Information technology, revolution in orthodontics

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Abstract

The author shows an effective digital information distribution system. Centrally stored information permits five orthodontists to access patient data from seven offices located in two states.

1. Introduction

The deluge of available information in the new millennium is overwhelming. We are inundated daily from a multitude of sources, including digital and printed materials. It has become incumbent on the professional to constantly assimilate new information at an increasingly accelerated rate. It was with this knowledge and the understanding of the vision for the future that we reorganized our orthodontic practices to embrace this concept of information accessibility. Orthodontics, just like any other practice, or business, lives or dies by its knowledge base. Not surprisingly, the old saying "He with the most gold, rules", has been replaced by "He with the most knowledge, rules."

2. System Description

Our orthodontic practice, which includes five orthodontists, seven offices located in two states (California and Washington), and a staff of 28, has been computerized to effect rapid access to patient information. Digital records and a computerized practice management system provide current information for each patient. The records include: digital radiographs, digital intra-oral and facial photographs, 3-D study models, and electronic treatment card. Our offices are arranged into an Intranet with a central server for information storage and distribution. Our computer system is reminiscent of the "old-days" of IBM mainframes with a network of "client" terminals each accessing the mainframe for programs and information storage. The computer industry departed from this concept with the advent of the desktop PC. With the PC, information was decentralized, as were the programs that processed the information. Centrally stored information has many advantages, not the least of which are: ease of software management, data security and safety, including backup and storage of data. Technically, a Windows NT 4.0 server, running Terminal Server, and supercharged by Citrix, a "thin-client" management software, powers our Intranet. Using Citrix, the information and software programs are "sliced" into "thin-slices" that enable multiple doctors and staff to simultaneously access patient records and treatment information. This is termed "thin-client" access. For example, all five doctors could

be viewing and manipulating the same lateral headfilm simultaneously.

This viewing and manipulation could be done from any office or home, with any device (Windows PC, Macintosh, or even a wireless handheld device like the Compaq Ipaq), as long as the device has access to the Internet. Because of the current ease of access to the Internet and the possibility of numerous devices acting as "thin-clients", information is available practically anywhere. This is especially true with the rise in popularity of wireless handheld Pocket PCs used for Internet access. Citrix.com provides client software, free of charge, for a wide variety of devices, including Pocket PCs. Imagine my delight when I discussed a patient's treatment with her general dentist, and her orthognathic surgeon at lunch using my wireless connection to our Intranet.

Fig. 1

As we viewed her panorex, lateral headfilm, photographs and 3-D study models on the Compaq Ipaq Pocket PC, more questions were generated about the technology involved in viewing records remotely, than questions regarding the interdisciplinary treatment. (Figures 1 and 2)

Fig. 2

A Winterm 3200LE (figure 3) sells for approximately $375 and includes the keyboard and mouse. You simply program the Winterm with the location of the Citrix server, that is, with the Internet Protocol address (IP address), the username and

address), the username and password, then connect it to the network, or Internet, and to a video monitor. All of the program icons appear on the screen and the programs are fully functional. It is important to note that the programs are actually "running" on the Citrix server, and the Winterm only provides the keystrokes, mouse clicks, and video images. All the powerful processing and data manipulation is done at the server end. A Winterm is a solid-state device, with no hard-drive, or any other moving part. In our energy conscious society, the "thin-client" devices, such as the Winterm, are receiving a lot of favorable press because of their greatly reduced consumption of electricity, when compared to the consumption of a typical PC.

Fig. 3

5. Conclusion

We have found this form of information distribution to be extremely effective, especially with a society that is highly mobile, better informed and in demand of more information from the orthodontist during their decision making process. We believe that we have positioned ourselves to fully embrace the rigors of the changing face of the orthodontic practice of the future. We invite you to join us in the Digital Age of Orthodontics.

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