

Teledentistry Trends in the United States During the COVID-19 Pandemic



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PREFACE

The Oral Health Workforce Research Center (OHWRC) at the Center for Health Workforce Studies (CHWS) at the University at Albany's School of Public Health conducted a qualitative study using a comparative case-study methodology to describe the different approaches to developing teledentistry policy and practice across the US.

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The mission of OHWRC is to provide accurate and policy-relevant research on the impact of the oral health workforce on oral health outcomes. The research conducted by OHWRC informs strategies designed to increase access to oral health services for vulnerable populations. OHWRC is based at CHWS at the School of Public Health, University at Albany, State University of New York (SUNY), and is the only HRSA-sponsored research center with a unique focus on the oral health workforce.

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EXECUTIVE SUMMARY

BACKGROUND

Teledentistry, as defined by the American Dental Association (ADA), refers to “the use of telehealth systems and methodologies in dentistry.”¹ Telehealth’s broad variety of technologies allows it to be used for consultation, diagnosis, triage, and health monitoring, and it has been frequently used for emergency responses, such as during the SARS pandemic in 2003.^{2,3} Although telehealth has been shown to be an effective tool to reach isolated patient populations,^{2,4-6} there has been an unwillingness to adopt telehealth because of skepticism towards its effectiveness and the cost of equipment.^{3,4,7} Lack of state policy and regulation have also been a hinderance to its uptake; however, in 2018, the Center for Connected Health Policy reported over 160 telehealth bills introduced across 44 states.

The use of telehealth for dentistry is often not explicitly included in these telehealth bills despite its prior use in various pilot programs across the US, with one of the first uses of teledentistry in the US Army in 1994 through the Total Dental Access Project.⁸ Other teledental pilot projects at the University of Rochester’s Eastman Institute for Oral Health (EIOH) and at the University of Minnesota, both established in 2004, and the California Virtual Dental Home (VDH) program, established in 2010, have had successful outcomes.^{5,8} Yet, despite the success and enthusiasm for these programs, and increasing telehealth legislation, it was not until the recent pandemic that dentistry began to take up this technology alongside other health specialties.

The novel coronavirus (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2), upended the healthcare system and prompted the use of telehealth across all healthcare providers in order to avoid the transmission of SARS-CoV-2.^{9,10} Even with the existing hygiene standards in the dental field, dental providers are particularly susceptible to the virus because of their face-to-face contact with patients and contact with saliva. This high risk resulted in the suspension of most routine dental procedures in the early days of the pandemic, with only emergency dental procedures and surgeries being performed.⁹ Across the US, states have implemented teledentistry in response to the COVID-19 pandemic in varying degrees. With the rapidly evolving use of teledentistry, this report seeks to review the use of teledentistry following the COVID-19 pandemic in 4 states—California, Maine, Pennsylvania, and Wisconsin—and the supports needed to enhance dental care in a post-COVID-19 world.

METHODS

This research is a qualitative study using a comparative case-study methodology to describe the different approaches to developing teledentistry policy and practice across the US. States were selected for case studies based on the following parameters:

- Existence of teledentistry regulation
- Medicaid reimbursement of telehealth (including teledentistry)
- Payment parity
- State Medicaid expansion
- Medicaid dental benefits for adults
- Direct access for dental hygienists and/or dental assistants

States were scored on each parameter to assess the expansiveness of their dental and teledental policies. This scoring system allowed us to choose a diverse set of states with different teledental environments for comparison: California, Maine, Pennsylvania, and Wisconsin.

Interviews with key national and state stakeholders (including dentists, state Medicaid employees, dental association members, and nonprofit advocacy organizations) on the topic of teledentistry were conducted and recorded over Zoom and were transcribed by Rev for analysis by the research team. We also compiled a document library on teledentistry by searching literature databases (ie, PubMed) and online search engines. The document library was collected between October 2020 and August 2021 and includes published literature, grey literature and press, and related state documents and legislation. We used Dedoose software¹¹ to conduct our qualitative analysis of the document library, interview notes, and transcripts.

FINDINGS

Across the 4 case-study states we found similar trends in the use of teledentistry and its challenges, both in immediate response to the COVID-19 pandemic and expectations in the long term.

Common teledentistry responses to the COVID-19 pandemic included:

- Regardless of the status of teledentistry in the state, stakeholders all shared the view that COVID-19 pushed its adoption faster than it would have been otherwise.
- All 4 states implemented emergency regulations expanding telehealth use to dentistry as part of their pandemic response. These regulations allowed dentists to bill codes D9995 and D9996 for synchronous and asynchronous telehealth service.
- States allowed for more liberal use of teledentistry, such as permitting the use of audio-only visits for certain services.
- All 4 states used teledentistry to guide parents in the administration and application of fluoride varnish over video for their children, to triage patients, and to control clinic capacity for emergency care.

These similarities in the uses of teledentistry are likely due to cross-state communication among dental practitioners, state dental organizations, and oral health coalitions.

Common challenges to teledentistry discussed by interviewees included:

- A lack of existing telehealth infrastructure in dentistry slowed down uptake in private practices, but dentists in federally qualified health centers (FQHCs) and other public settings were able to utilize existing technologies and telehealth systems that were already in place.
- A perception that current private-practice dentists, who are predominantly from an older age cohort, were reluctant to take up teledentistry for several reasons, such as little familiarity with the technology, an opinion of teledentistry as a lower standard of care, or a belief that it was too costly and complex to set up.
- Common broadband and technological barriers were experienced in rural areas and low-income populations.

Because of these technological challenges, several interviewees also commented that allowing for certain services to be provided via telephone calls and video calls was critical to administering care via telehealth for hard-to-reach populations. In addition, interviewees noticed a decline in teledentistry use by private-practice dentists as conditions returned to “normal.” However, stakeholders expect this decline to be temporary as the personal protective equipment and sterilization that are now needed means that dental clinic rooms cannot be turned over as quickly, nor can dentists transition between patients as easily despite practices reopening in-person offices.

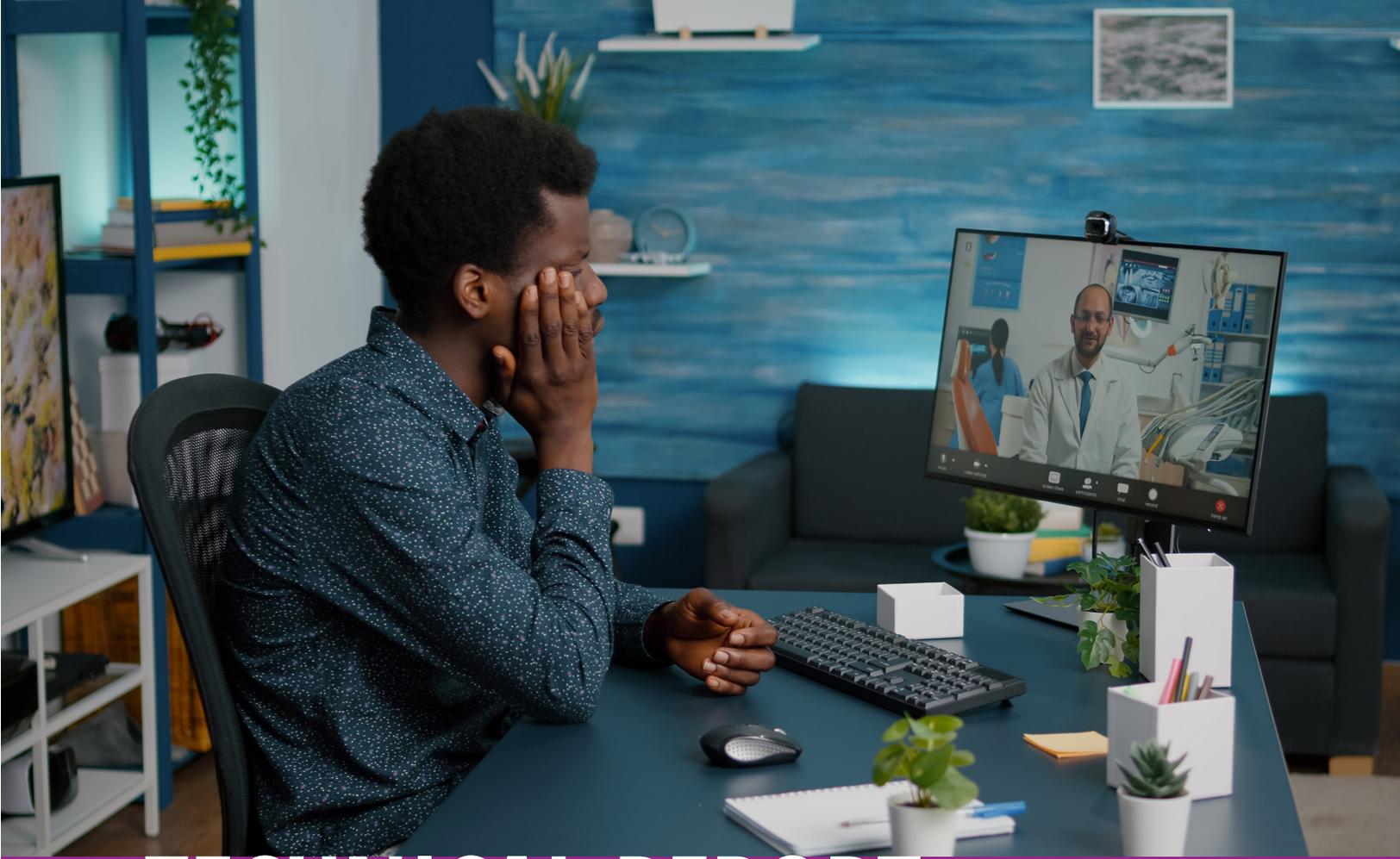
RECOMMENDATIONS AND CONCLUSIONS

Dentistry is an important part of our healthcare system, and though the delivery of dental services was compromised during COVID-19, teledentistry provided a viable option for remote consultation, treatment planning, and many more services. Rapidly developing information and communication technologies have increasingly shown improving cost effectiveness, accuracy, and efficient remote assistance for clinicians.

