The Positive Impact of Dental Care Coordination Across an Interdisciplinary Population Spectrum in a Large Urban Health Center Setting

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ABSTRACT

Introduction: The oral health report card on pregnant women and children in the US is concerning. According to the American Dental Association (ADA), expectant mothers face an increased risk of gingivitis and caries due to changes in hormones and diet, compounded by the effects of morning sickness, nausea, and vomiting on oral hygiene [1]. CDC (Centers for Disease Control and Prevention) say that tooth decay is the most common chronic childhood disease in the US, with more than half of children ages six to eight having had a cavity in at least one baby tooth [2].

Unity Health Care, Inc., a federally qualified health center (FQHC) in Washington, DC, launched a project in 2019 to address social determinants of health across a spectrum of inner city health center patients. To improve access to dental care for underserved populations, they introduced the role of CDHCs (community dental health coordinators) in several of their health centers to navigate patients to dental care.

Methods and Materials: Unity’s one-year project to coordinate dental care for underserved populations began with the recruitment of candidates for CDHC training. Upon graduation, the CDHCs implemented a four-pronged approach to navigate targeted patients (pregnant women, children ages nine and under, seniors with diabetes, and people with HIV with comorbidities into the three phases of dental care: emergent/acute, preventive, and restorative.

Results/Conclusions: Despite COVID’s impact on recruitment, the CDHC care coordination model proved successful: 460 patients were navigated into initial care with CDHCs and an impressive 72.83% requested additional support. During the project term, 15% (69) were in progress or had completed Phase 1 treatment (acute/pain); 66.31% (305) were in progress or had completed Phase 2 treatment (preventive); and 9.34% (43) were in progress or had completed Phase 3 treatment (restorative).

Keywords

Introduction
The oral health report card on pregnant women and children in the US is concerning. According to the American Dental Association (ADA), expectant mothers face an increased risk of gingivitis and caries due to changes in hormones and diet, compounded by the effects of morning sickness, nausea, and vomiting on oral hygiene [1]. While more definitive research is needed, a 2016 overview of twenty-three systemic reviews found maternal periodontitis was associated with the development of preeclampsia, pre-term birth, low birth weight babies, and low birth weight babies born...
CDHCs often come from the communities they serve, they are uniquely positioned to become a trusted health education resource for patients. Their mission for the communities they serve is to improve health outcomes by understanding and eliminating the barriers patients face in accessing and following through on dental care.

About Unity
Established in 1985, Unity Health Care is a Federally Qualified Health Center (FQHC), the largest network of community health centers in Washington, DC, and one of the largest in the US. Every year, nearly one thousand employees provide whole-person primary and specialty care and wellness to nearly ninety thousand residents of all ages, regardless of the patient’s ability to pay. Unity averages more than 400,000 visits to its twenty-seven health sites and mobile outreach vehicle across the District.

Methods and Materials
The first step of the pilot program was to recruit and train CDHCs, and then to operationalize the CDHC mission of providing dental care coordination to the target patient population of pregnant women and children ages six and under. Unity, the only health center in the nation to conduct a CDHC training program during COVID, partnered with DC Health, the program sponsor and principal grant-funder, on training CDHCs via Rio Salado College.

Three CDHCs, two dental assistants and one dental hygienist, and the first in public health in the DC area, graduated from the ADA-approved certification class and were deployed into action at four of Unity’s twenty-seven health sites: Brentwood, Upper Cardozo, East of the River, and Parkside. Per the project parameters, they supported their focus on interdisciplinary care and oral health treatment plan progression with a robust digital footprint to create a data story and support data-driven decisions by care providers.

The initial primary goal to navigate 300 expecting women and 2000 young children into dental care was later expanded to include diabetic seniors and people with HIV with comorbidities. The program implemented a four-pronged approach to dental care coordination, education, and prevention services, rigorously evaluated along the way. The project included 460 patients (206 children under age nine, 39 pregnant women, 147 seniors with diabetes, 17 people with HIV, and 51 other patients); approximately three-quarters opted in to continuing CDHC support (84% of children, 66% of pregnant women, 75.5% of diabetic seniors, and 76% of people with HIV). Charts 1 and 2.

