A condensed version of this article appeared in Orthodontic Products magazine, pages 42-45, in March 1998 and most of it is still pertinent today. However, for those seriously interested in paperless operation, the following articles, all written in 2004, provide additional and updated information brought about by technological advances.

'Advantages & Disadvantages of Paperless Operations in Orthodontics'

'Paperless Operation & The Role of Management Software'

'Using Internet-Based Software to Operate Paperless Orthodontic Practices'

THE "PAPERLESS PRACTICE"
Author: Charles A. Lewis

In 1991, it first became obvious to me that paperless operation would ultimately become the standard for all health care providers. Although several factors led me to that conclusion, first and foremost was this: **To optimize efficiency, any business that deals with large amounts of information and records must eventually find better ways of using, managing, and storing that data.** A good example is the banking and financial industries, which converted to electronic records several years ago. Since the health care industry deals with comparable - if not greater - quantities of records, it was inevitable that paperless operations, even in individual practitioner offices, would become a necessity. (Because these operations would consist of much more than just the office's administrative applications, I labeled them "Paperless Practices.") By 1994, hardware technology had progressed to required levels and the first orthodontic Paperless Practice began operation in Florida.

What is a Paperless Practice?

It is simply a practice where all the information, diagnostic, management, and communication tools are fully integrated into one computerized system. Instead of using paper treatment notes and plans, that information is entered directly into the computer. And since the introduction of imaging, scanning, 3D Electronic Models, and digital x-ray systems, all the visual records, including models, can also be maintained in the computer. The integration of all these tools and data into one system makes all the patient records instantly available at any workstation, no matter where it is located. As you can imagine, a Paperless Practice requires an extraordinary computer system. Presently, most practice management systems are not fully capable of paperless operation, so you must shop carefully. Also, the traffic flow in the practice, its storage needs, etc., can all change significantly by operating in paperless mode. Therefore, to achieve maximum efficiency, many office floor plans will eventually need to be designed or redesigned to adapt to those changes1. Although, paperless operation is relatively new, I am aware of at least one designer who is now designing these atypical offices. Manufacturers are also beginning to design special operatory cabinets and delivery units that will house the chairside and other computer workstations used in the Paperless Practice.

Limitations on Paperless Practices

Some doctors say that the state in which they practice will not allow electronic records as the only patient record; New York is reportedly one state. Others report that, for legal reasons, they feel that certain paper documents with signatures must be retained. The items usually mentioned include financial contracts, informed consent documents, and health questionnaires. Several doctors also believe that patient x-rays must be developed and maintained in a non-electronic file. (To the best of my knowledge, the legality of electronic orthodontic records has never been tested in any court of law.)

If it is true that some states do not allow electronic records as the only patient record, I believe this will be a temporary situation. The most common argument I hear against computerized records is that an experienced hacker, or programmer, can easily change an electronic record, even when security measures are taken. While this is true, it must also be said that a paper record is not difficult to alter. Further, a common safeguard is to back up the electronic patient records once each month and to store a copy of them with an independent third party such as a data storage company. In case of legal action, the court can then verify the authenticity of the practice's electronic records by comparing them with the copy stored with the third-party entity. In fact, this seems to be a more tamper-proof method than using paper records. Banking records around the world are maintained electronically, and there is much more incentive for people to attempt to change those records than there is to modify dental patient records.

As for the previously mentioned documents containing signatures, it is easy to have them on the computer complete with the patient's or guardian's electronic signature. Again, the banking industry, worldwide, accepts electronic signatures so it is difficult to believe that they will not be acceptable in healthcare. Regarding x-rays, the new x-ray machines are digital, which means that developing film will soon be outdated unless doctors are required to do so by state law.

The "Less-Paper" Compromise

If the state in which you practice currently prohibits truly paperless operation, one orthodontist reports that operating a "less-paper" practice is very beneficial. He says that even if you do have to maintain signed documents and x-rays, it is not unusual to leave those charts/folders gathering dust for six months or longer once treatment has begun. If you, like me, subscribe to the idea that legal authorities everywhere will eventually accept paperless operation, the less-paper concept seems a worthwhile interim solution.

Consulting With the Experts

Because of the enormous interest in paperless operation, I decided to compile factual information from practices that operate in that mode. To accomplish this, I interviewed orthodontists in five practices with paperless operation experience ranging from one to four years. The practices are located in five different areas of the country and are identified in the interview by the state in which they are located.

