THE CLINICAL SIGNIFICANCE OF THE DIGITAL PATIENT RECORD

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ABSTRACT

Background. Computer technology has revolutionized the way the world does business, allowing us to work faster, smarter and more efficiently than ever before. Computers first made their way into the dental office in the late 1960s as an accounts receivable device. Today, we can digitize anything and recall it in the operatory with the patient.

Clinical Implications. This article discusses new trends in the digital patient record and the benefits this technology provides to the dental team in terms of improved data collection and recording. It also discusses the benefits a digital patient record provides to patients, as well as how to communicate patients' oral health needs using these electronic tools.

The 200-year period from 1800 to 2000 represents one of significant advancement in prosthetic and restorative dental service. The transition from the time of ill-fitting dentures, fashioned from naturally occurring materials, to the application of synthetic resins for many different dental and surgical purposes exemplifies the technical and professional advancement that has taken place throughout this period. The advancement in dentistry has been possible through the cooperative efforts of contemporary scientists in many related fields.1

Computers made their way into the dental office as an accounts receivable device as early as the late 1960s. By the 1980s, they found their niche as a practice management tool.
The ADA, foreseeing the importance of computers in the operatory, has developed guidelines for clinical systems that include the acquisition, storage, retrieval, presentation and communication of computerized patient information.2

At the dawn of a new millennium, computers are appearing as an essential instrument alongside the handpiece in the dental operatory. They facilitate appointment scheduling and transaction posting, and have become the new center for dental office information technology—the nerve center for digital radiograph imaging, charting, and digital and photographic record keeping.

Five years ago, few dentists were using computers for practice management purposes. Now, most dentists use computers for practice management purposes. Five years ago, a modest number of software programs using operatory procedures—that is, charting, probing, digital imaging—were sold. This year’s projected sales of software for clinical dental use in the operatory has risen to almost equal those of practice management software.

The next stage in the development and expansion of this technology for the dental office is technology integration, which will allow the dentist to seamlessly link practice management, voice charting, intraoral cameras, CAD-CAM, lasers, electronic digital imaging, video imaging, digital radiography, and so forth, into a single potent system for complete clinical and practice management.3

This article discusses computer technology and the digital patient record, which have revolutionized the way patients are treated and dental practices are managed. As the information age marries the clinical and business aspects of the dental practice, practitioners work faster, smarter and more efficiently than ever before.

DIGITIZED IMAGES AND ELECTRONIC Charting

When digital radiographs entered modern dentistry, they brought many advantages for the dentist and the patient:
- less chair time for the dentist and patient;
less time and money spent on film and on its processing and mounting;  
- a better diagnostic and educational tool for patients;  
- less exposure to ionizing radiation for the patient and staff.

With a digital image, a dentist can “interact with the image” to enhance diagnostic capability. With computerized images on screen, patients can better visualize the treatment they have received or their current dental problem. It is a device to educate patients about their esthetic and functional needs, as well as their responsibilities to care for their dentition to ensure the success of their treatment. Within the bigger picture, digital photos and radiographs are conveniently stored as part of the patient’s electronic dental record. Charts are going electronic, as well.

Electronic charting in the dental operatory was first implemented as a stand-alone system. This allowed users to understand the new work flow requirements and redesign the dental operatory to accommodate a computer in the treatment room.

Charting can be a time-consuming task for the dental team. Poor penmanship or variations in data-recording methods can contribute to incorrect or incomplete patient information, which may not only leave practitioners vulnerable in the event of a legal challenge, but may result in the generation of an ill-conceived treatment plan. With digital charting, all dental team members chart the same way, and the charting shorthand is standardized.

Charting software is also providing new opportunities for dentistry. Software programs can standardize digital charting, including an intra- and extraoral examination, charting of dental anatomy, current restorations, pathology and periodontal condition (Figure 1).