Prong One: Link Patients to Oral Health Services
CDHCs began the process by building a list of patients through referrals inside and outside Unity. To raise awareness of the new CDHC role within the vast Unity health system, CDHCs facilitated integration by connecting with medical primary care providers, obstetrics and gynecology teams, and pediatrics department care coordinators. They also garnered referrals through the EMR (electronic medical record) from medical, obstetrics and gynecology, infectious diseases, pediatrics, dentistry, and other
departments. Building on those internal partnerships, CDHCs were then able to identify patients established at Unity to ensure all healthcare needs—including dental—were being met, reaching out not only to the care providers but also directly to patients in the targeted population by scanning providers’ schedules to facilitate engagement and care. As integration efforts solidified, CDHCs would join expectant women in midwife appointments, briefly discussing dental care when the provider stepped away— from getting a brief history of oral health care to setting up a dental appointment while on-site. CDHCs also engaged health center directors across the Unity system (HCDs) to reach out to social services providers to refer patients into the project.

While another principal tool in recruiting program participants was to extend the health center’s reach and utility to at least two outside partners, because of the impact of COVID on recruitment event planning, the CDHCs instead developed brief office hours that partners could publicize to their communities, further enhancing awareness of the CDHC services.

WIC, the federal Special Supplemental Nutrition Program for Women, Infants, and Children [4], was another strategic partner in building the patient list. CDHCs developed fliers for WIC to distribute to mothers scheduled to recertify for benefits. Because recertification included dental exams for participating children, Unity CDHCs integrated into the WIC workflow to facilitate dental appointing and make recertification seamless and easy for families. CDHCs also worked with Stork’s Nest, an incentive-based program encouraging expectant mothers to attend health care appointments [5]. The program awards points to compliant moms, redeemable for gifts for infants contributed by donors.

Recruitment was ongoing throughout the term of the project. CDHCs worked with dentists inside and outside the Unity system. They encouraged Unity doctors to participate by educating staff on oral health needs. Doctors could explore the CDHC build-out in the structured data set of their referral system and review the CDHC dashboards to see how the carefully recorded real-world data was making a real-world difference to the patients. The CDHCs worked with Unity dental staff on chair-side meeting preferences in order to facilitate scheduling and invite referrals to join the grant program.

However, due to the high demand for dental services for patients of record within the FQHC system, the impacts of COVID, the reduction of private practice dentists accepting Medicaid patients, and a significant lag time to appointing, recruitment efforts of new patients outside the health care facility was halted. The CDHC project team quickly shifted its patient recruitment focus solely to patients already within the Unity system, concentrating on dental referrals from Unity medical clinicians. CDHCs worked with a large managed care organization providing affordable plans to families to review their patient rolls and prioritize engaging with children assigned to Unity as a dental home who had not yet received dental care or were overdue for care. CDHCs engaged with patient families once children were seen clinically.

Prong Two: Navigate Patients to Dental Clinics
CDHC care coordination was both virtual and in-person, and included conducting oral health risk assessments, providing education, linking patients to preventive services, and encouraging treatment plan progression through scheduling. Due to COVID restrictions inhibiting physical attendance at the health center, the CDHCs used phone calls and emails to initiate care coordination with recruited patients.

They also used doxy.me, a simple, free for patients, online telehealth platform of phone and video communication for appointing, follow-up, navigating progression through treatment, and updates. The CDHCs scheduled all target populations for dental appointments, especially those exhibiting Phase 1 acute dental care needs (pain, swelling, abscess, etc.), performed virtual counseling, rebooked appointments recently canceled, and connected patients to other Unity services to reduce barriers to dental care (cultural, language, economic, transportation, and of course, COVID).