Though the teledentistry system may still be “clunky,” according to key informants, many dentists—especially those in the public arena—see the massive potential of teledentistry, whether used for triage to reduce COVID-19 risk, to reduce wait times, or use on an emergency basis. Improving the telehealth infrastructure will be important for its long-term success. Some recommended steps for making these improvements include:

- Combatting the existing hesitancy towards telehealth, such as addressing financial concerns by requiring payment parity, educating dental providers on its benefits, and incentivizing dentists to use teledentistry.
- Improving the technological infrastructure for teledentistry (ie, expanding broadband services) to improve access to care, especially for rural and low-income communities.
- Incorporating teledentistry training into dental education so that future dentists are comfortable with and ready to use this technology.
- Integrating telehealth more seamlessly with electronic dental records; currently, there are few existing options with that capability.
- Updating the coding system for reimbursement of dental services to make it more like the medical coding system and expanding the services available via telehealth.
- Harnessing the skills of the entire dental team (dental hygienists, dental assistants, and dental therapists) to improve access to oral health care and make teledentistry more manageable.

As the COVID-19 pandemic continues, dentistry must begin to push the boundaries of the status quo in order to meet the needs of patients. Future research should examine other states’ use of teledentistry during the COVID-19 pandemic, teledentistry technology generally, and teledentistry’s impact on oral and overall health to better understand what next steps are critical to improving and expanding this useful tool. With well-known workforce shortages and limited access to oral health care, it is important that teledentistry is recognized as a way to improve oral health.



TECHNICAL REPORT

BACKGROUND

The ADA defines teledentistry as “the use of telehealth systems and methodologies in dentistry.”¹ Telehealth encompasses a variety of technologies; it can be used for consultation, diagnosis, triage, and health monitoring. It is most commonly used in mental health (telemental health), rehabilitation (telerehabilitation), dermatology (teledermatology), and consultations (teleconsultation).² Telehealth has also frequently been used in emergency response, such as during hurricanes Harvey and Irma and during the SARS pandemic in 2003 for remote triaging, diagnosis via video, and making information rapidly accessible to a medical team.³ Although telehealth has been shown to be an effective tool to reach isolated patient populations,^{2,4-6} there has been an unwillingness to adopt telehealth by some clinicians and insurers who are skeptical of its effectiveness while also being resistant to additional training and the cost of purchasing required equipment.^{3,4,7} Lack of state policy and regulation have also been a hinderance to its uptake. However, in 2018, the Center for Connected Health Policy reported over 160 telehealth bills introduced across 44 states, indicating an interest in advancing opportunities to improve access for remote populations and potentially reduce healthcare costs.

Teledentistry entails using telecommunication technology, electronic medical records, video, and digital images to deliver dental services directly to a consumer, along with consultations among specialists. Teledentistry is not always explicitly included in legislative telehealth bills, despite its prior use in various pilot programs across the US. One of the first uses of teledentistry was for the US Army in 1994 through the Total Dental Access Project.⁸ In 2004, teledentistry programs at University of Rochester’s Eastman Institute for Oral Health (EIOH) and at the University of Minnesota were established with much success. The program at EIOH has reached almost 1,500 disadvantaged children across New York State and has shown that teledentistry screenings are effective in establishing a dental home for rural children.⁵ In California, the Virtual Dental Home (VDH) program, established in 2010, conducted over 5,000 visits for almost 1,600 individuals at 45 different sites throughout the state in 2013. It was also shown to be more cost effective, with the cost per visit through VDH at half the usual Medicaid dental cost. Furthermore, 79% of patients were satisfied with their care.⁸ Big Valley Medical Center, also in California, is another example of a health-care system using teledentistry to meet oral health needs.¹² Yet, despite the success and enthusiasm for these programs and increasing telehealth legislation, prior to 2020 dentistry had not taken up telehealth on the same level as other health specialties.¹³

The COVID-19 pandemic, caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2), upended the healthcare system and prompted the use of telehealth across healthcare providers in order to avoid the transmission of SARS-CoV-2, which can be spread via physical contact, droplets, fomites, or aerosol-generating procedures.^{9,10} After declaring the COVID-19 pandemic on March 11, 2020,¹⁴ the World Health Organization (WHO) released recommendations regarding precautions to be taken by all healthcare workers, including dentists.¹⁵ Because of their proximity to patients and contact with saliva, dentists are

particularly susceptible to the virus, despite the high attention to hygiene standards of disinfection and sterilization in the dental field. As the nature of dentistry involves face-to-face contact with patients and attendants in a closed setting, most routine dental procedures were initially suspended around the world when the COVID-19 pandemic was declared, with only emergency dental procedures and surgeries being performed.⁹

Although telehealth had not been as widely accepted in dentistry as in other medical specialties, during this ongoing global COVID-19 pandemic, teledentistry was shown to be a viable and effective care option to continue dental practice and make care more accessible in the future.¹⁶ Across the US, states have implemented teledentistry in response to COVID-19 in varying degrees, with some states creating their own innovative solutions to incorporate teledentistry into practice. With the rapidly evolving use of teledentistry, from policy to implementation, this report seeks to review changes in 4 states (California, Maine, Pennsylvania, and Wisconsin), to assess the use of teledentistry following the COVID-19 pandemic and the supports needed to enhance dental care in a post-COVID-19 world.

Description of Teledentistry Modalities

There are several different ways that teledentistry services can be provided to meet specific patient and provider needs, and these can be grouped into 2 general categories: synchronous or asynchronous (Table 1). Synchronous services are provided in live, real-time settings between the patient and provider usually by telephone or video.¹ Asynchronous services, like store-and-forward and remote patient monitoring (RPM), are done online but not in real time as providers review prerecorded or submitted information like photos to diagnose or treat the issue later.²

TABLE 1. Teledentistry Modalities

Category	Modality	Definition
Synchronous	Live Video/ Phone Call	Real-time video conference between a dentist and patient in different locations. The patient may also be accompanied by another oral health professional like a hygienist in a “spoke” location while the dentist is located at the “hub.”
Asynchronous	Store-and-Forward	Consultations between a dentist and another clinician where images/records are obtained from the patient, or the patient takes and sends images themselves, that are then sent to the dental professionals for review at a later time.
	Remote Patient Monitoring	Use of electronic devices to collect data in real time that are transmitted to providers at a distant location for review and action if needed.

Source: Case Studies of 6 Teledentistry Programs: Strategies to Increase Access to General and Specialty Dental Services (Langelier et al).³

States have varied in their allowance of these modalities. Though synchronous telehealth via video is considered the gold standard and allowing audio-only visits is rare, many patients do not have access to video services or have poor broadband service that prevents its use. Store-and-forward for dentistry has been in use, primarily in the VDH model first piloted in California. However, the pandemic has quickly made dental providers consider the merits of all forms of teledentistry in order to meet the needs of their patients.

METHODS

This is a qualitative study using a comparative case-study methodology to describe different approaches to developing teledentistry policy and practice across the US. The study aims to:

- Assess the use of teledentistry in response to the COVID-19 pandemic
- Understand the facilitators and barriers to teledentistry services
- Examine the supports needed at the state and national policy levels to sustain teledentistry

States were selected for case studies based on the following parameters:

- Existence of teledentistry specific regulation
- Medicaid reimbursement of telehealth/teledentistry
- Payment parity between telehealth and in-person care
- State Medicaid expansion
- Medicaid dental benefits for adults
- Direct access for dental hygienists and/or dental assistants

To further narrow down our list of states, we assigned a scoring system for each parameter to assess the expansiveness of each state's dental and teledental policies, with higher scores indicating more expansive dental and telehealth policies and lower scores indicating no or more restrictive policies (Appendix A). This scoring system allowed us to choose a diverse set of states with different teledental environments for comparison (Appendix B).

Interviews with key national and state stakeholders on the topic of teledentistry were conducted and recorded over Zoom, each lasting up to 60-minutes with at least 2 researchers present, with 1 as the primary interviewer and the other tasked with taking detailed notes. Those who were interviewed included dentists, state Medicaid employees, dental association members, and nonprofit advocacy organizations. Although we provided a standard interview protocol (Appendix C), interviews were relatively unstructured to allow informants to expand on their own experiences and roles in teledentistry during the pandemic. Audio files from interviews were transcribed with Rev when our notes were insufficient.

In addition to interviews, we compiled a document library on teledentistry by searching literature databases (ie, PubMed) and online search engines using variations of "teledentistry" and "telehealth dentistry"

to complement the content of the interviews with relevant sources on teledentistry practices and related Medicaid and state policy. The document library includes published literature, grey literature and press, and related state documents and legislation. It was compiled between October 2020 and August 2021. Dedoose software¹¹ was used to qualitatively analyze the document library and interview notes and transcripts. Documents were uploaded to Dedoose and tagged with “descriptors” to categorize the data by stakeholder (ie, dental association, government), site (ie, state), data type (ie, literature, interview), and focal area (ie, implementation).

FINDINGS

States Overview

Using the criteria laid out in Appendix A, we chose 4 states—California, Maine, Pennsylvania, and Wisconsin—to examine teledentistry and the impacts of the COVID-19 pandemic. Spanning different regions of the US and different levels of implementation of teledentistry and other dental policies, these states provide an overview of teledentistry trends in the US following the onset of COVID-19. For each state, we sought to interview a diverse set of stakeholders from various organizations, ranging from state to national organizations, such as state dental associations and government agencies, national dental insurance organizations, and dental clinicians (Table 2). As these interviews were taking place in the middle of the COVID-19 pandemic, we were not able to connect with everyone we hoped to interview. We report what we could ascertain from the individuals who agreed to participate. All quotes in the report, including in text drop-in quotes, are from relevant stakeholders interviewed for the study.

TABLE 2. Stakeholder Interviewees

Stakeholder Source	CA	ME	PA	WI	National	Total
Dental Association	3	0	0	0	1	4
Educator	1	0	2	0	0	3
Government/Entity	2	1	2	2	0	8
Insurance Company	0	0	1	0	1	1
Public/Nonprofit	2	2	1	0	0	5
Total	8	3	6	2	2	21

Trends

Across the 4 case-study states, we found similar trends in the use of teledentistry and its challenges, both in immediate response to COVID-19 and expectations in the long term. Stakeholders all shared the view that the COVID-19 pandemic pushed the adoption of teledentistry faster than it would have been adopted otherwise, regardless of status of teledentistry in the state. With the shutdown of dental offices at the start of COVID-19, teledentistry was critical to reaching and treating patients while also providing a way

for dental offices and clinics to remain open in some capacity rather than suffer larger financial losses. These responses were also similar as states across the country, including the 4 states in our study, implemented emergency regulations to respond to COVID-19. These regulations allowed for the use of codes, such as D9995 and D9996 for synchronous and asynchronous telehealth service, and allowed for more liberal use of teledentistry, such as the inclusion of audio visits. In addition, states used teledentistry to guide parents in the administration and application of fluoride varnish over video for their children, triage patients, and control clinic capacity for emergency care. These similarities in the uses of teledentistry are likely due to cross-state communication among dental practitioners, state dental organizations, and oral health coalitions.

