitted Medicaid patients for dental care was achieved. However, the two supporting goals related to the speed of obtaining the appointments and subsequent treatment plans were not met. The discussion that follows will be a review of the outcomes, strengths, and limitations of this quality improvement project.

Project Outcome Goals

The first project goal of referring all newly admitted patients for dental services was achieved as a direct result of the structure of the referral program that was created. Both prenatal providers and patients had struggled with finding a dental provider who accepted Medicaid patients and having an accepting dental clinic removed this barrier. Also, if a dental provider were located, often the prenatal practice would receive a letter from the dental provider asking for clarification of what medications could be given at her stage of pregnancy. This program addressed both barriers directly by identification of an accepting practice, establishing a relationship between the prenatal and dental site, and the creation of a dental referral form specific to the pregnant patient to minimize confusion to the dental provider regarding safe treatments plans.

The second project goal of getting the patient's first appointment scheduled three weeks after the date of the referral was not met and was an unexpected result. The third goal of having treatment plans established within three weeks was not met as a direct result of the second goal not being achieved. Before implementation, the dental clinic stated they did not see any barriers with scheduling patients within a three-week window. During the data collection period, the dental clinic's office manager stated this project generated more referrals for them to schedule than any other practice. As a result, they had struggled with being able to contact and schedule all the patients within a three-week timeframe. The mean time for scheduling was just outside the goal of three weeks at 3.2 weeks; however, for future projects, it would be beneficial to work with the office staff before the implementation of a project to optimize scheduling for these patients whose benefit is time-limited by blocking out time specifically for this referring prenatal practice.

Strengths and Limitations

The most significant strength in this project was having a Medicaid dental clinic located within the county, which removed the barrier of patients having to find a provider. Another significant advantage of this program came directly from Maryland's Office of Oral Health clinical practice guidelines which created a referral form for prenatal practices to use for dental referrals. The dental providers never requested additional guidance or clarification regarding medications or procedures a patient could be prescribed safely in pregnancy. In addition to the structure of the referral process, the support from the prenatal office manager and the admitting nurse was instrumental in the success of the referral rate.

Although urgent or emergency referrals were not needed, only 7.5% of the women had seen a dentist within the past twelve months. In addition to the low utilization of oral health care services, the disease burden was found to be high when 70% of those screened had at least one dental concern, and of the patients who had a completed appointment at the dental clinic, 88.9% required more than only oral prophylaxis but a treatment plan. The literature suggests that a patient's self-reporting of dental concerns has a high accuracy for indicating periodontal disease. The high burden of oral health disease that was found in this population suggests there is a potential for urgent and emergency referrals. Screening enables the prenatal provider to assess the acuity of the need and to determine the urgency of the referral.

Having an increase in the number of patients to schedule increased the workflow of the clinic staff and there was not a system in place for the office manager to manage this increase in workflow and subsequent demand in scheduling. Scheduling of appointments at the dental clinic within a three-week timeframe was a limitation to the project's success. At the dental clinic, it was recorded that only two or three attempts at contacting the patients were made. During the

data collection period, 44.4% of patients were scheduled; leaving more than half of the referred patients needing appointments. The office manager stated the barriers to scheduling patients included incorrect contact phone numbers, numbers that were unable to accept incoming phone calls or unable to leave a message. The dental clinic's office manager explained the difficulties contacting patients, and how this was a significant barrier to scheduling appointments and was an apparent increase in the workload to the clinic. Future quality improvement projects should consider the logistics of scheduling of patients as a potential barrier when planning the project's implementation.

Sustainability

Lack of integration of the screening tool into the EHR was a limitation to the prenatal site's ability to follow up on if the patient had been screened and referred. The screening was completed by the admitting nurse; however, there was no system in place to trigger a follow-up conversation regarding if the patient obtained an appointment to the dental clinic at the next appointment. If the screening and referral process was integrated, a prompt could be created in the EHR to alert the medical assistant to inquire if a dental appointment was scheduled and if further outreach was needed to be done by the prenatal office staff to secure an appointment. It is a recommendation that the screening and referrals be integrated into the new EHR for consistency of usage and sustainability of the project's goals.