Prong Three: Leverage Patients into Phase 2 Treatment
CDHCs guided patients to dental clinics for Phase 2 treatment (preventive care cleanings and regular check-ups) in a number of ways. Because of CDHC efforts to enhance open communication between Unity’s medical and dental departments, CDHCs were able to refine the FQHC’s workflow to offer same-day cleaning and dental exams for interested patients. Due to legal restrictions in DC, CDHCs are not licensed to write referrals for patient care (referral requires a diagnosis and CDHCs cannot diagnose patients); plus, EMRs only allow referrals by licensed clinicians. Instead, CDHCs utilized Scheduling Coordination and scheduling, a process that allowed them to directly connect with front desk staff to set up an appointment for a patient with a dentist. This workaround, a first for CDHCs and requiring additional training and Unity board approval, was a different way to address the problem and enhance CDHC endeavors.

The new responsibility resulted in CDHCs using their care coordination tracking of “call-backs” and “waiting for call-backs” to devise a system to fill canceled appointments with short notice scheduling, prioritized by urgency of need and available appointment type. The new system empowered front desk staff and CDHCs to quickly contact patients and match them up with a specific treatment appointment. The system, which created additional revenue and made good public health as well as business sense, could also help CDHCs forecast the types of visits a Unity site could expect: hygiene recall, scaling and root-planing (SCRP) needed, dentist needed, periodontitis care needed, diabetes, removable prosthesis (REMO) needed, and denture funding needed.

CDHCs expanded their care navigation to include verifying patients for next-day appointments and assisting with insurance and copay questions, which were two big barriers to care and significant drivers of cancellations for oral surgery. Additional activities included minimizing no-shows through care...
coordination: increasing patient understanding of the required care and the positive impact of care on overall health and well-being. The goal for filling no-show appointments was to increase access by reopening and filling appointments with patients with the highest need, with special attention on those with chronic medical conditions and expecting mothers. They aimed to increase the show vs. no-show rate through educating patients about the importance of dental health and demonstrating the value of good oral health to overall health. They encouraged treatment plan progression by reaching out to patients to follow up and answer questions.

**Prong Four - Encourage and Monitor Patients through Phase 3 Treatment**

At Phase 3 (restorative dental work such as fillings, etc.), the project scope expanded to include CDHC care coordination of additional Unity patients: seniors with diabetes and people living with HIV with comorbidities (diabetes, cardiovascular disease, respiratory disease, and hepatic disease). The expansion to include these two populations was due to three factors: the desire of Unity to capitalize on the excellent medical/dental team integration and raise the level of care for more patients, interest from medical clinicians, and CDHC observance of seniors presenting clinically to dentists and seeing a need for care navigation with these older patients. The CDHC project team secured additional grants to fund new services and expand beyond disease control into definitive care options to cover the cost of dentures and partials for seniors and patients with infectious diseases, as well as additional funding for equipment and direct patient care.

CDHC virtual-only care coordination with patients with HIV with comorbidities included team integration with Unity medical partners for referring patients, virtual counseling, monitoring of treatment plan progression, scheduling dental or ID appointments, offering appointment slots that were recently canceled, linking patients to other Unity services to reduce barriers to dental care, and monthly meetings with team members highlighting patient education. Two important facets included warm hand-offs to a guaranteed appointment (team members would “walk in” patients experiencing dental pain, feeling concerned about screenings, and expressing interest in comprehensive care) and funding for dental supplies, PPE, digital X-ray sensors, and direct patient care.

CDHC virtual-only care coordination with seniors with Type 1 and Type 2 diabetes included team integration with Unity medical partners for building a list of patients, virtual counseling, monitoring of treatment plan progression, scheduling diabetic care needs, offering appointment slots that were recently canceled, and linking patients to other Unity services to reduce barriers to dental care. A portion of the additional grant funding was allotted for dentures. Tracking efforts included reports on patients in dental care with Type 1 or Type 2 diabetes, patients in CDHC care, patients receiving funds for dentures, and patients with diabetes or periodontal disease.