Stakeholders also shared similar challenges in using teledentistry, many citing workforce receptivity and broadband issues as some of the biggest barriers to widespread adoption. In particular, many interviewees perceived current private-practice dentists, who are predominantly from an older age cohort, as reluctant to take up teledentistry, either because these dentists believed it was a lower standard of care or because the technology was too costly and complex to set up. From hygienists, dentists, providers at free and charitable clinics, and oral health coalitions, *“some people would really like to see it develop more as an opportunity... others are a little bit more hesitant because it is a new thing.”* Part of this apprehension is attributed to the misinformation surrounding what teledentistry is, such as imagining it as *“some [patient] with a pair of pliers in their hands like, ‘Okay, I’m going to pull my own tooth, just tell me what to do.’”* There is also a clear age divide when it comes to telehealth according to one Medicaid official who said,

“...the provider community, especially the Medicaid provider community, is an aging community. So I think you would run into the same sort of ‘I’ve done it the same way for however many years’ concerns there... the up and coming providers in the dental world are really excited about telehealth. They’re probably the group that are starting the pilots, and really anxiously awaiting what the board is going to do with the legislative documents or the legislation to expand the scope.”

Dentists in FQHCs or other public settings were much more willing to utilize teledentistry expansively, as they had an existing telehealth system to tap into or had already been using telehealth in some capacity, such as through the VDH model, prior to COVID-19. Broadband and technological barriers were seen in rural areas and for those serving low-income populations. Although medical offices in FQHCs could set up a laptop in front of patients on site, doing the same on the dental side was much more difficult. They found that *“if [they’re] going to be able to do anything, it’s just really going to be over the phone at this point... [but] it can be challenging as some patients don’t always have their phone on because something with their minutes or accepting calls...”* With these technological challenges, several interviewees commented that allowing for certain services to be provided via telephone calls and video calls is critical to administering care via telehealth for hard-to-reach populations.

Polling of dentists, primarily in private practice,¹⁷ shows that despite earlier uptake of teledentistry during the pandemic, use has begun to drop off almost completely compared to health centers, which *“are in organizations that have medical care and are more likely to be using a telehealth infrastructure to piggyback*

off of.” However, those in the teledentistry field expect this to be temporary. Although dentists *“were just using a Zoom call and since their practices have opened up... [and] they’re really trying to make the practice work the way it used to,”* clinic rooms can’t be turned over as quickly nor can dentists switch between patients as easily, and these extra safety measures aren’t going away any time soon. With already existing and growing interest in telehealth, teledental stakeholders expect that private practice dentists will explore using teledentistry more in the future.

California

When it comes to teledentistry, *“California leads the way in many places, and this is one of those cases and many states have followed.”* The VDH model, a community-based oral health delivery system that uses telehealth technology to connect allied dental professionals in the community with dentists at dental offices and clinics,⁵ was spearheaded in California by Dr. Paul Glassman at the University of the Pacific, Arthur A. Dugoni School of Dentistry. VDH bridged the distance between a local community provider (ie, allied dental professionals) and a dentist and demonstrated how registered dental hygienists in alternative practice (RDHAP), dental hygienists in public health programs (RDH), and registered dental assistants (RDA) were capable of providing oral health education, case management, preventive procedures, and more.¹⁸ From its implementation in 2010 to 2014, the VDH model was on a demonstration basis as a pilot program with a limited number of programs operating, according to California’s state oral health director. The passage of AB 1174 in 2014 set up the VDH model and expanded teledentistry to allow *“synchronous or asynchronous [services] and set up a structure by which a dental team could communicate, share records, [and a] dentist could render a diagnosis and treatment plan.”* Furthermore, the bill required that Medi-Cal (California’s Medicaid Program) pay for telehealth visits and *“mandated that Medi-Cal could implement [and reimburse for] teledentistry in their programs.”* Through the VDH model and AB 1174, there were additional supports for allied dental professionals to advance their careers with additional education and for new VDH sites to be established throughout California, including outlying areas with few dentists, such as in Northern California.

COVID-19 Response

When dental offices were closed for 3 months in California, the big question was *“how do we function in the New World?”* In April 2020, emergency regulations were developed in California, *“which were fairly liberal in terms of what could be done with telehealth in general and teledentistry specifically.”* All dentists could now use store-and-forward, which was largely restricted to VDHs prior to the pandemic. Furthermore, state emergency regulations removed in-person requirements for establishing new patients in a dental practice and removed restrictions on where patients could be during a telehealth visit. Audio visits were also included in the new regulations, which were a contentious point prior to the pandemic. Their inclusion as a telehealth option to maintain access to care was critical for patients with poor broadband and internet services, despite these visits having low reimbursement rates. Live video visits were reimbursed for 24 cents per minute, up

to 90 minutes, to cover transmission costs on top of reimbursement for the care provided during the visit. The state office of oral health created these policies, allowing for expanded services because *“we didn’t want to send people to emergency rooms, didn’t want them to go and contract COVID, worsening the situation.”*

Despite the liberal existing teledentistry regulations and the emergency regulations, California dentists were still largely unfamiliar with teledentistry, which was a barrier to its widespread utilization. A dentist in California explained:

“... it’s not what dentists know how to do. They know the surgical procedures they have been trained to do. This [teledentistry] is a different world. Even in its most simple form to follow up after an operation, they have to think about how to schedule that and anything beyond that becomes more complicated. Bring care to people where they are, that’s even more complicated.”

Furthermore, worries over the economics of teledentistry and financial losses were common. Although the Medi-Cal dental program has fee-for-service payment in place for permitted teledentistry services, some restrictions remained, preventing complete payment parity. Other facilities like FQHCs, which are paid via prospective payment (a per visit fee), experienced no difference in payment between services delivered in person or via telehealth. Financial challenges; the administrative burden of monitoring the regulations, services, and reimbursement; and differences between commercial and public plans all added up to many new factors involved that a dentist needed to be aware of to integrate teledentistry, and *“most providers are even clueless about [that]... you need to be tuned into this to be aware of everything...”* according to a dentist in California. To some, the financial and technological challenges (eg, paying for a secure software, coordinating video conferencing) may outweigh the benefits to implementing teledentistry in practice.

However, despite general reluctance, the COVID-19 pandemic required dentists to do a lot of work in a short amount of time to adopt teledentistry. Prior to the pandemic,

“Dental care systems were serving a minority of the population, and aren’t feeling busy enough... Most dentists wish they were busier and getting more patients... COVID made that situation much more acute.”

With the pressure of COVID-19, dentists needed to find solutions to keep their practices running within the limitations of the pandemic. Adapting quickly was critical and throughout California multiple clinics and dentists we spoke to told us about the unique ways they incorporated teledentistry to maintain services during COVID-19.

Innovative Programs

Schools being virtual for much of the 2020-2021 school year limited children’s access to healthy, free lunches and school dental visits. FQHCs, like the Petaluma Health Center and the Ravenswood Family Health Center, focused on providing preventive care for children. This meant finding ways to administer kindergarten oral

health screenings and fluoride varnish to children and working with schools to set up dental screenings during lunch pickups, since many schools were offering drive-up free lunches for students.

Focused on 0 to 5-year-olds, Petaluma Health Center focused on how the 6 steps to an infant care visit could be provided through a teledental visit, including fluoride varnish sent to the house along with a self-care whole package, and goal setting, motivational interviewing, and teaching how to brush teeth and apply fluoride were all done over telehealth. When describing this process, the chief dental officer explained:

“We talk to each other, do live video exam, patients send me photos, etc. We do the treatment planning and look together at everything. I prescribe, help guide the fluoride varnish, etc... So the goal is to have them not come in and if they do, how can they do it efficiently. It’s expensive to come in the office so using the dental chair for surgical procedures is ideal rather than having it for an infant oral exams and forcing patients to overcome the barriers to get to the office just for toothbrushing and prophys.”

To make these visits even easier, Petaluma used their staff to provide demonstrations, “creating materials on how to prepare for the visit, like being in a part of the house with good WiFi, [how to] prop the phone at eye level and make sure you’re sitting, etc.” They also created a video series to teach patients and parents how to take photos that are good enough to make a diagnosis from so that good preventive care can be provided without requiring an in-person visit.

The Ravenswood Family Health Center dental team also had to innovate to care for their patients. As telemedicine guidance was evolving by the hour, and with many on the dental team only knowing how to do asynchronous dentistry, “they had to think on the fly.” When a patient called about bleeding following an extraction, a clinic dentist said:

“I asked her if she had Facetime, can I see it, and I saw it was okay just saliva mixed with blood and told her to put [on] an ice pack and call if anything changed. That experience, and all our experiences, we were able to pivot to synchronous [tele]health.”

Triaging, prescription refills, figuring out who needed to come into the office, preventive dental visits with well-child visits in the medical clinic, and fluoride varnish with the parents, were all done via teledentistry. Particularly innovative was how the clinic worked to reach out to the 800 kids the clinic was seeing pre-pandemic via VDH through the schools. As schools were trying to figure out how to send materials home to the students, Ravenswood coordinated the additional toothbrushes to be sent along with the school’s materials, followed by a call with the parents to check in the following week. Parents discussed how “the kids snacked all the time and [were] running around” and Ravenswood clinicians “knew that they needed caries assessment and goal-setting – not just what they’re eating at school but everything else.” So, they began sending fluoride varnish home to families, and coordinating instructions over the phone.

Future Expectations

The California State Oral Health Office is exploring ways to utilize teledentistry to promote prevention in school-linked programs to reduce tooth decay, one of their priority goals. According to one key informant, *“young children enrolled in Medi-Cal who are at high risk are eligible to receive 4 visits per year, but for many, it is difficult to show up four times a year for a dental appointment... [and] to a large extent oral health outcomes depend not on what happens in the dental office but what happens at home.”* So, rather than aim for 4 in-person visits, advocates recommend that some of those visits occur via teledentistry and fluoride varnish can be sent home for its application by parents or guardians, and even have an adult brush their teeth under supervision—*“and that should be equivalent to a dental office visit.”*

Overall, California’s existing parameters for the VDH model and teledentistry meant that an infrastructure was in place for patients to receive remote examination, either synchronously or asynchronously, though one Medi-Cal employee noted that most providers used store-and-forward. With Medi-Cal paying for visits, the processes and codes already available included *“the examination and radiograph codes, like periodical exams, comprehensive exams for new patients... plus the 2 teledentistry codes for synchronous and asynchronous.”* Many of these were not used much prior to COVID-19 outside of the VDH model, and it remains to be seen how much the adoption will stick over time.

