

Brief: Evaluation of Medical-Dental Integration at the University of North Dakota Center for Family Medicine

Health of the mouth has historically been separated from overall health. Individuals who are low-income, underinsured, uninsured, or on public assistance are less likely to visit a traditional dental clinic but more likely to need dental services. Recognizing this health inequity, the North Dakota Department of Health (NDDoH) Oral Health Program (OHP) hired a public health hygienist (PHH) in 2018 to work at the University of North Dakota (UND) Center for Family Medicine (CFM) clinic located in Bismarck, North Dakota. Evaluation of this program has been conducted by the Center for Rural Health (CRH) at the University of North Dakota School of Medicine & Health Sciences. This report provides a brief review of the program along with recommendations for future medical-dental integration in North Dakota. For more information, read:

GOAL: Enhance the oral public health infrastructure and capacity by placing a public health hygienist in a medical facility to provide care coordination, oral health screenings, fluoride varnish, education, and referrals to low-income and uninsured patients.

- [Evaluation Report: Medical-Dental Integration at the University of North Dakota Center for Family Medicine](#)
- [Medical-Dental Integration Manual](#)

Evaluation Plan

In year two of the program (September 1, 2019 – August 31, 2020), the OHP subcontracted with the CRH at the UND School of Medicine & Health Sciences to evaluate the OHP's work related to medical-dental integration. In year one, the Center for Social Research at North Dakota State University conducted the evaluation.

Evaluation activities included:

- Review of de-identified data on patients served in the asthma clinic.
- Review of de-identified data on patients served at the UND CFM.
- Pre-survey of first-year medical residents completing a residency at the UND CFM.
- Post-survey of third-year medical residents completing a residency at UND CFM.
- Training evaluations (electronic survey).

Evaluation Results

The PHH, employed by the OHP, provides oral health education to medical residents and medical staff, direct oral health care preventive services, and oral health education to pediatric patients and their families. The PHH works as a member of the medical care team, which includes participating in team huddles, provider meetings, and treatment planning. In addition to providing education and resources during a patient's visit, the PHH worked with CFM to add dental-related resources in the waiting room.

The PHH, also provided two 30-minute educational lunch and learns on October 23, 2019 (Geriatric Oral Health) and January 22, 2020 (Child Oral Health) utilizing the Smiles for Life curriculum. These sessions are intended for the residents, but clinical care staff are welcome. As of January 28, 2020, a new process was developed for pediatric patients (younger than age 18) in need of dental sealants. If the pediatric patient had not visited the dentist in the last year, and/or they did not have a dental home, their caregiver was given information regarding dental sealants and offered services. To date, no dental sealants have been placed in the clinic.

COVID-19 Response

On March 18, 2020, the UND CFM began operating with only essential staff due to the coronavirus (COVID-19) pandemic. As a result, the PHH halted patient education and services in the clinic and, as an employee of the NDDoH, was reassigned to respond to COVID-19 activities. On July 20, the PHH welcomed the new class of medical residents at the UND CFM. At that time, the PHH made herself available to all residents and clinical providers. She shared her phone number and stated that she was available to answer general questions around oral health. The UND CFM and OHP continue to meet regularly and brainstorm new ways to utilize the PHH and improve patient oral health while recognizing the restrictions in place.

Patient Reach

Overall, the PHH screened 298 patients, provided fluoride varnish to 152 (51%), gave a brochure to 181 (61%), provided dental education to 282 (95%), gave dental supplies to 230 (77%), and referred 107 (36%) patients to a dentist in the 6.5-month timeframe. See Table 1. A greater percentage of patients who were referred to the PHH from the main clinic (54%) were referred to a dentist than those who were referred from the asthma clinic (8%). A greater percentage of patients from the main clinic were also given dental supplies than those seen in the asthma clinic.