**Team Integration Critical to Success**

Using their training on the value and oral health impacts of cross-disciplinary interactions, CDHCs facilitated both formal and informal communication about integration efforts—from messaging to checking in at weekly and bi-weekly meetings. CDHCs would connect with their dental leadership to discuss project progression and update on organizational stakeholders, patient lists, and data in order to evaluate and redirect, as needed. Another important objective was to look at progress on gaining buy-in from Unity’s medical teams on the medical-dental integration initiatives and to improve CDHC communication with medical colleagues within the network. CDHC leadership joined regular quarterly meetings with the full interdisciplinary team.

The CDHCs were trained to use The Model for Improvement’s proven PDSA program development methodology (Plan, Do, Study, Act) to aid in planning and decision-making. The PDSA model required continuous improvement of goals, objectives, and activities, and relied on data-driven, evidence-based decision-making to specify needed changes, to assess the effect of change on processes, and to measure outcomes. CDHCs devised brief cross-disciplinary trainings at monthly meetings on patient care, with the goal of streamlining patient dental education via quick Teeth Talk exchanges. Cross-functional efforts led to CDHCs identifying the need to improve medical/dental coordination with senior patients with diabetes and patients with HIV.

The new CDHCs were incentivized via the DC Health partnership to encourage excellence. Benchmarks through the year included removing all patients from the last cycle from their patient list and reviewing motivational interviewing techniques, screening, and classification protocols; refining care coordination goals (treatment plans, progression documentation, and scheduling) and building relationships with site leadership and providers to gain permission and training to schedule patients; coordinating care in person and virtually for pregnant women and children (and later, seniors with diabetes and patients with HIV); and performing longitudinal data checks and data presentations.

**Data a Critical Part of Project Implementation and Evolution**

The second overarching goal of the program was to prove the value of the CDHC care coordination model by monitoring and evaluating individual CDHC performance, as well as to track care coordination efforts and assess the model’s success in delivering oral health services. Key activities included recording daily client encounters in the EMR; repurposing a referral section to the structured data collection system; submitting a monthly data report capsuling encounters, activities, and outcomes; and writing quarterly narrative and annual reports to capture data for dashboards and visualizations throughout the project cycle in order to present a clear, data-driven story of care. This story of care was presented to current and potential funders, to the Unity teams, and to associated organizations to enhance decision-making. All data collection was built on the EMR and included reporting the number of patients in the target population who received CDHC
A crucial component of the data tracking was optimizing and utilizing the HIT (health information technology) system to collect and analyze baseline data on patient demand for and access to oral health services. CDHCs were trained on the eCW medical management software to evaluate a number of data points: lag time between the CDHC contact and the first appointment, the rate of missed dental appointments (no-shows), and the progression of dental treatment plans. CDHCs were able to compare a patient’s stated need against the next appointment’s diagnostic codes to assess the patient’s dental health education level. To ensure sound data and to drive Unity decision-making and new policies (i.e., how to fill open appointments), queried and checked data were visualized and shared with the team for feedback, as well as sent to the DC Department of Health, along with data dictionaries.

CDHCs did zip-code mapping of patients by need (as identified by the CDHC) to guide the most effective deployment of care coordination throughout Unity’s extensive service sites during the pandemic. They tracked the types of services to be offered to patients using investigative questioning about baby teeth and sealants, overall care coordination, gum disease, HIV and oral health, interest in short notice appointments, oral hygiene instruction and demonstration, root canal and crown vs. extraction, link to counseling, non-Unity dental home, remo before and after, same day dental service completed, and periodontal issues and diabetes. CDHCs also used tracking to strategically analyze the four prongs of their care coordination approach, evaluating the movement of patients through the three phases of dental treatment and identifying red flags and systemic concerns.