Maine

As a mostly rural state, Maine has used telehealth in the medical field since mid-2002.⁶ Since then, telehealth has been further developed, with the Maine Department of Health and Human Services approving rules for telehealth and telemonitoring in 2016 to simplify provider reimbursement.^{7,8} In 2019, LD 1236, titled “An Act Regarding Telehealth” was passed, requiring private health insurance companies to cover telehealth services according to the same rules regulating MaineCare’s telehealth coverage.⁸ However, as one MaineCare employee explained that *“Maine uses telehealth as a treatment vehicle... another modality of delivering services, so we don’t really use terms like teledentistry or telepsych, or teledermatology,”* so none of the pre-existing regulations allowed for the use of telehealth in dentistry.

COVID-19 Response

With little infrastructure in place to serve patients during the shutdown in March 2020 at the onset of the COVID-19 pandemic, dentists and complete dental teams were hit hard. A MaineCare employee detailed the scope of COVID-19’s impact on dental clinicians:

“Whether it’s the CDC protocols, now that they can see less clients in a day, more PPE, our hygienists often, or historically, have gone into schools a lot to deliver services. And then our school system has now completely been turned upside down... So [for] the hygienists, it’s been a completely different year.”

Consequently, many dentists were left wondering what they would do in the meantime and whether telehealth was a feasible option for them to provide any care to their patients. In addition, as their economic losses were going up, *“they [were] just in a tough spot in general”* and were looking for ways to mitigate some of the damages. At the start of COVID-19, without any idea of how long they would be shutdown, there wasn't *“a big enough advantage right now for them to dive in [to telehealth] until more services become available in that space.”*

Though temporary regulations allowing for expanded telehealth use were implemented when the public health emergency (PHE) was declared, dentistry remained stalled. This stall was *“less about the overall telehealth statute and more about the dental board of practitioners’ regulations.”* The Maine Board of Dental Practice (the Board) expressed its position in a message released on March 24, 2020 to dental professionals on the use of “teledentistry” stating that *“the current Dental Practice Act does not authorize licensees to engage in teledentistry.”*

As urgent dental needs became more pressing and offices remained closed, the Board issued further clarification a few weeks later that there was some flexibility within the limits of the Dental Practice Act. While the Board stated providers could not deliver dental services via telehealth, they could do normal screenings and triage remotely to continue meeting their patients’ needs. So, MaineCare opened codes D0190 and D0191 for those services, in addition to the global teledentistry codes D9995 and D9996. These D9 series codes were added to allow payment to dental providers for screening services and triage performed over telehealth, either synchronously (D9995) or asynchronously (D9996). In practice, these D9 codes should only be used when paired with the D0190 and D0191 codes, or other appropriate codes, to note the modality of the service.

Despite the addition of the teledentistry codes, MaineCare did not observe the same *“ramp up”* for telehealth services among dentists that had been observed in other medical arenas for various services during COVID-19, likely because these codes still were not extensive enough to incentivize dentists to use them. This point was further highlighted by the MaineCare representative we interviewed:

“I’m assuming that [limited use of telehealth] is because of the limited introduction of the 2 triage codes, because you can’t, as a provider, just turn telehealth on, right? You need live, real-time, interactive capability. You need members who are susceptible, or into the idea of telehealth, and you need incentive to move into that space.”

Furthermore, there was very little infrastructure in place for dentists to make the switch to telehealth services compared to, for example, the behavioral health services. Without an approved and accepted teledentistry definition, Maine dentists struggled to figure out how to continue their practice, especially as they had always used what could be considered “telehealth” prior to the pandemic. A dentist told us:

“... there were a lot of dentists asking questions because they were like, ‘we’ve always managed patients on the phone, via email, in ways that have been allowed in the past.’ And the concern was the ADA and other dental organizations were pushing teledentistry and the dentists in Maine were saying ‘I can’t bill any of this because this doesn’t technically exist. Am I going to get in trouble for doing these things? Because this isn’t necessarily within my scope at this point.’”

For the first year of the COVID-19 pandemic, those were *“the edges [they were] living on in the Medicaid program”* in Maine. Dentists worked within the limitations the state dental board defined, which did not explicitly allow for teledentistry but permitted remote work for dentists and phone triaging and other similar methods for dental emergencies – while the Board and other dentists *“were advocating already to use some vehicle to manipulate or change that overarching statute.”*

Innovative Programs

In 2019, prior to COVID-19, the Partnership for Children’s Oral Health in Maine, now known as the Children’s Oral Health Network (COHN) of Maine, and the Waterville Community Dental Center, a small nonprofit public health dental center in Central Maine, partnered to implement a pilot program to trial the VDH model (see California case study above), *“recognizing of course the rural nature of Maine, the workforce shortages [they] have, [and] it seemed like it could be a really good fit.”* COHN identified places with Head Start, a federal program that promotes school readiness for children from low-income families,⁹ as ideal pilot locations. The VDH model could *“solve a lot of the problems that the Head Start folks were raising.”* In particular, the federal requirement for Head Start programs to connect all children to a dental home within 90 days of their enrollment was a significant challenge, according to COHN’s statewide needs assessment for oral health at Head Start before COVID-19.¹⁹ According to a COHN representative, Head Start programs *“were just hitting a brick wall trying to get dental homes established because there were just no openings anywhere”* because few dentists accepted MaineCare patients. Getting children into a dental home also meant ensuring that they get an exam, preventive services, and any needed treatment. Even in cases where Head Start programs had strong relationships with clinics willing to take new MaineCare patients, children were sometimes dropped from dental offices as their parents struggled to get them to their appointments.

When COHN proposed the VDH pilot program in a preliminary meeting with Head Start in Maine, interest was even greater than they had anticipated. A COHN representative said, *“before we even finished the presentation, we had folks who were there, health managers raising their hands. Somebody raised their hand and said, ‘so we’d like to be a pilot site,’ before we even mentioned the possibility of a pilot.”* Following this meeting, COHN chose one Head Start to partner with the Waterville Community Dental Center and implemented a twofold design for the pilot program in anticipation of needing to prove that the VDH model offered care of equivalent quality. The first part of the pilot would involve conducting screenings in the “traditional” way, with a dentist going onsite, and in the VDH model method, with the hygienist screening onsite and the dentist reviewing remotely. In this way, they could assess whether the VDH model had equivalent results from those exams and if the treatment plans were similar in both approaches.

The start of the pilot project, planned for March 2020, was pushed back as the pandemic shut everything down, including Head Start. However, by the summer of 2020, *“Head Start folks started coming back [to COHN] ... and saying, okay we’re reopening and our requirements are waived for this year... but we’re really concerned about our kids and we want to keep moving forward.”* With the demand for care, COHN worked with 2 sets of partners on *“a take 2 of the field test.”* Since COVID-19 had taken away much of the concern about teledentistry equivalency, COHN dropped the twofold approach and *“jumped into testing a full-fledged [VDH] design,”* but still faced the challenge of working within existing state regulations on teledentistry.

VDH Pilot During COVID-19

Working within the boundaries set by the Board, Maine’s VDH pilot was restricted to the general guidelines for managing patients and triaging through the phone and computer. COHN was careful to not refer to it as “teledentistry.” In approaching this scenario, the COHN leader of the pilot said:

“So we were dealing with, okay how do we do the VDH but not do teledentistry, but still get those same kind of records that the dentists can evaluate. And then we had to figure out what that would look like in practice and then what the actual billing and coding would be right now that was allowable and was actually still describing what we were doing well enough that we could move forward with these pilots.”

The set of codes opened by MaineCare did help push the VDH pilot along as it allowed for screenings and evaluations, but COHN and collaborators still felt constrained by both the licensing and billing regulations. Dental hygienists could conduct a screening and assessment, but *“it wasn’t clear if the dentist could bill for the exam with the teledentistry code because it wasn’t triaged exactly...”* Although the VDH model incorporates the use of telehealth, these exams are largely done in person and were an important part of the VDH pilot’s design. The COVID-19 pandemic limited onsite visits at the Head Start site partnering with the Waterville Community Dental Center, but they quickly found a way to address this challenge with an independent practice dental hygienist (IPDH) and her mobile unit to do some form of the traditional exam. Because of Maine’s expanded scope for dental hygienists, the VDH pilot was able to hire a IPDH and use her mobile unit to do visits for the children in the Head Start program partnering with the Waterville Community Dental Center away from the Head Start grounds where they were not permitted to be onsite. Luckily, at the VDH pilot’s second smaller site, the clinic and Head Start had a long-established relationship and were able to go onsite.

With these limitations, IPDHs used screening or assessment codes for what they performed onsite, and in some cases applied prophylaxis fluoride varnish or silver diamine fluoride. The dentist would then do the review, without billing for it, for that exam. The IPDH could also *“do some of those simple restorative procedures”* which were already in their scope of practice prior to the VDH pilot project, and grant funds were used to reimburse IPDHs. Although children in their field-test year are not getting an official exam per ordinary

Head Start requirements, pilot project leaders are confident moving forward that they would be able to implement the VDH model in full once the teledentistry rules are in place.

Despite challenges coordinating with dental hygienists and efficiently maintaining records, community response to the VDH pilot program has been largely positive. One pilot program leader said:

"... overall, especially in cases where we've been able to identify children who definitely need to be seen in office or definitely need to be seen in an operating room level of care in order to have everything completed, those patients have been identified. And even if we weren't able to complete a full remote exam on every child, we've identified those kids, brought them into the center and have been able to come up with plans to triage [and build a] treatment plan, whatever needs to be done..."

The VDH pilot program is working to get all the children screened and taken care of to the point where parents *"don't have to do as much, but just to make sure their kids are going to school and this kind of stuff is happening regularly."* Although it's been hard to judge in the first 6 months of the VDH pilot in the midst of COVID-19, *"everyone is just doing the best they can and the parents are super grateful for that... so I think we're all looking to improve it, but we also know that people always have been really appreciative of care that's coming closer to them and feeling like people care enough to come out to their communities."*

New Regulations

Although there was no working definition for teledentistry in Maine at the start of COVID-19, it wasn't for lack of effort from the Board and the Maine Dental Association. A bill was proposed prior to COVID-19 that would have authorized teledentistry; however, this legislation died as the legislature shut down for COVID-19 and never reconvened again during that session.