Currently, standards do not exist that determine what a chart—in paper or electronic format—should contain. As the dental charting software continues to develop, the software is establishing standards and currently must include the diagnostic and treatment codes and associated modifiers currently being prepared by the ADA.1

The dental team must understand that the ultimate goal of the information management plan is to establish a network that can enhance communication both within and external to the dental office.3 As an example, there is no need to look for a misfiled paper chart. With the patient’s chart in a computer database, it can easily be accessed by the doctor or staff member from any workstation on the network, whether it be in the private office, reception area or treatment room.

**PRACTICALITIES AND TRENDS OF ELECTRONIC RECORDS**

An initial chart is created for patients at their first examination visit. This patient record documents findings of a thorough head and neck examination, hard- and soft-tissue examination, and the charting of existing dental restorations and areas of new concern (Figure 2).

On subsequent visits, as dental procedures are performed the chart is automatically updated by the dentist or a staff member and the transaction is posted, thus eliminating duplication of record keeping. Obviously, the electronic patient record is easily updated...
to reflect current changes in the patient’s medical or oral health status.

If the patient is referred to a specialist, no copying and mailing or faxing of the chart is necessary as long as the recipient has e-mail. With the digital chart, a dentist can electronically transfer the needed information to the specialist, hospital or a patient’s new dentist.

The electronic transfer will save front desk time, copying and postage expense, as well as a patient’s time and discomfort in an emergency situation. The electronic record can be accessed anywhere outside the practice by those with authorized access and secured from anyone unauthorized to enter the database.

Perhaps the most significant benefit of digital charting lies in its ability to educate patients during the case presentation. With all the components of a comprehensive oral examination needed for diagnosis within a mouse click, the doctor can develop treatment plans with ease. Built into the charting software is the link to the particular patient’s fee schedule along with his or her insurance copayment and deductible information. Thus, the treatment plan and its costs can be smoothly generated. The software can list the tooth numbers, restorative material description, insurance codes, fees and insurance benefits, in addition to an anatomically correct pictorial chart for the patient to understand. A nicely printed chart can add to patient education (Figure 3). With the combination of automated periodontal charting, and the integration of extraoral and intraoral images, digital radiographs and the digital chart, the dentist readily has all the information available and able to be presented visually to the patient in the form of a treatment plan.

After a high-tech case presentation, the patient leaves with a complete copy of his or her radiographs, chart, treatment plan and fee as well as informational sheets relevant to
the specific treatment. This written treatment plan provides a great marketing advantage for the dental practice. It takes little extra work, but the patient is well-informed and educated as to his or her needs and the rationale for the treatment plan. The patient has a professional-looking, printed representation of the dental practice to share with family or friends—something that can lend your practice an image of credibility, responsibility and state of the art.

Among the basic features needed for charting software are the following:

- variable patient look-up by name;
- patient identification number;
- medical health alerts;
- treatment planning and tracking of procedures performed and pending;
- comprehensive display of treatment completed and planned;
- medical history interview and data recording;
- all ADA-approved treatment and diagnostic codes with associated modifiers particular to the specialty being charted.

Each of these features may be recorded graphically or as text. All treatment, diagnoses and conditions noted must be date-stamped; an audit trail must exist when modifications are made to the record, by whom and when; there must be password-protected access to patient data; anatomical sites must be recorded; and most important, on-screen planning (“virtual charting”) or treatment planning must be documented. As computers slowly permeate our dental practices, it becomes obvious that we have a choice: either accept and embrace this technology and use it to our practice’s advantage, or reject it and sit on the sidelines and get left behind.

Incorporating dental practice management software with the digital patient record will provide digital dental practices with a comparative advantage over their less technologically inclined colleagues. With better quality information and the ability to store and access more information in one place, digitally networked dental practitioners will continue to excel in managing their practices.

CONCLUSION

This article discussed the revolution in computer technology and digital patient record keeping. Consumers are demonstrating a greater interest in their medical and dental care and demanding greater accountability from their health care professionals. Practitioners who have access to more information and better quality information, in regard to both their patients and their practices, will enjoy the benefits of improving both patient care and practice management-based decisions.

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