Technology of Telemedicine

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by Julie Welch, RHIA (formerly RRA)

Telemedicine is "the use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or healthcare provider and for the purpose of improving patient care."[1] According to a recent report to Congress by the US Departments of Commerce and Health and Human Services, "Telemedicine has the potential to make a difference in the lives of many Americans. In remote rural areas, where a patient and the closest health professional can be hundreds of miles apart, telemedicine can mean access to healthcare where little had been available before. In emergency cases, this access can mean the difference between life and death. In particular, in those cases where fast medical response time and specialty care are needed, telemedicine can be critical."[2]

About Telemedicine

Telemedicine is an emerging industry that is redefining the way consumers interact with healthcare providers and promises to change the way the entire healthcare industry conducts business. "Telemedicine combines multimedia communications and information systems with the latest in medical technology, creating a forum in which doctors, patients and educators can exchange data and engage in real-time interactive collaboration."[3] Telemedicine includes the diagnosis, treatment, and monitoring of patients using systems that allow access to patient information.

The underlying technologies that make telemedicine possible have been around for years. Companies have only recently begun to integrate information systems with multimedia technology into application-based packages. Telemedicine technologies can include facsimile, audio (telephone and radio), still images, and full-motion video -- many different systems exist. A common system package consists of a videophone system with color screens for face-to-face contact. This can include image capture, blood pressure and pulse meters, analog-based audio stethoscopes, and digital dermascopes built into the videophone system. Depending on the level of features, prices for videophones range from $500 to $10,000. Another hardware choice, the telemedicine rollabout system, can include color monitors, handheld wireless remotes, multiple video inputs/outputs, and microphones. Prices for these systems range from $5000 to $50,000.

Telemedicine technologies are used in every healthcare setting to remotely deliver medical services. For example, in the home care setting, telemedicine is used to conduct "video visits" between healthcare professionals and homebound patients. Psychiatrists can use videoconferencing to provide psychiatric services to patients at remote sites. Pathology specimens can be transmitted via e-mail or more advanced storage technologies that send digital images. Diagnostic images (such as CAT scans, MRIs, and x-rays) can be transmitted to a specialist for a second opinion or for general radiology services in the same way.

Benefits of Telemedicine

Telemedicine offers many benefits, including:

- improved access to healthcare (e.g., obtaining second opinions)
- improved continuity of care, patient education, and timely treatment (e.g., monitoring the condition of chronically ill patients; reduced travel time for physicians, other healthcare providers, and patients; and better access for patients in underserved areas)
- improved access to medical records and information (e.g., promoting self-help by increasing the online availability of medical information; knowledge-based self-diagnosis programs; distance learning programs)

- improved continuing medical education[4]
- improved delivery of healthcare in the US by bringing a wider range of services such as radiology, mental health services, and dermatology to underserved communities and individuals in urban and rural areas
- increased attraction and retention of health professionals in rural areas by providing ongoing training and collaboration with other health professionals
- improved cost control by helping to avoid unnecessary patient trips and allocation of resources to outlying areas

Implications for Confidentiality and Privacy

The electronic transfer of health information within and across state lines creates new challenges to the protection of health information. The current lack of uniform privacy and confidentiality legislation adds to the confusion as to which state's laws govern when transmitting electronic health information across state lines. To safeguard health information, AHIMA recommends the following actions:

- ensure that confidentiality/nondisclosure agreements have been signed by all contract/vendor personnel
- encrypt the data if possible
- employ redundant systems to "mirror" tape/monitor so that both referring and consulting facilities have originals of the media
- incorporate telemedical records in disclosure policies. Address who can disclose the information (e.g., either facility upon receipt of written authorization from the patient or legal representative; the referring facility only; the consulting facility only; in accordance with court order, subpoena, statute or other)
- establish a method to ensure that only authorized person(s) receive and transmit telemedical information
- ensure appropriate information system security maintenance procedures[5]

Telemedicine applications can streamline and improve the delivery of healthcare. Health information privacy issues require national legislation to remedy the confusion stemming from federal and state laws regarding health information confidentiality. However, until such legislation is passed, HIM professionals must ensure that electronically transmitted health information remains confidential and secure.

Notes

1. American Telemedicine Association. *Telemedicine Report to Congress by the US Departments of Commerce and Health and Human Services.* January 31, 1997. Available at www.atmeda.org.
2. Ibid.
3. Stephens, Erica. "Telemedicine's Goal: To Link the Healthcare Community," *Atlanta Business Chronicle* 20, no. 33 (1998): 16B.
4. Fletcher, Donna. "Practice Brief: Telemedical Records." *Journal of AHIMA* 68, no. 4 (1997): insert after p. 44.
5. Ibid.

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