In January 2021, HP 42, titled "An Act to Amend the Dental Practice Act to Define 'Supervision' and Authorize Teledentistry" was introduced, with the full support of the Maine Dental Association and the Board. In summary, this bill amended the Dental Practice Act to authorize the use of teledentistry, as well as some other unrelated changes to supervision and scope of practice revisions.¹⁰ Implementation of teledentistry will follow the Board adopting rules to ensure safe practices for teledentistry. The passage of HP 42 in June 2021 (Table 3) may further teledentistry expansion in the coming years, though uptake may remain slow. Pilot project leaders are hopeful going into 2022:

"Now the board is going into rulemaking... we're hoping by the time we come through the end of it, that they probably won't be billing for the screening or assessment anymore; they will just bill for the exam with the teledentistry code and then also any preventive services provided on site like the prophy if they do one and the fluoride varnish, SDF, etc."

However, with an “older practicing provider community,” many dentists may be resistant to change, reluctant to learn new technologies, and incorporate them into practice. Other barriers to long-term implementation of teledentistry include the broadband limitations across the rural parts of Maine, preventing some patients’ access to telehealth services.

TABLE 3. Maine HB 42 Breakdown

Category	Description
Bill Status	Adopted, June 2021
Allowed Teledentistry Types	Synchronous and asynchronous encounters
Modalities Included	Real-time visual, audio, or other electronic media
Services Allowed	Education, assessment, examination, diagnosis, treatment planning, consultation, and directing the delivery of treatment
Rulemaking Status	In progress, by the Maine Board of Dental Practice

Source: 2021 Maine HB 42.²⁰

Future Expectations

Despite the new teledentistry legislation, long-term uptake is unclear. For the VDH pilot program, leaders have promising plans to expand the program across Maine, with different grants from several local Maine-based foundations as well as federal funding to support the expansion. The leader of the pilot program from COHN described their vision for the pilot’s next steps:

“I think my dream would be that we get to the point in the next couple of years where it’s really, we’ve got all of the Head Starts covered, if they choose to be... we’d like to offer it to all that want it and need it... but then really I think our dream is to not have it just be Head Starts, but figure out how do we grow it on both ends so that we could be doing this in primary care settings with embedded hygienists and kids could be having a virtual dental home from birth. And then it could follow them into Head Start if they’re in Head Start or in whatever preschool, if we go beyond Head Starts... and just follow them right through... So we’re doing a lot of work on our school-based oral health services as well as our sort of early primary care.”

Immediate next steps include 2 efforts to have more of a community presence and understand what parents “most want and most need.” To build a greater community presence, the VDH pilot program hopes to build a dental assistant-community health work role “to accompany the hygienist and to be part of the bridge builder and relationship builder with the Head Start staff and families.” One Head Start partner received a grant to evaluate parent engagement in the VDH model. Collecting input and feedback from parents about what works and what doesn’t will help inform the larger VDH pilot. Once things are running well with child- and school-based models, COHN has discussed plans to extend to other need areas such as “elder care facilities or homes with people with special needs and things like that where it may also be challenging to get people to the dentist...”

Wisconsin

While medicine and behavioral health were using telehealth in Wisconsin for some time, it wasn't until 2019 that Wisconsin passed a telehealth bill, Act 56, that would allow for teledentistry. The act stipulates that the “[Wisconsin Department of Health Services] DHS shall provide reimbursement under the medical assistance program for any benefit that is a covered benefit, that is delivered by a certified provider for medical assistance through interactive telehealth” and teledentistry was included under that umbrella for covered dental benefits. The specific services to be allowed under teledentistry would be determined by the Wisconsin DHS. The passage of the bill was driven by the need for greater access to healthcare in Wisconsin, according to a Wisconsin DHS employee who said, “I know I keep bringing it up that in Wisconsin Medicaid we are constantly striving to improve access to our members. It has been a serious problem in dentistry and that is what I’m trying to change.” Plans to design the regulations for teledentistry were set to begin in early 2020 but were quickly paused as COVID-19 began and emergency regulations were needed.

TABLE 4. Wisconsin Act 56 Breakdown

Category	Description
Bill Status	Adopted, November 2019
Allowed Teledentistry Types	Synchronous and asynchronous
Modalities Included	Audio, video, or data communications
Services Allowed	Health care delivery, diagnosis, consultation, treatment, or transfer of medically relevant data ^a
Rulemaking Status	In progress, by Wisconsin Department of Health Services

^a The Wisconsin DHS has allowed the use of telehealth in dentistry for “consultation and care for teeth and mouth conditions.”²¹
Source: 2019 Wisconsin Act 56.²²

COVID-19 Response

Although Wisconsin’s existing telehealth mandate through Act 56 was wide-ranging, temporary policies were implemented to include guidelines that were “as flexible as possible” while also “[responding] as quickly as possible for our members.” In March 2020, with the onset of COVID-19, the Wisconsin DHS moved to increase the use of telehealth by allowing Medicaid members to participate in telehealth visits at any location and allowing for visits both over the telephone and with face-to-face video technology.¹¹ A Wisconsin Medicaid employee involved in creating these guidelines explained, “Basically any service could be provided via telehealth if it was functionally equivalent to a face-to-face visit. Providers just needed to let us know by using a modifier and a claim form.”

However, while Medicaid and private payers chose to include payment parity for services rendered via telehealth, getting dentists to use the codes indicating telehealth use was a challenge. For medical services, the temporary telehealth policies used the CPT modifier 95, which indicates synchronous telehealth services; however, not all dental claim forms allow a modifier to be used, making what’s being done via teledentistry

“a little bit murkier.” Like other states, codes D9995 and D9996 (synchronous and asynchronous, respectively) could be used to indicate teledental services like oral examinations. Other codes, including D0140, D0170, D0171, D0190, D0999, were highlighted in the Wisconsin Dental Association’s “Teledentistry Tips” as codes being reimbursed by third-party payers. Interviewees also highlighted additional coding challenges for radiographic and diagnostic imaging as the *“radiographic codes were bundled image capture with interpretation.”* Fortunately, the ADA created new codes for image capture only, meaning that *“if the member is remote, a different provider, not associated with the dentist, interpreting the radiographs could take those and bill [Medicaid] for them.”* These additional codes give Wisconsin Medicaid a *“a better picture of who’s doing what”* via teledentistry, but there is still uncertainty about whether dentists and other oral health providers are able to do fluoride varnish via teledentistry, a question that has been posed on the Medicaid dentists’ listserv, as told by a Medicaid representative.

It is unclear how responsive practitioners are to these codes. The Wisconsin Dental Association published “Teledentistry Tips” detailing that *“examinations performed remotely such as D0140, D0170, D0171, D0190, D0999 and others are being reimbursed by many third-party payers during the coronavirus outbreak,”* with further guidance to reference the ADA’s Coding and Billing Guidance.¹³ The author of the piece also included his own insight, saying, *“Because teledentistry has not been adopted in Wisconsin, I feel the safer and cleaner play is to avoid using codes D9995 and D9996 altogether. These teledentistry codes are zero-fee codes. Omitting these codes should not affect the reimbursement for other services.”* This seems to be in opposition to the guidance from the Wisconsin Medicaid office, and their emergency teledentistry guidelines, and is likely a contributing factor to the murkiness of teledentistry use in Wisconsin.

Innovative Programs

The Marshfield Clinic Health System, which has been serving the state of Wisconsin since 1916,¹⁴ has implemented telehealth across its clinics in some form or other over the past 20 years. When the COVID-19 pandemic hit, they were able to quickly mobilize their system to stay in contact with their patients. Chris Meyer, the Director of Virtual Care and Telehealth at Marshfield, said in a news interview:

“...we launched virtual visits with a program called Telehealth at Home using a product called Webex. Webex is a very popular videoconferencing platform...we chose to use it because...we could launch it quickly. We launched that platform in about a week. At its peak, we were able to replace about 30 percent of our office visits with telehealth visits.”

Harnessing tech programs that support telehealth helped propel Marshfield Clinic and others to expand access to oral healthcare during COVID-19. Anthem Blue Cross Blue Shield in Wisconsin and nationwide announced a partnership with The TeleDentists, *“an in-network provider of virtual dental services from board-licensed dentists,”* in April 2020.¹⁵ At the time of Anthem’s press release, the insurance provider committed to providing *“dental care that is available 24/7, 365 days a year in the event of an emergency, with virtual exams*

covered at 100 percent with no deductibles, copays, paperwork or claims to file through June 30, 2020” as an alternative to emergency room or urgent care center visits.

Future Expectations

Despite the challenges of implementing teledentistry during the COVID-19 pandemic, teledentistry in Wisconsin, and more broadly telehealth, has been a success, especially as it opened up access to services that otherwise would have been shut down. With the legislation passed prior to COVID-19, teledentistry can continue to expand in the state, informed by the implementation of the emergency regulations. The regulations are tied to the timeline of the Executive Order and PHE declarations, and “*help those people who aren't able to travel to a dentist or get an appointment right away in the office itself due to whatever limitation.*” State officials are continuing to “*identify some things that absolutely should not be done via tele-health,*” like personal care, surgeries, etc., which “*seems like more common sense,*” are not currently written explicitly in the state’s temporary policies. However, achieving this specificity is important to the officials involved in formulating this permanent policy to ensure a functional equivalency standard for all services being provided via teledentistry. For state Medicaid policy, an employee involved in the regulation process shared some preliminary plans:

“... teledentistry isn't required for all members. It should be based on the member's individual circumstances and what the dentist feels appropriate to make sure that the service can be done at the same level of quality as if the member was in the office. I think we're starting out at that baseline, having those certain oral evaluations and open to request for expansion or putting limitations on those... I'd rather be specific in the teledentistry policy and let providers know what to expect and what parameters we have around this service rather than just letting it open right away...”