Table 1. Patients Seen by the Public Health Hygienist at the University of North Dakota Center for Family Medicine and the Asthma Clinic (September 1, 2019, through March 11, 2020)

09/01/2019 – 3/11/2020	Asthma Clinic	Main Clinic	Total
Referred to the PHH	131	190	321
Refused Screening	12	11	23
Screened by the PHH	119	179	298
Fluoride Varnish Applied	63	89	152
Brochure Given	60	121	181
Dental Education	114	168	282
Given Dental Supplies	80	150	230
Refused Screening	12	11	23
Referred to Dentist	10	97	107
Sought Treatment	5	8	13

Of the 298 patients from both the main clinic and the asthma clinic screened by the PHH:

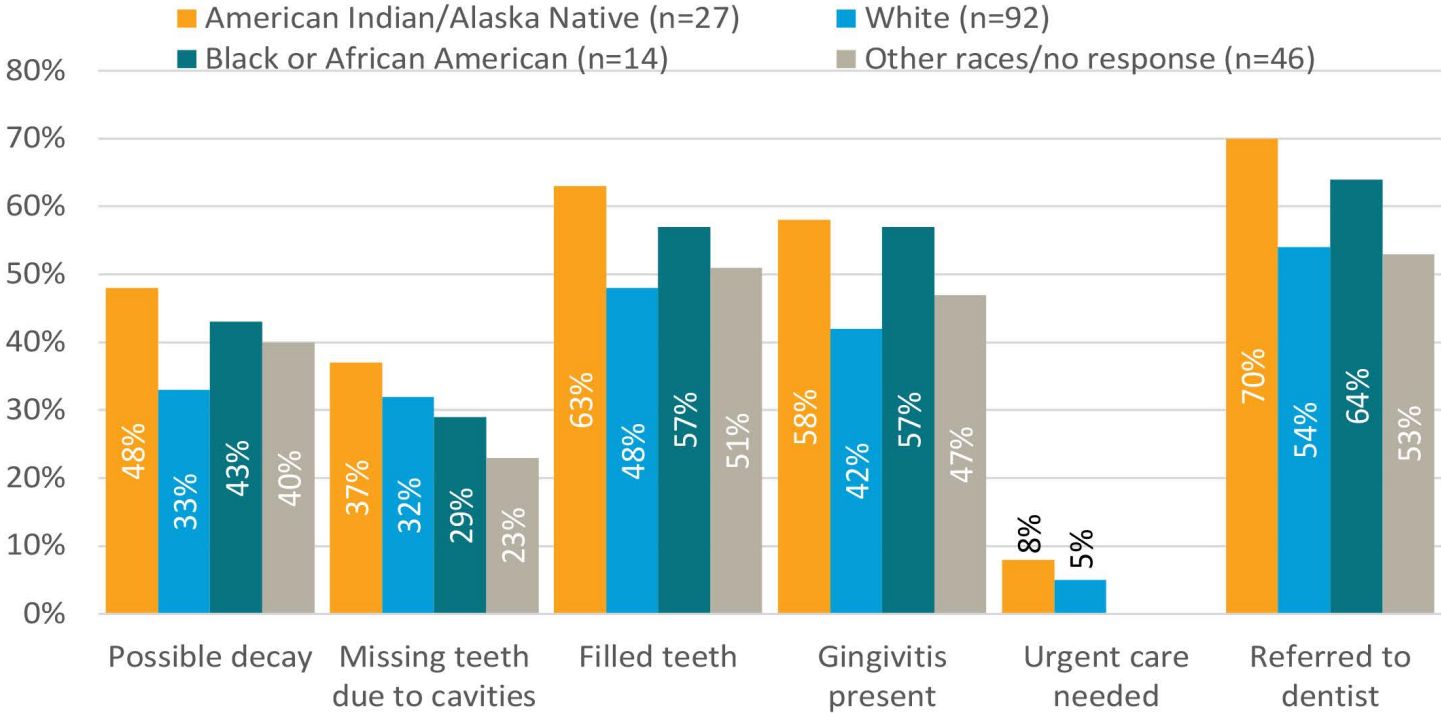
- 61% received an educational brochure from the PHH.
- 95% were given verbal oral health education from the PHH.
- 77% received dental supplies from the PHH.
- 67% received an application of fluoride varnish.
- 37% were referred to a dentist.

Among age cohorts, there was variability around fluoride application, dental referrals, and the provision of dental supplies. Although 71% of those ages 0-2 and 71% of those 18 and older received fluoride varnish application, the same was true for only 65% of those between the ages of 3-17.

A greater percentage of those without insurance were referred to a dentist, received fluoride varnish, and were given an oral health brochure. For example, only 54% of those with some form of private or public health insurance were referred to a dentist compared to 82% of those without any form of health insurance.

