

Case Studies of Teledentistry Programs: Strategies to Increase Access to General and Specialty Dental Services

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ABSTRACT

Research Objective: Teledentistry is an emerging modality to improve access to oral health services in places with inadequate availability of general and specialty dental care. The objectives of this study were to describe contextual conditions affecting decisions to offer teledentistry services, environmental facilitators and barriers to implementing teledentistry programs, the necessary technology to provide services, and provider attitudes towards and satisfaction with teledentistry services.

Study Design: This qualitative research used a collective case study methodology of 6 provider organizations using teledentistry to provide services to various population groups.

Principal Findings: Teledentistry is an evolving application of telehealth technology that is demonstrating promising results for patients. Teledentistry was found to be an appropriate strategy for linking patients with general and specialty dental providers that were not otherwise easily accessed and for providing patient centered services coordinated by an inclusive oral health team. As much as 70% of patients assessed through teledentistry consults were able to remain in local communities for basic oral health services and care management. Implementation of teledentistry programs required significant preliminary planning processes and focused training for providers. Infrastructure requirements varied but certain basic technology was essential to provide quality services. Teledentistry was described as a cost-effective modality for both patients and providers but finding sustainable funding to provide these services was challenging. Teledentistry was also identified as an effective modality for providing continuing education for clinicians and others. Evaluations of the effectiveness of teledentistry programs are lacking with many outcomes of interest that would benefit from further study.

Conclusions: The use of telehealth applications is expanding with increasing recognition of their promise as essential tools in efforts to provide value-based care for patients. Teledentistry is especially advantageous for triaging patients to the most appropriate level of care. Beneficial outcomes from teledentistry services include shorter time frames to obtain specialty consultations, higher treatment completion rates, lower no-show rates for appointments and improved workflow efficiencies for providers. As a result of teledentistry programs, access was improved, care was efficiently managed, and scarce dental resources were reserved for patients in need of more extensive treatment services. Probable outcomes include cost avoidance for patients and increased clinical and appointment efficiencies for providers.

Implications for Policy or Practice: Oral health workforce is not evenly distributed with the population and people in rural areas encounter greater difficulty with obtaining both general and specialty dental services. Individual states determine the regulations for the conduct of and payment for teledentistry services so demonstrating effectiveness is important. Virtual encounters make it possible to establish a dental home from wherever the patient is located.

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OBJECTIVE

The objectives of this study were to:

- Describe contextual conditions affecting decisions about teledentistry
- Identify facilitators and barriers to implementation
- Hear provider attitudes about and satisfaction with the modality
- Learn about the technology necessary to provide teledentistry services

The research for this work was supported by funding from the Health Resources and Services Administration.

METHODS

This study used a collective case study methodology. A formal protocol of questions guided the interviews of multiple informants at 6 organizations using teledentistry services to increase access to general and/or specialty dental services across the US. The interviews were conducted in the spring and summer of 2016.

There was purposeful selection of participating organizations that demonstrated the applicability of teledentistry to providers with diverse organizational structures and varying patient populations. The organizations included:

- An independent dental hygiene practice in Colorado
- A nonprofit staff model group practice in Minnesota
- A dental service/dental health maintenance organization in Oregon
- A dental residency program (GPR and AEGD) in New York
- A district health department in Georgia
- A Federally Qualified Health Center (FQHC) and Migrant Health Center in New York

PRINCIPAL FINDINGS

Teledentistry programs use different methods to provide services:

- **Video Conferencing**
 - Allows patient and attending provider to interface in real time with consulting dentist
 - Permits immediate diagnosis and treatment planning
 - Especially useful for specialty consultations
- **Store and Forward**
 - Useful in states where dental hygienists have broader scopes of practice to complete preventive services without prior authorization. Images are acquired and assessments completed
 - Creates efficiencies for dentist permitting treatment planning for patients during or after clinical day
- **Mobile Technologies**
 - Scheduling appointments (MyDentist), imaging and consultation (Oral Eye)

PRINCIPAL FINDINGS (cont.)

