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Teledentistry: Understanding the Issues, Managing the Risks

Although the term *teledentistry* has been in use for some years, it was not formally defined until recently by the American Dental Association (ADA), which describes the concept as follows:

> *Teledentistry, a component of telehealth, is the electronic exchange of dental patient information from one geographic location to another for interpretation and/or consultation among authorized healthcare professionals. Teledentistry utilizes both information and communication technologies and includes the electronic exchange of diagnostic image files, including radiographs, photographs, video, optical impressions and photomicrographs of patients.*[1]

As teledentistry evolves, it raises a wide variety of regulatory and liability concerns. While standards have yet to be developed and implemented on a national level, a number of states already have taken action, and significant legal changes may lie ahead. (See Question 7, next page.) Practitioners should check regularly with their state boards of dentistry to determine the status and progress of any adopted or proposed actions regarding teledentistry.

This issue of *Dental Expressions*® is intended to brief dentists and their staff regarding teledentistry, and to help them identify, understand and manage current and emerging risks. In addition to answering basic questions about this growing field, this publication presents an array of resources for further study and guidance.

Q 1: How well developed are teledentistry technology, systems and standards?

A: Telecommunications and computer technology has advanced rapidly since the 1990s, solving many of the technical challenges that once faced teledental practitioners. However, telemedical applications and standards are generally further advanced than are their dental counterparts. For example, while progress is being made regarding secure, site-to-site transmission of digital images and electronic records, a "turnkey" solution for dentists is not yet available.

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1 ADA members may access the 2012 House of Delegates report, which formally defined teledentistry and endorsed certain imaging standards, at **http://www.ada.org/houseofdelegates.aspx**. A detailed list of terms and definitions can be found at **http://www.americantelemed.org/practice/nomenclature**, accessed 2/13/2013.

As of now, some technical standards are in place and some teledentistry programs have been implemented, providing a range of valuable services to patients. The 2012 ADA House of Delegates report cites a number of examples, including the army's Total Dental Access Project, a telehealth network in Nebraska, a University of Florida teledentistry/distance learning project and others. In addition, a number of successful teledentistry projects have been launched in California, which has played a leading role in promoting telehealth standards and activity.[2]

Q 2: What is "DICOM," and how does it apply to me and my patients?

A: DICOM (Digital Imaging and Communications in Medicine) can be described as a "base standard" in the transfer of radiographs, photographs, and other diagnostic and therapeutic images.[3] Compliance with the DICOM standard ensures that digitally transmitted images remain unchanged in terms of information and quality. DICOM is endorsed by the ADA, which has participated in developing and refining its dental applications.[4]

Q 3: The 2012 ADA resolution calls for development of standards … but isn't DICOM the standard?

A: The DICOM base standard is only *part* of what is needed for secure exchange of images and associated patient information (known as "metadata"). For example, a DICOM-compliant image sent by e-mail attachment over the Internet or exchanged on a flash drive or other removable computer media is rarely completely safe. As software capable of reading a DICOM-compliant image is freely available, confidential patient information is vulnerable to interception. To minimize the risk of compromising patient privacy, and thereby comply with federal and state privacy laws and regulations, dentists must utilize secure networks, Web sites and file encryption/decryption systems at the present time.

Q 4: What is the next step for teledental technology?

A: Currently, safe exchange of images and metadata requires uploading and downloading data from protected Web sites over secure Internet connections. However, a faster, more user-friendly method, known as Integrating the Healthcare Enterprise (IHE), is currently under development. IHE is designed to address security and interoperability issues associated with dental image exchange, potentially making teledentistry safer, more convenient and less costly. A demonstration of commercially available products is planned as early as autumn 2014 at the ADA Annual Session in San Antonio.[5]

Q 5: How will using products and services that comply with established standards help dentists manage teledentistry risks?

A: In the absence of DICOM or similar standards, images saved and sent to another dentist or other healthcare provider may look different when examined post-transmission. Furthermore, if the teledentistry participants do not share a standard interoperable file format, metadata included in the file may be lost or corrupted. These potential problems increase the risk of false positive or negative findings and resultant allegations of failure to diagnose or false diagnosis.

Information security is another key consideration. Unless a robust encryption/decryption process is in place, patient confidentiality may be at risk, possibly leading to HIPAA violations.

Q 6: The telehealth literature refers to a "store-and-forward" consultation – what does this mean, and how does it differ from other types of teledental collaborations?

A: Store-and-forward consultation involves the capture of patient information, such as dental images or radiographs, which is then uploaded and saved to a secure Web site or network server. The images are then downloaded by or sent to another practitioner for later evaluation. All transmissions are completed via a secure Internet connection. (Note that IHE technology, as described in Question 4, promises to simplify the transmission process.) After the consultation is completed and documented, the referring dentist can log on to the server or Web site to review the results. Store-and-forward is in contrast to real-time consultation with remote specialists.

Q 7: What regulatory and liability issues arise when one dentist provides images to a dental or medical specialist in another state?