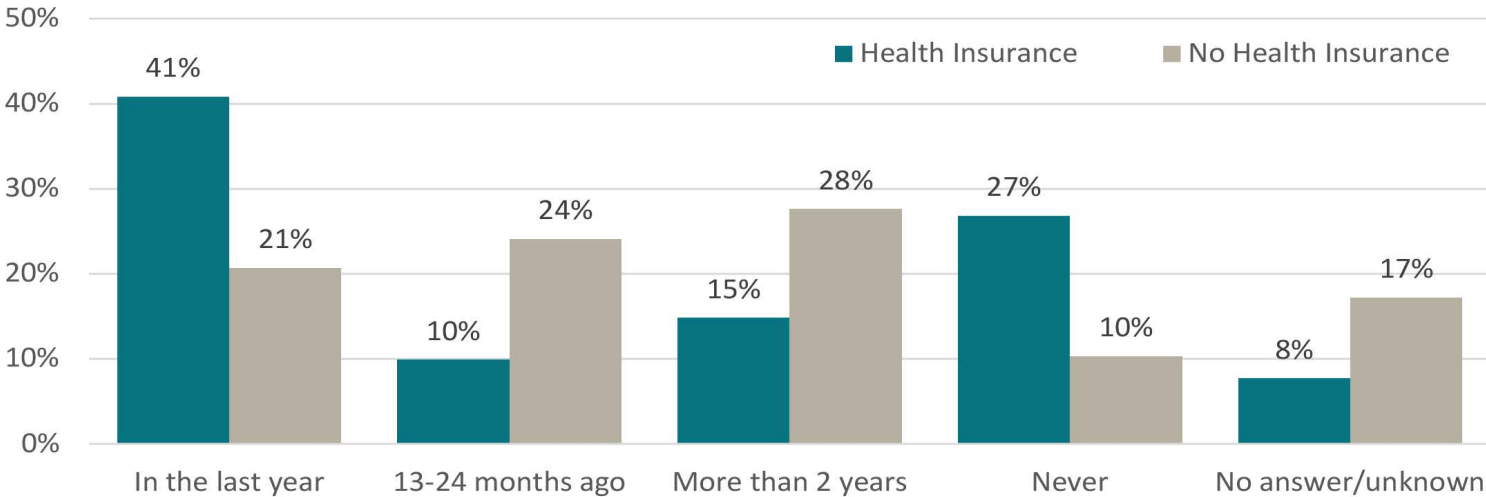
Based on the date of their last dental visit, regardless of race, nearly one in four patients in the main clinic reported they had never visited a dentist. A greater percentage of individuals who identified as American Indian/Alaska Native, Black or African American, or other race were referred to a dentist than those who were White. There was also variability by race for rate of fluoride varnish application and provision of dental supplies, dental education, and oral health brochures. In nearly every comparison, a greater percentage of American Indian/Alaska Native patients presented with oral health care need when compared to any other racial group. See Figure 1.

Figure 1. Percent of Patients with Dental Visits by Insurance Status: Main Clinic Only, September 1, 2019, through March 11, 2020



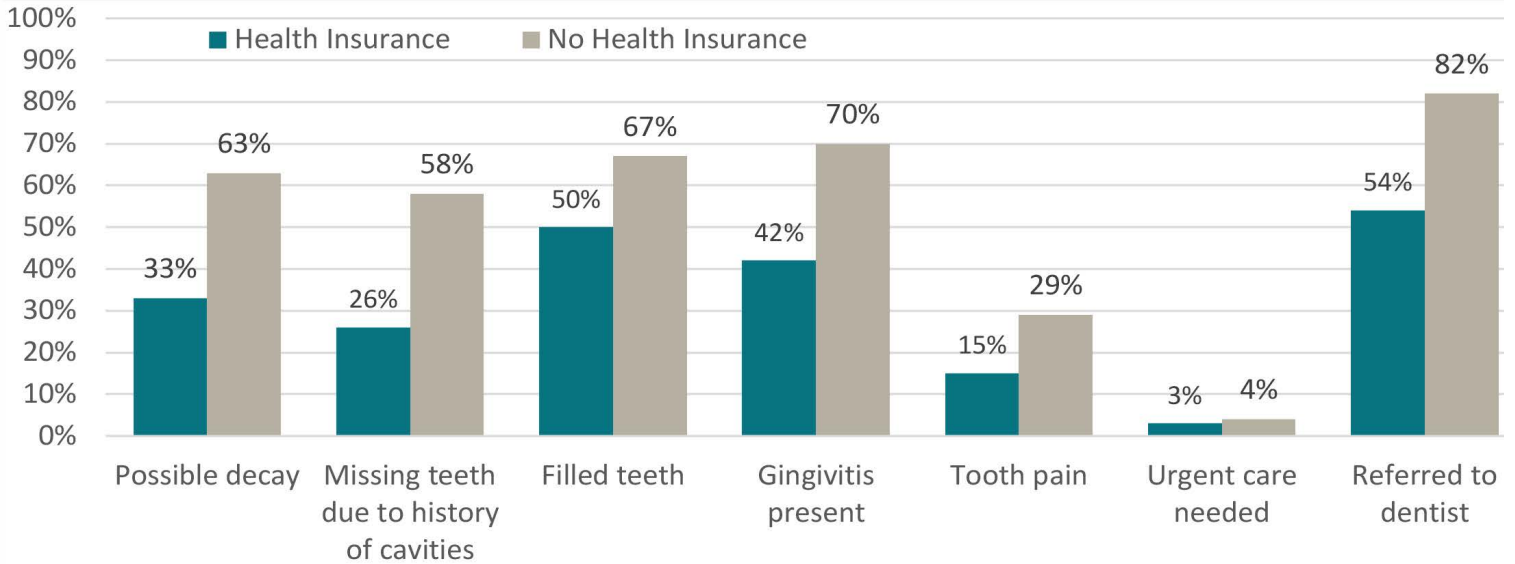
Based on the date of their last dental visit, a greater percentage of individuals with health insurance (41%) than those without health insurance (21%) had visited the dentist in the last year. However, a greater percentage of those with health insurance (27%) reported never having been to a dentist compared to those with no health insurance (10%). See Figure 2.