Having the practice be able to access educational materials at little cost will assist in the sustainability of the educational component of the project. Maryland's Office of Oral Health does provide some printed materials at limited or no cost to the practice. Utilizing free services is a way to offset a financial burden for any project. During the planning stages and throughout the

implementation, there was an emphasis placed on how to procure additional printed educational materials.

Conclusion

Having identified a Medicaid accepting dental clinic was the hallmark to the success of the high referral rate. Further projects need to identify more effective ways to be able to contact patients who are referred and improve the logistics of scheduling of the increased numbers of patients to the accepting dental practice. Future QI projects could examine the feasibility of expanding this program to include multiple Medicaid providers to decrease the burden of referring to one practice. Due to the overall trend of the decline in dental care in the general population, it is recommended that additional projects explore establishing oral health programs which are open to the entire patient population of the prenatal practice.

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Appendix A

Results of screening for oral health needs for prenatal Medicaid recipients.

Table 1
Descriptive characteristics of patients in a prenatal practice that were screened for oral health needs including data related to the awareness of their Medicaid dental benefit during pregnancy, dental problems, dental pain, bleeding gums and recent dental visit within 12 months.
Total sample (n=27)

	n=27	%	Range	Mean (SD)	Median	Mode
Receiving Medicaid benefit	27	100				
Awareness of Medicaid Dental Benefit						
Yes	11	40.7				
No	16	59.3				
Maternal age			20 - 37	28 (4.7)	27	26
Gestational age in weeks			7.1 - 34.5	13.4 (8.2)	8.6	8.3

Appendix B

Table 2
Descriptive characteristics of patients in a prenatal practice that were screened for oral health needs including data related to dental problems, dental pain, and bleeding gums.
Total sample (n=27)

	n=27	%	Range	Mean (SD)	Median	Mode
Receiving Medicaid benefit	27	100				
Maternal age			20 - 37	28 (4.7)	27	26
Gestational age in weeks			7.1 - 34.5	13.4 (8.2)	8.6	8.3
Dental Screening						
Dental problems or concerns	14	51.9				
Dental pain	12	44.4				
Bleeding gums	10	37				
Dental Problem/Concerns						
No dental problems or concerns	8	29.6				
Reported at least one dental problem or concern	19	70.4				
Awareness of Medicaid Dental Benefit	11	40.7				
Annual dental visits	2	7.5				

Appendix C

Table 3
Descriptive data of the prenatal patients receiving Medicaid benefits that were referred for dental services including data related to the need for emergency appointments, cancellations and time taken to the time the referral sent to when the appointment scheduled.

Total sample (n=27)

	n=27	%	Range	Mean (SD)	Median	Mode
Prenatal patients referred for dental services	27	100				
Appointments scheduled during the data collection period.	12	44.4				
Completed visit.	9	33.3				
Canceled appointment.	1	3.7				
Emergency appointments.	0	0				
Time in weeks from referral received to date of scheduled appointment.			0.1 -5.3	3.2 (1.5)	3.6	4.1

Appendix D

Table 4
Descriptive data of the treatment plans from the completed appointments.
Total sample (n=27)

	n=27	%
Patients referred	27	100
Completed first visits.	9	33.3
Patients receiving oral prophylaxis and recommendation of 6-month cleaning with no further treatment.	1	11.1
Patients receiving oral prophylaxis and treatment plans recommended. *	8	88.9

*Treatment plans include oral examinations, dental fillings, and restorations, scaling and root planing, root canals with the use of local anesthetics with epinephrine.