For example, audio-only visits would make teledentistry much more accessible, though certain parameters would need to be put in place on what services can be provided over audio, according to the Medicaid staff we interviewed. Beyond Medicaid and state regulations on teledentistry being constructed, sites like the Marshfield Clinic Health System have expanded their offerings to patients during COVID-19. Marshfield has offered telehealth to varying extents for the past 20 years, allowing patients to avoid traveling long distances to receive care. While telehealth was primarily used to accommodate those too far from the clinic, the pandemic has “*created an opportunity to offer telehealth on a much wider scale, without distance being a criterion for use.*”⁶ Marshfield Clinic is actively trying to improve the reach of the telehealth services by helping to fund broadband infrastructure. As quoted in *Hub City Times*, Chris Meyer explains the importance of expanding telehealth and supporting the local community:

“When we start talking about all the things that telehealth can do, local communities hear things like ‘We keep people in their homes longer. We make our towns more attractive to businesses because we have better access to healthcare.’ And of course, broadband brings a whole host of other benefits to communities.”

For each of the communities Marshfield Clinic works with, they also support broadband funding. Generally, according to Chris Meyer, Marshfield Clinic has *“provided \$15,000 in matching funds to their (broadband) grant application.”*

The COVID-19 pandemic has made telehealth’s usefulness in expanding options for patients and improving access very clear. Other future policies may include harnessing allied dental professionals, such as hygienists, into a teledentistry model like a VDH. Wisconsin already uses IPDHs in schools and other locations outside of dental offices. Some changes to teledentistry in Wisconsin can likely be anticipated as the permanent policies are formed and implemented, but across the board, from Medicaid to health systems like Marshfield Clinic, maintaining quality of care for telehealth appointments is key.

Pennsylvania

In Pennsylvania, there was no policy implementation for teledentistry prior to COVID-19, or in the words of one key informant, *“it’s not legal, but not illegal.”* This gray area allowed the Pennsylvania Coalition for Oral Health (PCOH) to pilot the VDH model initially created by Dr. Paul Glassman in California. PCOH obtained a grant in 2014 and later implemented a VDH pilot project following a statewide summit in 2016, alongside other models. With Pennsylvania’s public health dental hygiene practitioner (PHDHP), who can provide preventive and therapeutic procedures in limited public health settings without the supervision of a dentist, and expanded-function dental assistants, the state was well equipped to implement the VDH model. However, beyond the VDH model, there was little teledentistry in Pennsylvania. There have been telehealth bills in every Pennsylvania state session in the past few years, but *“the across the aisle argument over abortion consultation being able to be done over the phone”* has prevented any bill’s progress, according to a PCOH representative. As such, this was the state of teledentistry in Pennsylvania when the COVID-19 pandemic began in 2020.

COVID-19 Response

Many practices in Pennsylvania had to close completely when COVID-19 hit for 1 week, even for emergencies. The state implemented a strict requirement described by interviewee as *“you couldn’t do any in-office care for patients as dentists, unless you had a negative pressure isolation room, which really no dentist at the time did.”* Very quickly, dentists and policymakers in the Pennsylvania Department of Health Services *“knew this wasn’t going to last a few weeks; it was going to last a long time and access to care was going to be reduced, whether because of workforce, fear of the patients, or general stay at home orders.”* With clinics struggling to meet the needs of patients, many dental practices had to build a teledentistry system from scratch and encourage their colleagues *“to do this and do it immediately.”* While some dentists may have been resistant to telehealth, the emergence of COVID-19 created necessity and *“helped people see that it’s... perhaps better than they thought it was.”*

PCOH directed people to projects like the VDH pilot as examples of how teledentistry was “a great way to be connected with their patients and have preventive teledentistry appointments.” For a time, particularly from March 2020 to June 2020, telehealth was used frequently, usually with phones and Zoom to conduct visits. However, payment for these telehealth visits was limited and dependent on multiple factors, including the service provided, the site and their payment system, and the insurance provider, such as state Medicaid or a managed-care organization (MCO) providing Medicaid coverage. Early on, the teledentistry effort was uncertain. The PCOH representative we interviewed told us:

“We’ve talked about education, parents applying fluoride, but for right now all I’ve heard about is oral hygiene education and home care side and addressing the emergency concerns. And no official payment parity. Everyone is just making the rules up as we go, and there’s no system to make sure that’s happening. It’s insane, I hear different things every day. With so many different providers and insurance companies, and with 5 different regions each with 4-6 managed care organizations working in that region...”

The national codes were adopted in Pennsylvania, with reimbursement for codes D9995 and D9996. Limited reimbursement was allowed for live video telehealth services, with D9995 to be used only in conjunction with code D0140 (a limited problem-focused oral evaluation) for teledentistry visits with patients experiences emergencies related to pain, infection, trauma, and others. No additional payments were allocated for technology services. MCOs could make their own decisions, with some “not paying any telehealth, some paying everything telehealth, and some paying only a few things.” In May 2022, the Pennsylvania Department of Human Services announced they would begin paying for teledentistry and included procedures codes (D0140, D1206, and D1320) for counseling services.²³

Innovative Programs

One school of dental medicine in Pennsylvania, which has an onsite dental clinic, spoke of needing to quickly meet the needs of the public and provide students with clinical experience. They followed the same established guidelines to have everything off-site except for emergency care, and the telehealth platform worked in any patient who was seen on-site. An administrator further explained their telehealth system:

“We had about 4 staff members taking the initial calls and doing the questionnaires, then feeding them to 2 general dentists (or specialists that we just hired to feed into the program). From there, the dentists on the call would decide if they could be delayed with medication or other palliative measures or if they needed to come in to our COVID clinic, then they would come in for emergency with general dentists or surgery. Pain or swelling wasn’t even enough, even though usually we wouldn’t do that.”

Within this telehealth system, the dental school worked to be as considerate as possible to the community, the situation unfolding, and their own limitations to using telehealth. Though many of the dental school’s participating insurance plans would only provide reimbursements for video visits, they did not push the video components onto their patients, some of whom were already hesitant to use video even as the

platforms improved. During the summer months in 2020, the dental school charged \$25-\$50 for on-site visits, which were heavily regulated with a police officer at the door checking names on the day's list of scheduled patients. This regulation helped control what was previously a walk-in clinic, with patients now being vetted thoroughly and likely only coming in after several rounds of antibiotics for treatment. The dental school also posted on their website and used messaging, such as through their electronic medical record system, to communicate with patients.

A FQHC dental clinic in Philadelphia, *"shifted a little bit once we could start bringing more people into the office"*, using teledentistry as a way to triage patients before they arrived whereas prior to the pandemic, they *"used to see a certain number of walk-in emergencies every day."* Dentists at this clinic highlighted similar benefits to those at the dental school, with teledentistry being a useful way to control capacity in the clinic by requiring everyone who wanted an emergency appointment to be triaged over the phone or on video services, such as Doxy.me, which allows the provider to create a waiting room and share the account with other dentists. However, patients tended to prefer phone calls, and some clinic dentists shared this preference as patients sometimes *"have trouble with the technology... but then they're on the other line and you can see them, but you can't hear them, and they're getting really flustered and they're in pain and they're crying because now you can't help them."* Incorporating audio as an allowable option was critical to providing care, especially with underserved populations who may not have the internet bandwidth for a video call. With this system, *"it's really just a way to rule out who needs to be seen right now, or if somebody does need to be seen really soon, how can I help them manage their pain or their symptoms until we can get them an appointment in the office just to make sure everybody's cared for."* Furthermore, this system also accommodated the limited staff that the clinics could have on-site with room turnover and air exchange and equipment requirements.

The University of Pittsburgh Medical Center Health Plan, an MCO in Pennsylvania's Medicaid, developed a program for teledentistry to engage dental providers, allowing them to schedule appointments with the plan's members *"to do a virtual screening that would constitute an exam"* for which a code was available to bill for reimbursement. Members would take photographs and upload them to the dental office portal, where a registered dental hygienist would discuss prevention and education with the patient and a dentist would examine the photos for any visible issues. Though there were challenges without X-rays, this process did allow dentists to identify larger cavities and get patients seen on an emergency basis. The University of Pittsburgh Medical Center representative cited telehealth as *"a great way to get dentists and DHs working even though offices were closed."*

Similar to other states, patient response to telehealth was largely positive. According to 1 clinic director, they received very few patient complaints and were highlighted by their local news *"for getting accolades from the patients getting care during the pandemic."* Where private practices were closed, these public clinics were the only places where people could receive care. PCOH further highlighted the acceptance of the telehealth model in teledentistry due to COVID-19, making appointments even easier for patients and giving them more time during a telehealth appointment than what they would have in an office.

Among dentists, the response was predictably varied as *“different levels of providers are more or less accepting”* of telehealth. PCOH observed that *“the most resistance is with general dentists, and a lot of that was fueled by the ADA statement that said you shouldn’t do telehealth unless you can do it perfectly.”* This perspective from the ADA paired with the failure of many private practice dentists to see the long-term benefits of teledentistry has been a problem in sustainability, according to PCOH. Reception from public health models of practice is much more openminded, with the mindset of *“doing the best with what you’ve got”* and seeing the benefits of teledentistry to improving dental access, *“help enhance patient care, enhance patient oral health outcomes.”*

Future Expectations

For many dentists in Pennsylvania, finalized Medicaid policy on teledentistry is the next big step. For those involved in drafting and implementing that policy, it has been a delicate balance of *“pushing the teledentistry to its limits without compromising standard of care.”* There will likely not be any extra reimbursement structures for virtual visits on their own, but additional services that were not previously reimbursed via teledentistry, such as fluoride varnish, will be reimbursed. In this case, providers can choose to send out prepackaged varnish to patients or a medical office—the location for varnish application is kept intentionally vague so that it can be sent to a hospital, school, etc., and the dentist can do a virtual visit to show how to apply the varnish. Other services such as tobacco cessation via telehealth were in the works prior to COVID-19 but became even more important to include since COVID-19 is a respiratory illness, according to the team composing Pennsylvania’s Medicaid teledentistry policy. Beyond establishing teledentistry policies, there are some aims to improve how things are categorized, with better differentiation of services to help teledentistry function better within its limitations.

However, improvements in broadband in rural areas, access to technology in dental practices, and changing perceptions among dentists are critical to create an infrastructure that can sustain teledentistry. Schools like University of Pittsburgh are working to integrate their students into this teledentistry learning process:

“Our students especially may prefer the digital media and they will absolutely embrace telehealth in their practice settings, so we want to make sure they are prepared to do that, just as we’d teach them how to use a machine to make a crown or use EMR, we want them to be prepared to treat their patients and introduce themselves in practice to their patients through that platform.”

