Use of technology in the orthodontic practice: A day in the life

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Technological changes affect most areas of our lives, and our orthodontic practices are no different. As these changes mount, orthodontists and their teams have many questions. How can we possibly adapt to these rapid changes? Is now the right time, or should I wait to see what others do who know more than me? Will something better come along? Will I be left behind if I don’t jump in now?

According to Dr. Sacha Lindeken of the Leadership Research Institute, change dynamics have certain consistent characteristics. No matter how exciting the change, it is coupled with a sense of loss. No matter how competent people are, they should expect a sense of confusion and ambiguity.

In Managing at the Speed of Change: How Resilient Managers Succeed and Prosper Where Others Fail (New York, Villard Books/Random House; 1992), Daryl R. Conner describes positive and negative responses to change that, despite their differences, tend to lead eventually to the same end point level of satisfaction.

Decision makers often have time to mentally digest the process and reach a level of comfort before instituting change. Employees, on the other hand, must often accept a new concept or process with little warning or time for emotional preparation. They might actively resist change through deliberate opposition, reduction in output, chronic quarrels, hostility, rationalizing “why this won’t work,” agitating others, failing to report problems, and denying the need for change. Passive resistance techniques include foot-dragging, lack of productivity, not supporting the change, avoiding it by saying “we’ve always done it this way,” and creating new complications. People resist for many reasons. Some have to do with “me” issues: fear of loss of control, uncertainty or unpredictability, appearing messy or disorganized, fear of loss of face, concern about future incompetence, history or “baggage,” more work with fewer people, and accurate recognition of a real, not imagined, threat. Another reason might be concern for the company—expressed as doing a job “the old way”; this is frequently combined with leaders who do not understand that their new job description includes facilitating change. In attempting to preserve the past, employees do not want to accept the death of the old ways and might be unclear about specific tasks, time frames, and standards for which they are now accountable. Many times, employees face an ultimatum to institute the new program and do not understand that in reality the choices are “get with the program or get out.”

Areas currently being influenced by technology in our orthodontic practices include education, personnel management, marketing, communication, diagnosis and treatment planning, and treatment. I have chosen to use an integrated technology solution when possible to avoid many of the above problems and to provide a certain sense of comfort for my team and myself by having a single source for customer support. I will describe my choices in this article.

INTERNET CONNECTIVITY AND PRESENCE ARE THE KEYS

The foundation for much of the new technology is Internet connectivity. I selected a vendor in my community (Time-Warner Cable, New York, NY) that offered cable television, broadband Internet, Voice Over Internet Protocol (V.O.I.P.) telephone, and fiber connection between my 2 offices. Thus, I have 1 point of contact for connectivity issues. Bundled solutions such as this have been available for home consumers for some time and are now becoming more popular as business solutions. They are available from many companies nationwide.

Technology has benefited education with something as simple as online registration for meetings, up to and including complete Web-based continuing education programs for both doctors and staff.
Personnel management can be enhanced with online employment applications, aptitude testing, and staff training including testing to verify accomplishment of objectives to allow doctors to increase their training resources by “hiring” industry experts with minimal investment. We also have time clocks that use digital biometric scanners for payroll.

Technology can also help separate your practice from those around you both internally and externally by using a targeted Internet presence to increase your marketing impact.

I will use the example of Mrs Jones and her daughter, Jenny. Jenny is 11 years old, and all her friends have recently begun to get their braces. Mrs Jones and Jenny go to their dentist, who explains that Jenny should see an orthodontist and gives her the names of 3 orthodontists: 2 are old friends to whom the dentist has previously referred, and the other is a new acquaintance who recently hosted a continuing education seminar for general dentists. The seminar included a Dental Ed North America lecture, provided through Vision Trust (North America, Vision Trust Communications, Colorado Springs, Colo). This geographically exclusive franchised lecture series features live interactive webinars with the top speakers in general dentistry and allows orthodontists to provide a premier service for their referrals via the Web with minimal effort on the orthodontist’s part.

Mrs Jones decides to check out all 3 orthodontists on the Internet. The Internet is a significant resource for consumer research today, and creating and managing the proper Web presence is critical to every business; orthodontics is no different. Orthodontists can maximize Web-site effectiveness by both search-engine optimization and pay-per-click and sponsored listings; both require continual supervision and management to maintain top positions in search-engine listings. Don’t forget other Web venues such as MySpace (www.myspace.com), FaceBook (www.facebook.com), Twitter (www.twitter.com), and YouTube (www.youtube.com), all of which can be linked to your Web site.

So, what are we competing with on the Web? Consumer blog Web sites, such as www.archwired.com, are becoming popular. Here, patients can write anything they want, positive or negative, such as this entry: “First adjustment. It felt like my very soul was shattered. . . . not in a good way.” Remember that anyone can make entries on the web, factual or not. YouTube clips range from informational to downright ranting craziness. View http://www.youtube.com/watch?v=PAFagwESIOw for an example of what we as orthodontists must confront.

Your Web site is now the gateway to your practice. Patients expect to be able to obtain general information, maps, and directions; contact you by phone or e-mail; check accounts and make payments; and check, make, and change appointments.

COMMUNICATION AND PRACTICE MANAGEMENT SOLUTIONS

After her Internet research and review of the various Web sites, Mrs Jones calls our office and makes an appointment for Jenny. We ask whether she prefers e-mail, fax, or traditional mail correspondence, and also whether she would like to receive telephone, e-mail, or text-message reminders.