Appendix E

Evidence Review Table

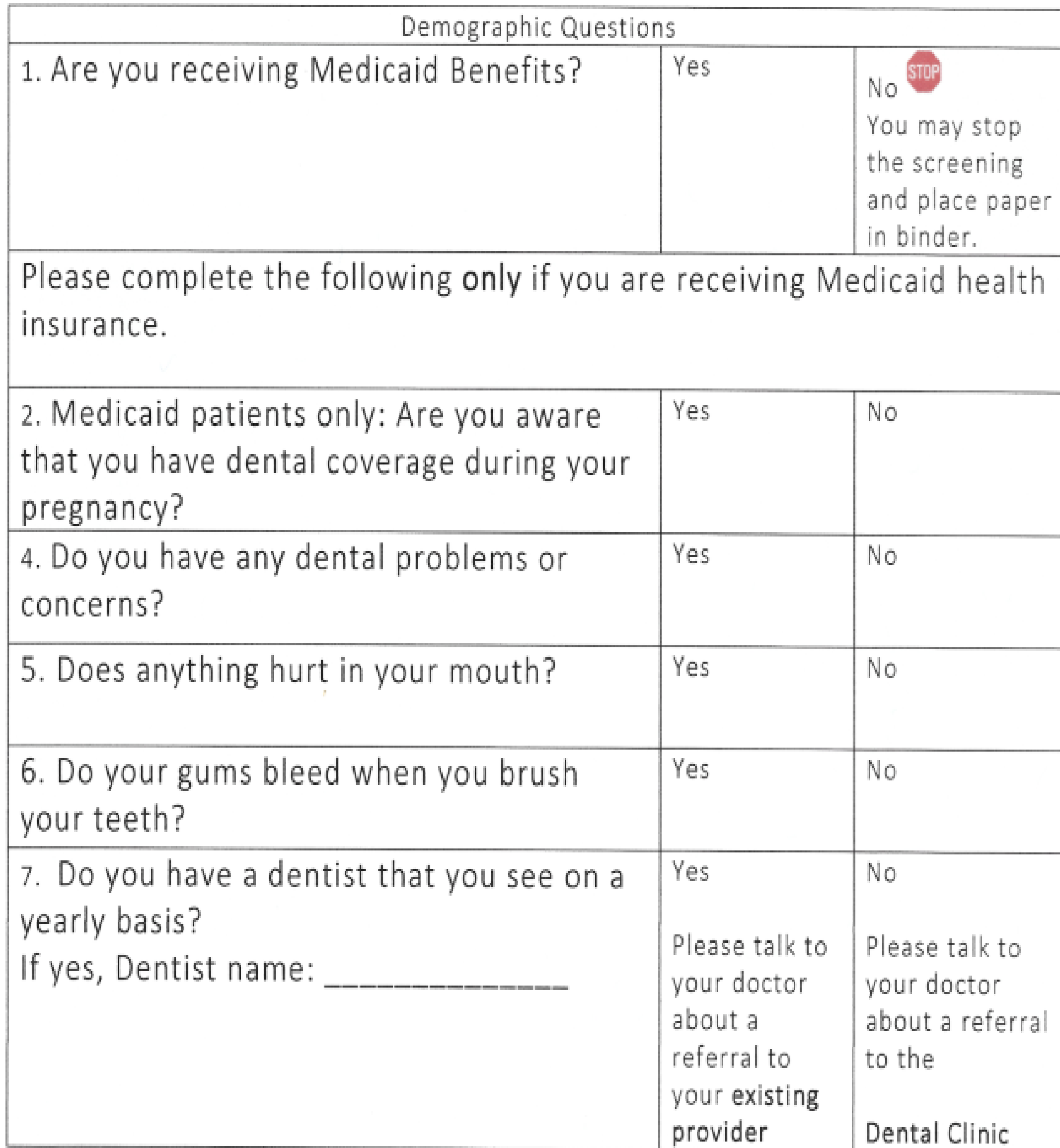
Author, year	**Study objective/intervention or exposures compared**	**Design**	**Sample (N)**	**Outcomes studied (how measured)**	**Results**	***Level and Quality Rating**
Amin and ElSalhy (2014)	To determine the factors that are affecting pregnant women from using dental services.	Retrospective, cross-sectional study.	Mothers (N=423) visiting a Canadian community health center for their infant's or toddler's immunizations.	A questionnaire was created regarding social demographics, mother's basic knowledge of oral health, and difficulties with dental care during last pregnancy.	Income, education, and having dental insurance were associated with the utilization of dental services during pregnancy. (P < 0.001).	5, C
Chatzopoulos, Tsalikis, Konstantinidis, & Kotsakis (2016)	To evaluate a questionnaire for self-perceived periodontal disease	Cohort study	Men and women (N=600) receiving dental care in a school of dentistry located in Greece.	A questionnaire consisting of four questions identifying two domains of information: A history of being diagnosed with periodontal disease and any self-perception of periodontal disease. The accuracy of the responses from the questionnaire was compared from scores obtained from the community periodontal index of treatment needs (CPITN).	The questionnaire's specificity for self-perceived periodontal disease ranged between 78.2% to 99.5%. The sensitivity for identifying professionally diagnosed periodontal disease was low to moderate, ranging from 5.3% to 72.6%. The combination of the first and third questions asking if there has ever been a professional diagnosis of periodontal disease and if there is any self-perception of loose teeth had a c-statistic of 0.87 indicating a strong model and accuracy.	2, B