The data showed that CDHCs bring additional value to the FQHC. Their value proposition included being the link between medical and dental teams to integrate care, which resulted in an ability to schedule medical and dental appointments to better control chronic conditions. The CDHCs ensured value-based dental care through measuring and documenting treatment progression to inform decision-making. They aided in efforts to increase dental appointments and decrease no-shows through one-on-one patient education and counseling. They also worked to reduce barriers to care.

**Challenges**

While still a valued part of the healthcare team, CDHCs are not providers and cannot refer patients; therefore, the project team had to retool their role in the referral process. CDHCs would flag patients in the EMR so the actual referral for tracking would come from appropriate team members (a dentist or hygienist). One CDHC, a hygienist, could fulfill this function. The other CDHCs took on a new workaround called Scheduling Coordination, which involved juggling additional training and responsibilities.

CDHCs faced a number of challenges in their day-to-day work: internal referrals to specialists, acting on a work plan initiated by a medical provider, balancing need with capacity, protecting their time in the midst of a staffing shortage, and tracking supplies. The team addressed these with one-on-one check-ins, recording of meetings and redirections, and creation of a manual.

The project focus on data to drive decision-making paid off. Flagged data revealed a lag time between CDHC contact with patients and appointing. Exploration of the issue led to the discovery of changes in Medicaid that resulted in less buy-in and participation from private dental offices. The opting out of many in the oral health private sector effectively shifted the burden of care and created a large influx of new patients to the FQHC. There was also a change in the types of patients Unity CDHCs were able to recruit for the project. One large outside dental provider halted adult services and prioritized only children, impacting project recruitment of the target population of children ages six and under, and again, flooding the FQHC with new adult patients, many with comorbidities and could benefit from the new medical/dental team integration. However, the overflow of new patients created the logical and unavoidable lag time: The number of patient requests vs. the number of available FQHC dentists weren’t adding up. Because of the combination of limited staff, stretched capacity, and a significant increase in the number of patients and demand, Unity narrowed its CDHC project focus to just those patients within its own system.

A common problem at the time was the ongoing impact of COVID and the resulting staff shortages and limitations, as well as patient discomfort with in-person visits. Outside partnerships were not as fruitful, as events were canceled due to pandemic concerns and restrictions.

CDHC monitoring of patients progressing through treatment phases revealed that dental care stalled for a number of patients due to COVID. This was compounded by limited dental staff, and so, fewer available appointments. While the FQHC never closed its doors to new patients, CDHCs shifted their priority from recruiting new patients to ensuring current comprehensive patients moved back into care, still often juggling both new and returning patients.

Pandemic back-ups caused administrative slow-downs which resulted in delays in the grant cycle and reporting. There were also ongoing issues with developing a database that supported program implementation, evaluation, and reports in real-time (concurrent with program implementation). Also, because the method of capturing data overwrote the previous month’s treatment plan progression report, collected data did not reflect the patients’ time in each phase; there was no way to evaluate by comparing month-to-month data reports.

The pandemic Great Resignation impacted Unity’s dental department, necessitating the reshuffling of CDHCs to various different sites and days for important coverage. This included requiring CDHCs to balance care coordination with actual chair time, returning them to their original roles as hygienists and...
dental assistants and reducing their care navigation time. This was compounded by the influx of new and returning patients into dental care. It was determined that until the clinical assisting team and hygiene openings were filled, staffing a CDHC would interrupt clinical function and inhibit Unity Dental’s capacity to offer and follow through on appointments. Despite the juggling act, having the care coordinator perform dental services was considered valuable to the patient experience and was thought to enhance patient education with those patients.

The last challenge dovetailed with earlier manpower issues. While DC Health was interested in providing another CDHC training course, Unity did not have the dental assistants to spare—they were all needed chair-side.

**Results**

Due to COVID and the constraints on staffing and provision of service, the project fell short of its recruitment goals. However, Unity was able to pivot quickly to answer the request of internal medical team colleagues to expand care coordination to additional groups of patients outside the original target. Over the course of the grant (November, 2020 – October, 2022), a total of 460 patients in the target populations received initial CDHC services.