The Interview

Lewis: Each of you reportedly had at least one other management software before switching to your current program. Was the change necessary for paperless operation?

California: Yes, our system was very outdated and was no longer supported well.

Colorado: I started with a management software program that was too restricted in what it could do for my practice. I needed a software, and a company, that would be responsive to my needs and allow me to integrate all aspects of my practice, from patient imaging to insurance billing.

Florida: Yes, since the system we were using was not able to integrate with our video imaging system.

Georgia: My previous software was too confining. It did not enable me to choose the imaging program that I wanted to use, and still be able to integrate it with the management system. I had to use all of the vendor's software. Also, the flexibility of the program was a major factor in my decision to use my current system. When looking for software, I was primarily interested in finding a program that would work for me and allow me to use the features I wanted in my practice - without changing the way that I practice. My old software often forced me to practice the way the program was written, if I wanted to utilize it fully. I believe a change in software was absolutely essential for the jump to paperless operation.

Kentucky: Our previous system simply ran out of memory. The company was going to charge quite a bit to upgrade, so I decided to reexamine our needs before upgrading.

Lewis: What were your primary reasons for converting to paperless operation?

California: With two offices and patients coming to either one, it became apparent that we needed to have access to everyone's records at all times.

Colorado: One of my goals, when I began my orthodontic practice, was to be "high touch" and "high tech." To have the time to remain high touch, you have to be high tech. By this, I mean you have to be extremely organized and be able to access all of a patient's information in just a few keystrokes. If you have a busy practice, paperless operation is the best way to conserve everyone's time.

Florida: We needed the ability to access all the patient information, efficiently and effectively, without having to "hunt-down" the chart.

Georgia: After working with banks, airlines, hotels, etc., where computerization was absolutely essential to the operation, I felt that orthodontics did not need to be confined to "paper shuffling" any more than did the local bank branch. I wanted to eliminate the need to keep a folder of papers for every patient, and to remove from my day the need to search through a file of 20-30 pages to find a letter written three months ago. I wanted a system that would complement the organization of my office (which was already very well structured) and allow us to do the same things we had been doing previously, but with fewer errors and greater ease. Computers are fantastic for handling the normal procedures and patients, and it is these normal routines that make up 95-percent of the orthodontist's day. By eliminating the stress in dealing with normal routines, the entire staff can more effectively deal with the remaining 5-percent of problems and exceptions. Also, I had been using four software programs and three different computers to handle scheduling and accounting, images and diagnostic cephalometrics, letter writing, check writing, and payroll. I wanted to find a way to incorporate all those functions into one program that could be shared by multiple users, simultaneously.

Kentucky: It was the next logical step in office automation. Our diagnostics and imaging was computerized, and all systems except charting were, as well. It was also frustrating to constantly track down charts. Who had the chart, the diagnostic assistant, the insurance secretary, the patient coordinator, or the doctor while waiting to make a phone call?

Lewis: When did you first begin paperless operation?

California: About four years ago.

Colorado: We became a Paperless Practice in May 1996.

Florida: August 1994.

Georgia: September 1996 - and it seems like ages ago.

Kentucky: April of 1997.

Lewis: Did you change to a paperless operation all at once or convert gradually? Did that method work well for you?

California: Our practice converted gradually over a one-year period.

Colorado: I know some practices elected to scan in all their treatment charts and histories for every patient. We chose to scan in the radiographs of our current patients and to transfer the photos from our imaging software, but it seemed too overwhelming to scan all of our current patients' treatment histories. Of course, as we began new patients, all of the information was immediately placed into our practice software. There are both advantages and disadvantages to doing it this way. The advantage was that we saved time by not scanning in thousands of pages of material. The disadvantage is that it takes a couple of years until you feel you are really paperless.

Florida: We decided to "go for it" and went paperless all at once. I would do the same thing again if I had the opportunity.