George et al. (2014)	To develop and test the maternal oral health screening tool utilized by midwives.	Randomized controlled trial.	Pregnant women (N=300) in the prenatal clinic that is in a hospital in Sydney Australia. Of the 300 participants, 56 pregnant women who were screened positive were given a referral to the study dentist.	The three-question tool screened for dental conditions, yearly dental visits, and if a dentist was seen in the last 12 months was administered by midwives.	Women without annual dental visits reported more dental problems than those who had annual dental visits (p=0.002). Of those who had not seen a dentist in the past year, 66% (n=193) had been positively screened for dental issues. Only 32% of the participants had seen a dentist in the past year (n=88). A two-item screening tool is focusing on dental condition and if they had seen a dentist in the past 12 months had a sensitivity of 98% and a specificity of 40%.	2, C
George et al. (2016)	To further evaluate the sensitivity and specificity of the maternal oral health screening tool.	A tool validation study.	Pregnant women from three clinics were recruited for this study in Sydney, Australia. Two intervention groups in the control group each had a goal enrollment of N=124.	The maternal oral health screening tool was assessed by comparing the results with an existing oral health screening tool	The screening tool had a high sensitivity of 88 to 94% and a low specificity (14 to 21%). Due to its high sensitivity, it was recommended as a screening tool for a prenatal population.	2, C
Maryland Department of Health, Office of Oral Health (2018).	Practice guidelines from the Office of Oral Health.	The Office of Oral Health recommended practice guidelines for both prenatal and dental providers.			These practice guidelines were based off the recommendations from the American College of Obstetricians and Gynecologists, the American Dental Association, in addition to multiple other organizations that have issued the Oral Health Care During Pregnancy: A National Consensus Statement. The guidelines include a recommended dental referral form specific for pregnant women with guidance for prenatal providers regarding dental procedures and medications that are safe during pregnancy.	1, A

Singhal et al. (2013)	To explore the needs surrounding oral health and how services are utilized in mothers in Maryland from 2001-2003. Issues surrounding having dental needs both addressed and unaddressed during the pregnancy are examined.	Utilization of the Pregnancy Risk Assessment Monitoring System collected information regarding experiences surrounding pregnancy. Random selection of women who had given birth during the specific time frame was included.	Women (N= 4,537) who had a live birth during the years of 2001 – 2003 in the State of Maryland.	Three primary outcomes were measured: if the mother had a dental visit during her pregnancy, did she need oral health care during her pregnancy and did she need to seek professional advice regarding her oral health during her pregnancy.	Main study finding was that 50% of women did not have any dental care or seek any professional advice regarding their oral health during their pregnancy. Twenty-five percent of those surveyed needed oral health care but only 33% of those received any dental care.	4, B

Source: Newhouse, R.P. (2006). Examining the support for the evidence-based nursing practice. Journal of Nursing Administration, 36(7-8), 337-40.

Appendix F



TODAY'S DATE: ____/____/____

How many weeks pregnant are you? ______

Demographic Questions		
1. Are you receiving Medicaid Benefits?	Yes	No STOP You may stop the screening and place paper in binder.
Please complete the following **only** if you are receiving Medicaid health insurance.		
2. Medicaid patients only: Are you aware that you have dental coverage during your pregnancy?	Yes	No
4. Do you have any dental problems or concerns?	Yes	No
5. Does anything hurt in your mouth?	Yes	No
6. Do your gums bleed when you brush your teeth?	Yes	No
7. Do you have a dentist that you see on a yearly basis? If yes, Dentist name: ______________	Yes Please talk to your doctor about a referral to your **existing provider**	No Please talk to your doctor about a referral to the **Dental Clinic**