She supports our efforts to reduce the amount of paper we are using and agrees to e-mail correspondence and text-message reminders. We send a thank-you e-mail and later send new-patient information by e-mail. She also receives appointment confirmation by text message. All this is provided as the integrated patient communications module of our practice management system, in our case Ortho 2 ViewPoint (version 6, Ortho Computer Systems, Ames, Iowa; www.orthoi.com). I chose this software because it is completely integrated and provides a Web interface for appointment and account information; an integrated, paperless office, including e-mailing correspondence; integrated credit-card scanning; integrated voice, e-mail, or text patient reminders; integrated traditional or doctor time scheduling; integrated digital imaging and cephalometric analysis; integrated internal instant messaging; integrated employee time clock; and integrated backup on-site or off-site.

As you can see, in addition to the traditional roles of accounting and scheduling, your practice-management system is also an integral part of the technology integration solution. If your system does not provide required features, you will need to add third-party software vendors, such as Televox (TeleVox Software, Mobile, Ala; www.televox.com) or OrthoSesame (Sesame Communications, Renton, Wash; www.sesamecommunications.com) to complement your management system, generally at some additional expense.

Mrs Jones and Jenny arrive at our office for their appointment. Mrs Jones has already completed the health-history form online, and it is in the electronic treatment chart before their arrival at the office. They are greeted by name and welcomed to our office. Remember that, even though we think technology is exciting, it is critical that our personal interactions exceed the influence of technical gadgetry. It might be the technology that wows the patient at first, but it is the personal relationship that the patient will remember, so we must not allow technology to get in the way of developing relationships.
Fig 1. Biometric fingerprint scanner for patient sign in.

Fig 2. Our office features a computer at each chair with a custom-designed practice desktop.

Fig 3. Patients no longer sign on the dotted line; they use an electronic signature pad.

After signing in using our biometric fingerprint scanner (DigitalPersona, Redwood City, Calif; www.digitalpersona.com) (Fig 1), Mrs Jones can begin watching a video promoting the features of our office that set us apart; Jenny might prefer to go online via our complimentary Internet access in the lobby (your lobby connection should be completely separated from your management system network).

The instant the patient logs in, the entire staff and the doctor are alerted via color coded displays on the monitors throughout the office. When escorting Jenny and her mom into the clinic, we give them a brief tour, pointing out some of our more unique and interesting technology and its benefits for them. Examples include a computer at each chair and a custom-designed practice desktop on every computer (Fig 2).

We take a full series of photographs in the photo studio, using an umbrella flash for warmer skin tones. Then we take a low-resolution (low radiation) cone-beam computed tomography (CBCT) scan. Jenny and her mother are seated in the conference room and watch our custom new-patient video while a treatment coordinator prepares all the images for review.

While I examine Jenny, the treatment coordinator enters all the information in the computer, and Jenny's treatment plan is being developed. We review the CBCT with Jenny and her mom, pointing out any abnormal or unusual features. Then we present the options for Jenny's treatment, explaining how each might work for her. The entire conference is recorded with a Webcam for future review.

The treatment plan is entered into the management software and linked to Jenny's electronic treatment chart. The first step on the path to a paperless office is the electronic treatment chart. You should be able to custom design your electronic treatment chart to your needs. You must establish the appropriate backup systems to ensure integrity of all digital information. Current technology makes offsite backups straightforward, with many vendors available.

Jenny's options include treatment with self-ligating brackets or aligners. Self-ligation is a much-discussed technology that, along with aligner treatment, has finally gained widespread acceptance in the orthodontic community. I have used both for about 10 years. Jenny—perhaps eager to join her friends—chooses braces over aligners so that she can have colors. I use Insignia Damon brackets (Ormco, Orange, Calif; http://www.ormco.com/index/ormco-products-insignia), which feature virtual treatment planning that results in custom-precision direct bracket placement combined with computer-generated, custom-bent wires.

An isolated laser gingivectomy will be required to place 1 bracket in the correct position. The use of diode lasers in orthodontics has increased dramatically, and
they have many daily applications; gingivectomy is but one.

Jenny also has a congenitally missing canine. One option we discuss involves using a miniscrew-supported prosthetic tooth as a temporary replacement at the end of treatment. Although there is some controversy about the advisability of these restorations, there is no documented evidence to support opposition to placement of miniscrew-supported denture tooth restorations. The general use of miniscrews in orthodontics has exploded in the past few years, and this is just 1 application. I use the Vector TAS miniscrew kit (Ormco) because I like its organization and the design of the screws.

At the conclusion of the 1-step examination and consult, Mrs Jones agrees that Jenny can start treatment. We pull up our informed consent form and a contract on the computer and review them with her, and she signs them on an electronic signature pad (Fig 3). Those documents then become part of the digital record, and we print copies for the patient.

A PAPERLESS, IMPRESSIONLESS FUTURE

So what does the future hold? I believe there will be a day very soon when we will be both paperless and impressionless. Technology will allow us to use direct DICOM manufacturing, using data from CBCT or intraoral light scanners or a combination of them. We have already produced prototype Invisalign and Insignia appliances, and it will not be many years until appliances will be routinely manufactured without impressions. Along with these changes, we will also trade in our computers at every station for simple, small, solid-state clients that we will use to log in to a virtual office, just like Web-based e-mail or making airline reservation. Thus, we will leave the technology problems to someone else and get on with being orthodontists.