**Chart 1:** Of that, 72.83% requested continued CDHC support: 206 children under age nine, 39 pregnant women, 147 seniors with diabetes, 17 people with HIV, and 51 other patients.

**Chart 2:** The top two patient populations receiving CDHC care coordination (147 seniors with diabetes and 206 children) represented more than 75% of the total of patients served; 111 seniors and 182 children accepted continued CDHC care.

**Chart 3:** To meet the expanded need, the project team won additional grant funding to navigate seniors with diabetes and people living with HIV with additional chronic conditions to oral health care. This funding included monies for removable dentures.

**Chart 4:** At the end of the grant cycle, metrics for dental treatment Phase 1 (emergent/urgent dental problems) showed 12.83% (59) of all coordinated target patients were in progress, 2.17% (10) were complete, and 8.04% (37) were on a treatment plan but had not started.

**Chart 5:** For dental treatment Phase 2 (preventive care cleanings and check-ups), 19.35% (89) of all coordinated patients were in progress, 46.96% (216) were complete, and 21.3% (98) were on a treatment plan but had not started.

**Chart 6:** For dental treatment Phase 3 (restorative), 8.91% (41) of all targeted patient groups were in progress, 0.43% (2) had completed treatment, and 13.04% (60) were on a treatment plan but had not started. Approximately 7 patients accessed funding for removable dentures.
Chart 2: Total Patients - Continued CDHC Services.

Chart 3: Patient Breakout - Continued CDHC Services
**Chart 4:** Top Populations by Phase 1 Dental Treatment

**Chart 5:** Top Populations by Phase 2 Dental Treatment.
Conclusions

The effects of COVID—the fear, isolation, and shutdowns—on access to care demonstrated the importance and utility of prioritizing high-impact oral health interventions. This led to changing one of the initial target patients from children under age five to children ages nine and under, so the application of beneficial dental sealants and fluoride varnish by medical providers could be included in treatment.

Building strong interdisciplinary relationships was critical to success. It was the interest of medical team work groups that inspired CDHCs to quickly pivot and not only broaden their dental care coordination to include senior patients with diabetes and patients with HIV comorbidities but also to secure grant funding to support the expansion.

Data were important to decision-making. The project accumulated an impressive amount of data for future project development, workflow refinements, and new systems development, including tracking treatment plan progression, charting how patients were moving through the process, uncovering the reasons for lag times in appointing, and evaluating patients’ knowledge of their dental care needs and next steps on the oral health continuum.

Patients are essential partners in good oral health. Unity had been experiencing a rising demand for dental care. The introduction of CDHC care coordination red-flagged and documented a backlog of patients needing appointments. CDHC efforts moved these patients into care and through treatment.

It was vital to keep an eye on what was happening in the DC dental industry ecosystem. CDHC data tracking across the two years of the project revealed a higher number than normal of underserved patients flooding Unity in need of a dental home, stretching capacity. Further investigation through CDHC efforts revealed a seismic shifting of care from private dental practices to maxed-out FQHCs.

The most effective use of CDHCs happens in an environment where human resources are not stressed and stretched. Due to pandemic staffing shortages, changes in private practice dental care in the greater DC area, and an influx of new patients to the FQHC, Unity had to reassign CDHCs to their former capacities as hygienists, moving care coordination to the back seat in order to meet patient demand for urgent and emergent clinical care.

During times of staffing constraints, it’s wisest to recruit dental assistants for the CDHC program instead of hygienists because hygienists are more valuable chair-side working to the top of their license and scope of practice.

CDHC care coordination was a success at Unity, as evidenced by the increase in patient appointing, the extension of the project to three years, the awarding of additional grant monies, and the decision by Unity’s human resources department to include the CDHC role in the fiscal budget at the end of the grant cycle.

Chart 6: Top Populations by Phase 3 Dental Treatment.
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References
5. https://www.betazeta1925.org/Storks-Nest