Figure 2. Percent of Patients with Dental Conditions and Care Needs by Insurance Status: Main Clinic Only, September 1, 2019, through March 11, 2020



A greater percentage of those without any public or private insurance presented with possible decay, missing teeth, filled teeth, gingivitis, tooth pain, and a need for dental care referral. For example, only 26% of patients with some form of public or private health insurance presented with missing teeth due to cavities compared to 58% of those with no health insurance. See Figure 3.

Figure 3. Percent of Patients with Dental Conditions and Care Needs by Insurance Status: Main Clinic Only, September 1, 2019, through March 11, 2020



Evaluation of Oral Health Training for Medical Residents

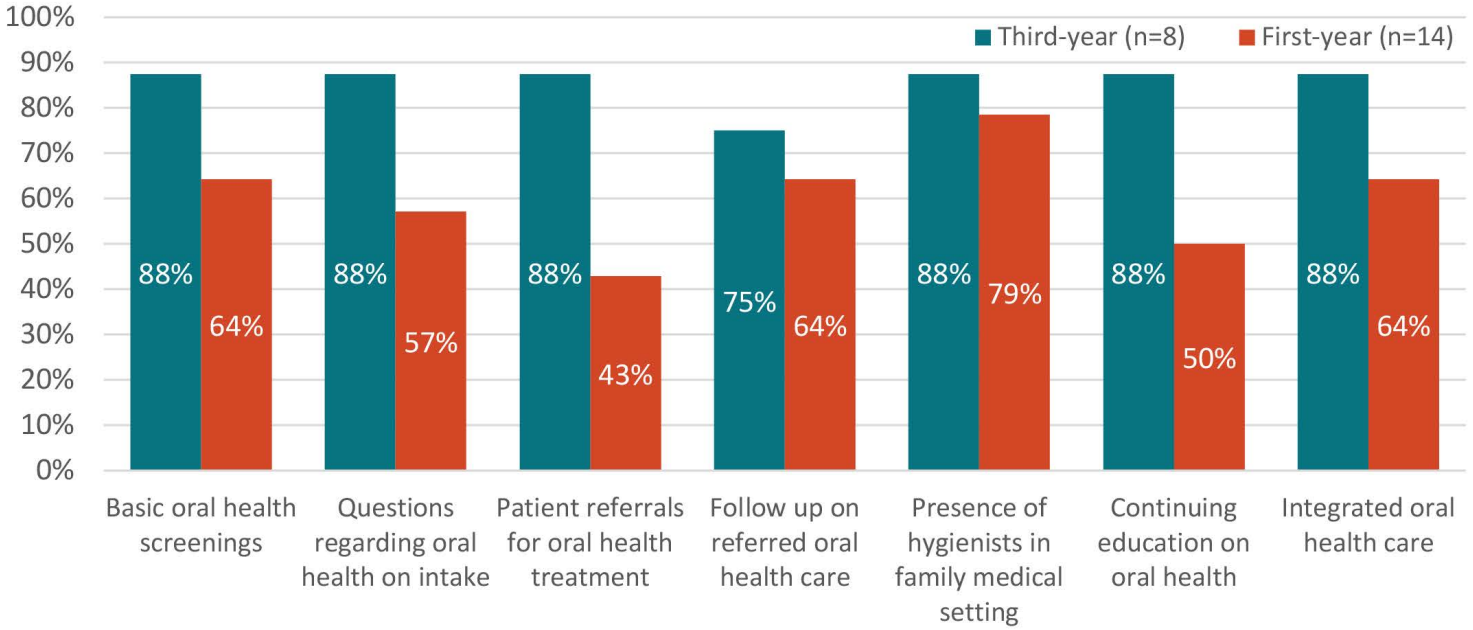
In year two, the PHH provided two 30-minute educational lunch and learns on October 23, 2019, (Geriatric Oral Health) and January 22, 2020, (Child Oral Health). In August, 2020 the PHH presented the session, Oral Health for Women: Pregnancy and Across the Lifespan. These sessions were intended for the UND CFM residents, but other clinical care staff were welcome. Six individuals completed a training evaluation in January, and nine in October and thirteen in August. On average, there was strong agreement that the trainings were well organized, relevant, and useful. One open-ended comment regarding the geriatric training included, “not enough time to complete lecture. A small pamphlet or handout with most useful points would be great for use.” Three open-ended comments regarding the training on oral health for women included: “I would have liked to hear more about interventions and specific plans to help my pregnant patients.” “The xylitol suggestion was fantastic!” “Vanessa is very thorough and helpful, should have more oral health lectures.”