Teledentistry is an emerging modality to improve access to oral health services, especially for rural and other underserved populations.

Populations of particular concern:

- Children
- Functionally impaired elders/elders in nursing care
- Migrant workers
- Special needs populations
- Rural populations

Preliminary planning and focused training of staff prior to program implementation is key to efficiency.

- Careful program development and commitment of clinical, administrative and support personnel is essential.

Table 1. Process for Implementing Teledentistry Services

Plan & Define	Train	Pilot	Implement
<ul style="list-style-type: none"> • Need • Services • Process • Training • Patient Engagement • Technology • Security • Privacy • Contracts • Sustainability 	<ul style="list-style-type: none"> • Clinicians • Case Managers • Care Navigators • Administrative & Billing Staff • IT Staff 	<ul style="list-style-type: none"> • Enrollment • Equipment • Appointment Times • Services • Communication • Health Information Exchange & Storage 	<ul style="list-style-type: none"> • Identify and Engage Patients • Provide Technical Supports • Effect Consults • Manage Care • Evaluate Quality • Track Outcomes

Infrastructure requirements vary by location but certain basic technology is essential to provide high quality services.

- High speed broadband, wireless modems, and dedicated bandwidth
- Network interfaces and bridges
- Desktop or laptop computers
- Software including image storage and retrieval programs, encryption and security, electronic dental records
- Intraoral camera, portable x-ray and sensors
- Fixed, mobile or portable dental chairs, water supply, etc.
- Video conferencing technology including monitors

Teledentistry is useful for delivering both primary and specialty dental consultations.

- Diagnostic and treatment planning services
- Real time to provide virtual supervision (if required by state)
- Permitted triage to appropriate level of care and provision of services in the patient's community
- Reserved scarce dental resources for patients in need of treatment services
- Allows for pre-visit review
- Introduction to provider in setting familiar to patient
- Improved specialty appointment scheduling

Teledentistry offers the opportunity to provide patient centered services coordinated by an inclusive team of clinical providers and other organizational staff.

- Dentists, dental hygienists, dental assistants
- Managers, patient navigators including community health care workers
- Social workers

PRINCIPAL FINDINGS (cont.)

- Information technology personnel
- Administrative and executive staff

Teledentistry is interactive and includes exchanges between:

- Clinicians (dentist to dentist, dentist to dental hygienists)
- Patients and clinicians
- Clinicians and support staff
- Team meetings involving all stakeholders

Teledentistry is cost-effective but finding sustainable funding is challenging.

- Organizations were blending funding from federal and state grants, senior programs, philanthropy, pilot/demonstration grants, etc.
- Difficult to maintain programs due to:
 - Concerns of policymakers about effectiveness
 - Variation in reimbursement policies among insurers
 - Reluctance of state Medicaid programs to fund

Teledentistry is an effective modality for providing education and training to practicing clinicians, dental students and dental residents, and other member of the health care team.

- There is a concurrent benefit related to the education of both patients and providers.
- Patients and staff are educated from listening to and working with oral health specialists.
- The services build professional relationships across provider systems and contribute to the quality of care in the health home.
- Used by dental residency programs for case learning activities in real time, to present complex patients, to consult with other dental residents and preceptors about case management strategies.

CONCLUSIONS

- Teledentistry is a value-based method to provide oral health services that are patient centered.
- The modality allows the organization to provide a continuum of oral health services and to effect a comprehensive dental home.
- Teledentistry permits risk assessment, early diagnosis, and referral; it also allows providers to triage each patient to the most appropriate level of care and to maximize scarce provider resources.
- Providers find it efficient, timely, and cost-effective.
- Patients enjoy the ease of access to difficult-to-obtain services and the benefit of cost avoidance for travel and time off from work to see providers at distances.
- The use of teledentistry in service delivery helps to effect strong teams for oral health service delivery.
- Many of the barriers to wider implementation are financial and regulatory.