A: Licensing and credentialing continue to be major topics of concern for practitioners of teledentistry and telehealth. Since the practice of dentistry is regulated by individual states, and state laws vary considerably, dentists must determine what if any teledentistry rules and regulations exist or are planned in their own jurisdiction,

2 See Rocca M.A. et al, "The Evolution of a Teledentistry System Within the Department of Defense," at *Proceedings of the American Medical Informatic Association Symposium,* 1999, pages 921-924, available at **http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2232632/**, accessed 4/19/2013. For information about the Nebraska teledentistry project, see the University of Nebraska Medical Center Web site at **http://www.unmc.edu/dentistry/teledentistry.htm**, accessed 2/13/2013. For details about the University of Florida project, see "Teledentistry as a Method to Improve Oral Health Access in Florida," available at **http://www.doh.state.fl.us/family/dental/sohip/workgroup/Teledentistry_Whitepaper.pdf**, accessed 2/15/13. And for more about teledental progress in California, see Glassman P. et al, "Using Telehealth Technologies to Improve Oral Health for Vulnerable and Underserved Populations," in *Journal of the California Dental Association,* July 2012, Volume 40:7, pages 579-85. Abstract available at **www.ncbi.nlm.nih.gov/pubmed/22916379**, accessed 4/17/13.

3 See the DICOM℠ home page at **http://medical.nema.org/**, accessed 2/14/13.

4 See the American Dental Association (ADA) Technical Report No. 1048, "Attachment of DICOM Datasets Using E-Mail in Dentistry: 2011" (abstract available at **http://www.ada.org/805.aspx#1048**, accessed 2/13/13), and ADA Technical Report No. 1060, "The Secure Exchange and Utilization of Digital Images in Dentistry: 2011" (abstract available at **http://www.ada.org/805.aspx#1060**, accessed 2/13/13).

5 Personal communication with Gregory G. Zeller, DDS, Chair of the ADA Standards Committee on Dental Informatics and Senior Director, Research and Laboratories, Division of Science, 2/13/13.

as well as those of consulting professionals. Dentists practicing in states that have not taken action regarding teledentistry should proceed cautiously, especially in regard to remote consultations and collaborations with dentists, physicians or other practitioners who reside and are licensed in other states.

According to the 2012 ADA report, legislatures in Alabama, California, Kentucky, Maine, Missouri and New Mexico have addressed teledentistry. Georgia also proposed a rule in 2010 that defined teledentistry, but it was not adopted. For more information about state and federal telehealth regulatory initiatives, visit the American Telemedicine Association at **http://www.american telemed.org/**.[6] And as noted above, check regularly with your state dental board for new or planned regulatory actions in this area.

Q 8: I am always careful to inform my patients about the benefits and risks of any treatment and about appropriate alternatives, including no treatment. Does teledentistry present any specific risks that should be discussed or other informed consent issues?

A: Definitely. As unique risks exist, consider using a consent form designed specifically for teledentistry procedures. The form should include such information as

- name(s) and credentials of consulting practitioner(s)

- name and description of procedure

- potential benefits and risks

- possible alternatives, including no treatment

- contingency plans if problems occur

- an explanation of how findings are to be documented and accessed

- measures used to safeguard patient information

- reiteration of the right to revoke consent or refuse treatment at any time

Additionally, explain to the patient the inherent technical and operational challenges of telehealth, and how they may hinder communication with the remote location.[7] Sample telemedical consent forms, which can be adapted for dental practice use, are available at **http://www.mgh.org/telehealth/tel3/consent.pdf** and **http://www.medri.uniri.hr/~prebilic/telehematology/guide lines.pdf** (scroll down to page 4).

Q 9: What other resources are available on teledental topics?

A: The following additional resources contain valuable information about teledentistry and telehealth:

- The American Telemedicine Association (ATA), an advocacy and resource organization, can be accessed at **www.american telemed.org**. The ATA's *Core Standards for Telemedicine Operations* (November 2007) are available at **http://www. americantelemed.org/practice/standards/ata-standards-guidelines/core-standards-for-telemedicine-operations**.

- Lustig, T., *The Role of Telehealth in an Evolving Health Care Environment: Workshop Summary*, a 2012 National Academy of Sciences report, can be ordered at **http://www.nap.edu/ catalog.php?record_id=13466**.

- *Teledentistry in Arizona: Initial Development* (Phoenix: Arizona Department of Health Services, Office of Oral Health, 2009), a progress report on the first five teledentistry providers in Arizona, sharing their lessons learned, is available at **http:// www.azdhs.gov/phs/owch/oral-health/documents/reports/ teledentistry-arizona.pdf**.

- The Telehealth Resource Centers (TRCs), at **http://www.tele healthresourcecenter.org/**, are funded by the U.S. Department of Health and Human Services' Health Resources and Services Administration Office for the Advancement of Telehealth, which is part of the Office of Rural Health Policy.

Many questions remain about teledentistry, but one thing is certain: It is here to stay. The facts, strategies and resources presented here serve as a starting point for understanding this potentially powerful tool for transforming and improving dental care. For more detailed information on telehealth issues, consult PubMed or other literature databases.

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6 The American Telemedicine Association also sponsors FixLicensure.org (**http://www.americantelemed. org/fixlicensure-org**), an effort designed to bolster public support for telehealth and modify obstructive licensing requirements.

7 For more suggestions about informed consent and telehealth, see CNA *Vantage Point*® 2012 - Issue 2, "Telemedicine: Risk Management Issues, Strategies and Resources," page 6. It can be accessed at **http://www.cna.com** (select Risk Control Library on the lower right, under Customer Resources).

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333 South Wabash Ave., 35th Floor
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