Assessments of First- and Third-Year Medical Residents

Six individuals completed a pre-assessment in 2019, and eight completed the pre-assessment survey in 2020 for a total of 14 first-year medical residents. Five individuals completed a post-test in 2019, and three in 2020 for a total of eight third-year medical residents. A majority of first-year medical residents are not aware of the relationship between oral health and:

- Low birth weight (64% unaware).
- Cerebrovascular disease (64% unaware).
- Preterm birth (100% unaware).
- Pregnancy (75% unaware).
- Opioid use (63% unaware).
- Alzheimer’s, dementia, and/or memory loss (75% unaware).

Figure 4. Percentage of First-Year and Third-Year Residents Indicating Each Is “Very Important” to Address in a Family Medical Center, 2019-2020 Combined



Conversely, every third-year resident was aware of the connection to oral health for listed behaviors/conditions. Only one of the eight residents indicated not being aware of the relationship between oral health and aspiration pneumonia, low birth weight, and cerebrovascular disease. A greater percentage of third-year residents than first-year indicated that it was very important that family medical centers incorporate various oral health services. See Figure 4.

Summary and Recommendations

Summary One

The PHH, in partnership with the OHP and the CRH, developed a manual to assist other primary care clinics and family medical centers in adopting medical-dental integration models.

Recommendation One

It is recommended that this training manual is time stamped, reviewed regularly, and updated as processes change. It is especially important to update the manual in response to any innovative promising practices implemented to address oral health during a global health pandemic. There are opportunities to explore teledentistry and virtual case management. It is also recommended that the OHP allocate time and resources to disseminate the manual. Communication strategies can include, but are not limited to, news items for relevant provider groups and organizations in the state and nationally sharing the link to the continually revised manual, submissions to national and state conferences with relevant audiences, webinars for primary care providers on the model and toolkit, and announcements for provider group email lists.

Summary Two

The PHH and the OHP developed a standardized patient data collection tool to document oral health services, provided education, and dental referrals. The PPH worked with the UND CFM Information Technology Department to implement this data collection model and to maintain a workflow through the UND CFM electronic health record (EHR). The data collection at UND CFM does not mirror the data collected in the asthma clinic.

Recommendation Two

UND CFM, the OHP, and the CRH should work together to create two standardized data collection instruments so that patient-specific data from both the main clinic and asthma clinic can be combined and reviewed. Conversations have begun on this topic, and the CRH is working on a revised data-collection tool for the asthma clinic.

Summary Three

As of January 28, 2020 a new process was developed for pediatric patients (younger than age 18) in need of dental sealants. If the pediatric patient had not visited the dentist in the last year, and/or they did not have a dental home, their caregiver was given information regarding dental sealants and offered services. However, to date, no dental sealants have been placed in the clinic.