Appendix G

Dental Referral Form for Pregnant Women

SECTION A: PRENATAL PROVIDER TO COMPLETE (SEND TO DENTAL PROVIDER)

Patient Referred to:

Referral Date: ______________

Patient Information:

Name: ______________________ ______________________

DOB: ____ /____/ ________ Estimated Delivery Date: ____ /____/ ______

mm dd yyyy *mm dd yyyy*

Known Allergies and Precautions: *(Specify, if any)*

The following are considered safe during pregnancy:

Dental Procedures:

Oral Examination
Dental
Prophylaxis
Scaling and Root
Planing, Extraction
Dental X-ray with Lead Shielding
Local Anesthetic with
Epinephrine Root Canal
Restorations | Fillings

Medications: Amoxicillin
Cephalosporin
Clindamycin
Metronidazole Penicillin
Acetaminophen
Acetaminophen with Codeine, Hydrocodone, or Oxycodone

Patient may NOT have: *(Specify)*

SECTION B: REFERRING PRENATAL PROVIDER INFORMATION

NAME: SIGNATURE:

Oral health care is covered by Medicaid for pregnant women in Maryland.
To find a dentist who accepts Medicaid, visit: **OralHealth4BetterHealth.com**

Permission is given to use this form, which can be found at: ***OralHealth4BetterHealth.com***

Published: February 2018

By: MARYLAND Department of Health

Appendix H

Educational Materials

Did You Know?

Good oral health is important for your overall health and the health of your baby.

During pregnancy, changes in your body can cause your gums to be sore, red, puffy and bleed easily. If you have any of these conditions, see a dentist at once.

Make an appointment to see the dentist as soon as you know you are pregnant.

It is important to have healthy teeth and gums before you deliver so germs do not pass from your mouth to your baby's mouth.

Healthy Teeth Healthy Kids

Oral Health is Important During Pregnancy

Free dental care is available to pregnant women through Medicaid.

Find a dentist at:
HealthyTeethHealthyKids.org

If you do not qualify for Medicaid, contact your county's health department to find a dentist.

Take care of your teeth and gums and go to the dentist during pregnancy. Do your best to keep you and your baby healthy!

Maryland Dental Action Coalition

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The Department of Health and Mental Hygiene (DHMH) complies with applicable Federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability in its health programs and activities.

Help is available in your language: 410-767-5300 (TTY: 1-800-735-2258). These services are available for free.

Hay ayuda disponible en su idioma: 410-767-5300 (TTY: 1-800-735-2258). Estos servicios están disponibles gratis.

用您的语言为您提供帮助：410-767-5300 (TTY: 1-800-735-2258). 这些服务都是免费的

Give yourself a healthy mouth during pregnancy.

Healthy Teeth Healthy Kids

www.HealthyTeethHealthyKids.org

When You are Pregnant

Brush
Brush twice a day with fluoride toothpaste. Fluoride prevents cavities.

Floss
Floss once a day to prevent red, puffy gums.

Drink Water
Drinking water is healthy for you and your baby. Most tap water in Maryland contains fluoride. Fluoride prevents cavities.

Choose Healthy Foods and Drinks
Eat fruits, vegetables, whole-grain bread or crackers and dairy products. Avoid sweets like candy, cookies, cake and sugary drinks.

Visit the Dentist
Make an appointment to see a dentist as soon as you know you are pregnant. It is just as important as going to the doctor. Tell your dentist you are pregnant and about any changes in your mouth.

Three Reasons to See a Dentist During Pregnancy

Getting dental care while you are pregnant is:

1. Important. The health of your teeth and gums affects the health of you and your baby. If your mouth is healthy, you'll be giving your baby a healthy start!

2. Safe. Getting dental care while you are pregnant is safe. That includes x-rays, fillings and having your teeth cleaned.

3. Covered. Medicaid pays for dental care during pregnancy.

To find a dentist visit:
HealthyTeethHealthyKids.org

Appendix I

County Dental Clinic

8:00 a.m. – 4:30 p.m

Please remember to make an appointment to see the dentist

Staples Copy & Print