Incorporating teledentistry training into a dental school will help generate future dentists who understand the value of teledentistry, which is still lacking despite some improvements. Other stakeholders in Pennsylvania echoed this sentiment about advancing the dental workforce with teledentistry.

LIMITATIONS

As our research was conducted in the middle of the COVID-19 pandemic, there were some limitations. Interviews with key stakeholders were subject to recall bias. Also the information provided may have changed since the time of our interviews, given the ongoing nature of COVID-19 and the public health crisis.

CONCLUSIONS

Dentistry is an important part of our healthcare system and it has been severely compromised during the COVID-19 pandemic. Teledentistry provides a viable option for remote screening, consultation, treatment planning, and many more services in the field of dentistry. Rapidly developing information and communication technologies have increasingly been shown to improve cost-effectiveness, accuracy, and efficient remote assistance for clinicians. These developments also show how accepting patients and the dental workforce are towards the teledentistry tool, as it offers multiple benefits for patients and oral health practitioners.

Though the teledentistry system is still “clunky,” according to dentists, those in the public arena particularly see the massive potential of teledentistry, whether to use for triage to reduce COVID-19 risk, cut down on wait times, or use on an emergency basis in the long term. Initial consultations or assessments of pain before an emergency visit can easily be done via telehealth without burdening the patient with multiple in-person visits. This would especially benefit patients in rural areas, as highlighted by a interviewee at the Pennsylvania Office of Rural Health:

“...another benefit to the patient is they’re saving a trip, especially if they’ve maybe traveled to see a specialist, they could do that initial consultation via telehealth, so that there’s a game plan and when they go for that first appointment, there’s actually work that is done and they feel they’ve gotten something out of that trip. They made that trek for a reason.”

Not only would there be long-term benefits to maintaining teledentistry for the patient, but there are financial savings and cost benefits to dental practices as well that should not be overlooked.

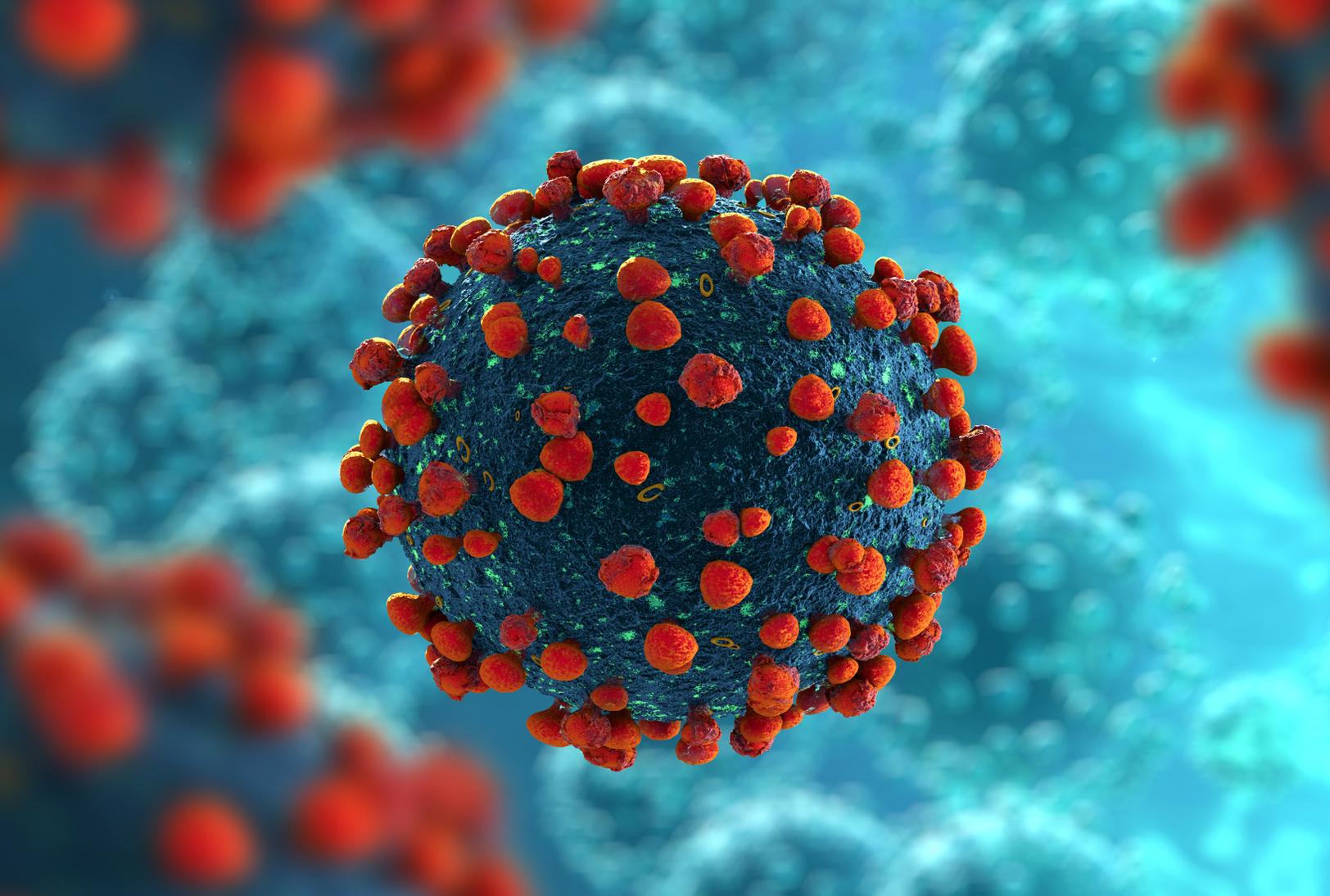
Combatting the existing hesitancy towards telehealth and incentivizing dentists to use teledentistry are important obstacles to overcome. While COVID-19 opened the door for widespread use, stakeholders are not certain it’s enough to ensure continued use of teledentistry. One state Medicaid official said, “how are we going to help them with rates, or setting up the live interactive audio, or what can we do to help them move forward in the telehealth world?” Furthermore, one dentist said, “even if dentists are interested in participating, the idea of taking on another 150 kids or so, and finding the staff to make sure that is getting reviewed in a timely fashion... I think that’s going to be the bigger challenge.” Finding ways to address financial concerns, such as requiring payment parity in telehealth legislation for in-person and telehealth visits, is one way to incentivize dentists to integrate teledentistry. In addition, highlighting how teledentistry could help prioritize chair time to surgical interventions, for which dentists receive higher reimbursement, would allow for “more

predictability of [their] schedule and [their] resources." This sentiment was shared by multiple stakeholders and demonstrates how teledentistry could expand dental practice capacity and further alleviate financial and staffing concerns.

To reach its full potential, building the technological infrastructure for teledentistry is an important barrier to overcome to improve access to care, especially for rural and low-income communities. Though use of Zoom, Skype, and other secure apps exists, several stakeholders acknowledged that including audio-only as an option in telehealth policies is important to bridge the gap to patients who don't have access to video services, either because of poor technology or poor broadband service, or who are simply not comfortable using video. Furthermore, training dentists to use this technology and be comfortable with it is essential to maintaining long-term use of teledentistry. It will also require greater integration of telehealth with electronic dental records, for which there are few options currently that have that capability. Increasing access to better broadband and internet services, improving telehealth software for dentistry, and training dentists on how to use it are all viewed as critical to teledentistry's long-term success.

While *"so much of dentistry fears medicine... there are so many good things in medicine that will actually push [dentists] to move forward a lot faster, one being teledentistry."* Other developments that address the coding system for reimbursement, categorize services more like medicine, and tap into the skills of the dental workforce could strengthen not just teledentistry, but the entire oral health field. Several stakeholders from California and Pennsylvania discussed improving medical codes for dental procedures to include procedures that have not been billable in the past, such as consultations, which would expand the services available via telehealth. Better billing codes would give dentists more flexibility, such as leaving *"Friday mornings open to address patient concerns through consulting."* An interviewee from California said that creating these types of codes would remove the questions of *"are you doing something that's going to be valuable to the patient, your relationship to the patient, or to the practice as a bottom line."* Other stakeholders share this perspective, with one Pennsylvania interviewee recognizing that the lack of structure in dentistry's coding system makes triaging difficult, but by categorizing things more like medicine *"will help us move faster."* Alongside improving billing and coding, harnessing the skills of the entire dental team will help improve access to dental care and make teledentistry more manageable. Dental hygienists have already proven to be incredibly useful and capable in the VDH model in California. Dentists in Maine see the potential of dental therapists to aid their VDH pilot project, with the idea of using them to help move through case files more quickly to avoid a bottleneck at the dentists' level.

As the COVID-19 pandemic continues, dentistry must begin to push the boundaries of the status quo in order to meet the needs of their patients. Future research should examine other states' use of teledentistry during COVID-19, as well as teledentistry technology and its impact on oral and overall health to better understand what next steps should be to improve and expand this useful tool. With well-known workforce shortages and limited access to oral health care, it is important that teledentistry is recognized as a way to improve oral health and that, according to one stakeholder, *"there is a sense of returning to normal, we need a new normal that's even better."*