Recommendation Three

The OHP should identify other integrated health systems nationally that have successfully integrated dental sealants into a primary care office. There may be need to:

- Educate healthcare providers on the importance of sealants.
- Revise the patient-visit model to suggest sealant application when scheduling the appointment to overcome concerns of time.
- Prepare materials for parents that highlight the importance and benefit of dental sealants.

Summary Four

A total of 107 patients were referred for dental care, but only 13 sought treatment. This indicates that roughly 88% of those referred for dental care did not seek treatment.

Recommendation Four

The CRH evaluation team should work with the PHH, OHP, and UND CFM to identify what the barriers may be for patients who have been referred to care. A potential barrier may include insurance status of the individual referred (82% of those without insurance were referred for dental care compared to only 54% of those with insurance). It is imperative that the OHP identify dentists willing to accept new patients, dentists open to accepting pediatric patients, and dental offices willing to accept Medicaid patients and/or to work with patients on payment plans. This gap between referred for care and utilizing care may also require stronger case management at UND CFM. Patients may need additional follow-up phone calls and/or assistance in making and keeping scheduled dental appointments. This is also an opportunity to identify barriers to care utilization among patients and assist in identifying solutions.

Summary Five

Roughly 79% of patients between the ages of 0-2 had never been to the dentist.

Recommendation Five

The OHP and PHH should work with both the clinical care teams at UND CFM and the medical residents to stress the importance of a dental visit at the time of tooth eruption. This education should also be relayed to parents of young children as well as individuals who are pregnant. The OHP should identify existing materials on the importance of dental visits in the first years of life, and if there are not any relevant for this audience, consider developing one that can be shared with patients. It is also important that the OHP and PHH secure a list of available pediatric dentists. It may be necessary to conduct an assessment among North Dakota dentists to determine availability of pediatric care, but more specifically, care for those ages 2 and younger.

Summary six

Although the data reviewed are limited to patients at one facility, the results mirror trends that have been reported through Basic Screening Surveys and the Behavioral Risk Factor Surveillance System. Specifically, there was greater oral health need among those without insurance than those with, greater oral health need among women than men, and greater need among American Indian and Alaska Native populations than any other racial/ethnic group.

Recommendation Six

These data can be utilized with other data in the state to stress the oral health disparities in North Dakota. It is imperative that there are unique strategies developed to specifically address the oral health needs among American Indian and Alaska Native populations, as well as a need to address dental care access and utilization among lower income and uninsured individuals.

Summary Seven

On average, there was strong agreement that the training was well organized, relevant, and useful. One open-ended comment regarding the geriatric training included, “not enough time to complete lecture. A small pamphlet or handout with most useful points would be great for use.”

Recommendation Seven

As the PHH develops training for medical residents and clinical care staff, they would be well served to identify and/or develop simple handouts or products that could accompany the training and serve as a resource for the clinical care teams in the future.

Summary Eight

A majority of first-year medical residents were not aware of the relationship between oral health and low birth weight (64% unaware), cerebrovascular disease (64% unaware), preterm birth (100% unaware), pregnancy (75% unaware), opioid use (63% unaware), and Alzheimer’s, dementia, and/or memory loss (75% unaware). Conversely, every third-year resident was aware of the connection to oral health for listed behaviors/conditions. A greater percentage of third-year residents than first-year indicated that it was very important that family medical centers incorporate various oral health services including basic oral health screens, patient referral, a PHH onsite, and integrated oral health care. It is clear that students completing their medical residency at a medical center that has a level of medical-dental integration positively impacts the oral health literacy of the future providers.

Recommendation Eight

These data should be highlighted and stress the importance of oral health education among medical residents and future primary care professionals. An area with a significant gap in knowledge related to the relationship between oral health and pregnancy, preterm birth, and low birth rate. It is recommended that the OHP consider expanding services to specifically address women’s health and pregnancy. There is opportunity to connect pregnant persons with the PHH during one of their first and one of their last prenatal visits. At the first meeting, the PHH can stress the importance of oral health and pregnancy, while at the later visit, the PHH can stress how important dental care is for children in their first years of life.

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For More Information

Visit the North Dakota Oral Health Program
webpage at <https://oral.health.nd.gov>.

Visit the Center for Rural Health
webpage at ruralhealth.und.edu/what-we-do/oral-health.