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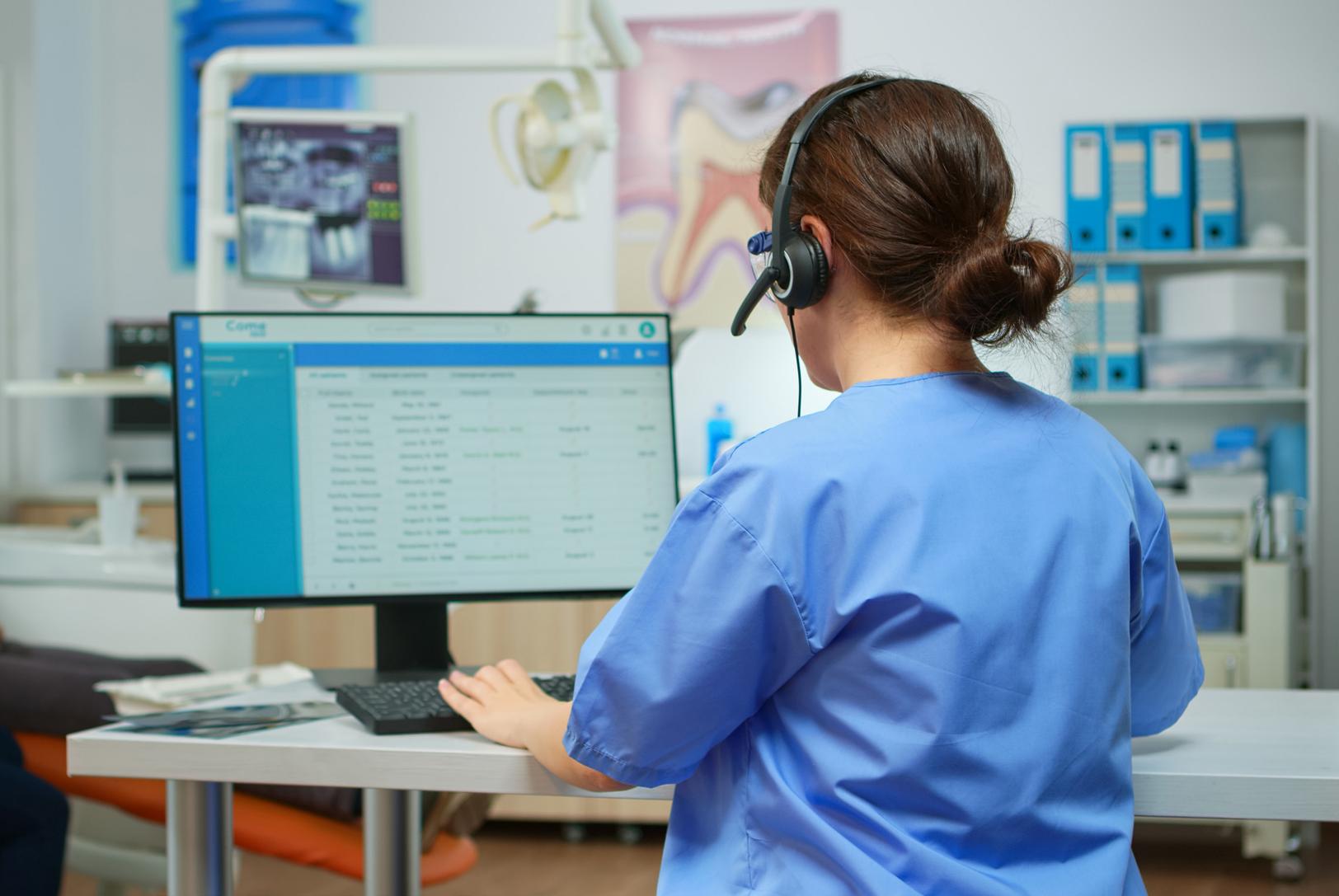


APPENDIX A

TABLE A-1. Parameter Scoring and Definitions

Parameter	Key	Key Definition	Scoring
Teledentistry Status	None	No regulations specifically for teledentistry exist in the state ^a	0
	Moderate	Teledentistry has been mentioned in other bills or possibly defined, but no real regulations for practicing with teledentistry exist	1
	Extensive	Regulations for practicing with teledentistry exist in the state in the form of a Teledentistry Act or other documentation	2
Expanded Function in Teledentistry	No	Expanded function for DHs/DAs/DTs not allowed in telehealth environment	0
	Yes	DHs/DAs/DTs can exercise expanded function in the telehealth environment	1
Direct Access	No	No DH direct access	0
	Yes	DH direct access exists	1
Medicaid Reimbursement	No	No reimbursement for teledentistry/telemedicine services	0
	Limited	Reimbursement for specific services (eg, live video/synchronous services, etc.)	1
	Yes	Reimbursement for all services administered through teledentistry/telemedicine	2
Payment Parity	No	Services provided over teledentistry are not reimbursed at the same rate as when they are provided in person	0
	Yes	Services provided over teledentistry are reimbursed at the same rate as when they are provided in person	1
Medicaid Expansion	No	State has not expanded Medicaid under the ACA	0
	Yes	State has expanded Medicaid under the ACA	1
Medicaid Adult Dental Benefits	None	No adult dental benefits	0
	Emergency	Covers only relief of pain under defined emergency situations	1
	Limited	Fewer than 100 diagnostic, preventive, and minor restorative procedures recognized by the ADA; per-person annual expenditure for care is \$1,000 or less	2
	Extensive	A comprehensive mix of services, including more than 100 diagnostic, preventive, and minor and major restorative procedures approved by the ADA; per-person annual expenditure cap is at least \$1,000	3

^a Lack of specific teledentistry legislation does not mean teledentistry is not allowed in your state. Wider telehealth state laws may also be applicable.



APPENDIX B

TABLE B-1. State Scoring^a

State	Teledentistry Status	Expanded Function in Telehealth Environment	Direct Access	Medicaid Reimbursement for Teledentistry	Payment Parity	Medicaid Expansion	Medicaid Dental Benefits for Adults	TOTAL SCORE
AK	0	1	1	2	1	1	0	6
AL	0	0	0	1	0	0	1	2
AR	0	1	1	1	1	1	1	6
AZ	2	1	1	1	1	1	2	9
CA	2	1	1	2	1	1	3	11
CO	0	1	1	2	1	1	3	9
CT	0	1	1	1	1	1	3	8
DC	0	1	0	1	1	1	0	4
DE	1	1	1	1	1	1	3	8
FL	0	1	1	1	0	0	1	4
GA	1	1	1	1	1	0	1	6
HI	0	1	1	2	1	1	2	7
IA	2	1	1	1	1	1	3	10
ID	2	1	1	1	0	1	3	9
IL	1	1	1	1	0	1	2	7
IN	0	1	1	1	1	1	3	8
KS	2	1	1	2	1	0	2	9
KY	2	1	1	1	1	1	2	9
LA	0	1	1	1	1	1	2	6
MA	0	1	1	1	1	1	1	6
MD	0	1	1	1	1	1	0	5
ME	1	1	1	2	1	1	3	10
MI	0	1	1	1	1	1	2	7
MN	0	1	1	1	1	1	2	7
MO	0	1	1	1	1	0	2	6
MS	0	0	1	2	1	0	2	6
MT	0	1	1	2	1	1	3	9

TABLE B-1. State Scoring^a (cont.)

State	Teledentistry Status	Expanded Function in Telehealth Environment	Direct Access	Medicaid Reimbursement for Teledentistry	Payment Parity	Medicaid Expansion	Medicaid Dental Benefits for Adults	TOTAL SCORE
NC	0	1		1	0	0	2	4
ND	0			1	1	1	1	4
NE	0	1	1	1	1	1	1	6
NH	0	1	1	1	1	1	3	8
NJ	0	1	1	1	1	1	3	8
NM	1		1	2	1	1	3	9
NV	0	1	1	1	1	1	3	8
NY	2	1	1	1	0	1	3	9
OH	2	1	1	1	0	1	3	9
OK	0	1	1	1	1	0	1	5
OR	0	1	1	1	1	1	3	8
PA	0	0	1	1	1	1	2	6
RI	0	1	1	1	1	1	3	8
SC	0		1	1	0	0	2	4
SD	0	1	1	1	0	0	2	5
TN	2	1	1	2	1	0	0	7
TX	0	1	1	2	1	0	1	6
UT	2	1	1	1	0	1	1	7
VA	2	1	1	1	1	0	2	8
VT	0	1	1	1	1	1	1	6
WA	2	1	1	2	1	1	3	11
WI	0	1	1	1	0	0	1	4
WV	0	1	1	1	0	1	3	7
WY	0	1	1	1	0	0	2	5

^a Table cells were left blank when there was insufficient information to determine a score.

Sources: Mouthwatch “Teledentistry Regulations in Your State”; Oral Health Workforce Research Center; American Dental Hygiene Association; Center for Connected Health Policy; Kaiser Family Foundation “Status of State Action on the Medicaid Expansion Decision”; Center for Health Care Strategies “Medicaid Adult Dental Benefits Coverage by State”.



APPENDIX C

TELEDENTISTRY INTERVIEW GUIDE

Teledentistry in a Post-COVID-19 World

Funded by the Oral Health Workforce Research Center (OHWRC)

This study is approved by the UCSF Institutional Review Board as human subject research. Do you have any questions about the consent information sheet I sent you?

We would like to record our conversation, but the recording would only be used to clarify any information missing from our notes. Is this fine with you?

Background & Context:

1. Tell me about your title, role, and current job?
2. Please describe how your involvement in telehealth/teledentistry has evolved over the past year during COVID, if at all?

Past to Current Policy Status:

1. Could you tell us about the status of teledentistry in your state before COVID-19?
 - a. Prompt: payment, regulation (see additional prompt questions below)
3. Were there any existing policies in place that specifically address/allow teledentistry (before COVID-19)?
4. Any change in existing policies in place that address/allow teledentistry during the COVID-19 pandemic?
5. What policies have facilitated the use of teledentistry during COVID, or hindered it?

Reimbursement & Payment Parity Prompt

6. What type of population coverage and services will be offered through teledentistry?
7. What type of Medicaid reimbursement is used for the teledentistry/telemedicine service? (yes or no, limited with specifics services)
8. Could you also elaborate on the Payment parity for services provided using telehealth or teledentistry (would it be the same as if those services were provided in person)?
9. Also, is there any Medicaid dental benefits coverage by your state? (like limited, emergency, extensive, or none)?

Teledentistry in Practice:

1. How has teledentistry use changed as a result of the COVID-19 pandemic?
 - a. Facilitators that have helped implement teledentistry? Barriers that have blocked or slowed the process of implementation?
 - b. How has the barriers been overcome?
2. Who has the responsibilities of the services delivered through teledentistry? (dentist, dental hygienist, dental assistants or expanded function DH/DA's)
 - a. Does the state allow for the expanded function of DHs/DAs? (Currently, filled out for DH direct access)?
3. What are the innovative solutions dental practices and organizations are identifying that have broader implications for the future of the evolving dental landscape?
 - a. Are there any particularly innovative programs in your state we should know about?

Future/Barriers to the Teledentistry:

1. How accepting are the dentist and the dental workforce to the teledentistry world? What about patients?
2. What do you think is most important about Tele-dentistry?
3. What barriers have blocked or slower the process of telehealth services before and after the COVID-19 pandemic?
4. Have these barriers been overcome? If so, how?

Closing:

1. How do you see the acceptance of telehealth in the dental world?
2. What should we be asking/looking for pre and post COVID-19 pandemic?
3. Is there anything you think we should know that we didn't ask you?
4. Who else should we be talking to about this?
5. Any published resources we should know about?

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