Georgia: I made a commitment to convert to paperless operation on the last day of training on our new system, and held to that schedule. But, paperless applied only to those things done prior to September 1996. We still pulled paper charts for patients and used them until enough treatment information was entered that the chart was no longer necessary to identify the nature of the problem, or the treatment plan. It took about three months to start leaving the chart on the counter when the patient was in the chair, and I expect that it will be another 6-9 months before we are pulling absolutely no charts. Since we had already been doing all scheduling, accounting, and letter writing with computers, our problem was one of integrating all that we had been doing - in one system. I think my approach would remain the same if we had to do it over. I do not think that going paperless is something that you can stage into, if that is your goal. If you want to get to paperless operation, you have to be "paperless" first, then find out what changes you need to make in your practice to remain that way. However, I would never recommend that someone starting from scratch, jump to paperless. We were well prepared and still had to devote over two weeks of non patient time to getting things like letters and treatment codes into the system, although we had been using such systems previously.

Kentucky: We began at once, although we continued to pull charts through each patients' 2nd or 3rd appointment after going paperless. That method worked well for our practice.

Lewis: How many offices do you operate in paperless mode?

California: Two.

Colorado: We have a single practice location with no satellite practice, and we do not aspire to have one. For those that have multiple practices, a paperless practice would be the only practical way to have immediate access to all of the data from any location. I think the term "no brainer" applies here.

Florida: One.

Georgia: Two.

Kentucky: Two.

Lewis: How many workstations do you have in each practice location?

California: We have eleven workstations in the main office and ten in the satellite office.

Colorado: We currently have nine workstations, a patient check-in station, an on-deck station, and we are adding two new workstations with the remodeling we are currently doing. We have a workstation at each chair, which is essential if you are truly attempting to be paperless. Of course, the term paperless is misleading because we keep hardcopies of radiographs, contracts, and informed consent forms. But, these "thin" charts soon gather dust.

Florida: Our practice has twelve workstations, plus the ability to use the imaging system computer as a workstation.

Georgia: My primary office has eleven workstations and a patient check-in station. My satellite office has eight workstations and patient check-in.

Kentucky: We have a bay of six chairs in our treatment area, a records room and two examination/conference rooms. We have four computers to serve the treatment area and one in each of the other three rooms. In addition, the office manager, administrative assistant, patient coordinator, and I, each have one at our desk.

Lewis: Do you use any laptop computers in the practice? If so, where are they used?

California: We don't have any laptops.

Colorado: We have laptop computers at each chair. Because of the size, I feel this is the best option.

Florida: We have one laptop that I use offsite to modem into the office network and do work.

Georgia: I do not have any laptop computers - but wish that I did. I would like to have one for personal use so that I could use the same computer in each office. On that computer, I would keep my supplemental programs and software for an Internet connection. Using laptops is, in my current view, an economical and practical way to approach putting workstations at every chair. Each person would then be responsible for their own computer and all you would need are a lightweight support, or stand, and a cable to each chair. Believe me, there is not yet a good way to place a full-size PC next to, or at, a dental chair. I foresee that any practice having more than one office will find that portables make tremendous sense, and that we won't be seeing full-size workstations in clinical settings.

Kentucky: The laptops have really made integrating our satellite office more feasible, as well as reducing space requirements in the treatment area. All our treatment area computers are laptops, and we have one in the conference room. The hard drive of another laptop is used to transfer data from the server in the main office to the server in the satellite.

Lewis: Has eliminating the need for pulling paper patient treatment records at each appointment benefited your practice?

California: Yes, we were operating with six employees, and now we operate with just four.

Colorado: In our practice, the amount of time saved by the elimination of pulling and re-filing charts is immense. Not only does it save staff time (really eliminating a staff position), but the access to all the patient information is much faster and we don't have those mysteriously lost pieces of information.

Florida: No doubt about it! There is a real and true time and energy savings that allows the individual, who previously pulled and filed charts, to spend time and energy on other more patient-oriented duties. Also, no more "lost" charts, which provides a time and energy savings, while reducing stress.

Georgia: Absolutely! I was able to eliminate one part-time employee as soon as we quit pulling charts. What we did not consider was the problem of insurance and all the paperwork that is generated from that, with the need to file copies. We used to file all EOBs in a monthly expanding folder, rather than in each individual chart. Even so, it took tremendous time to look up claim history if a patient requested it. It is getting better, but insurance remains a headache. By eliminating paper, I found that we added a new dimension of freedom to the practice; the staff is no longer afraid to ask about the status of treatment because they know they can find the answer so quickly. I think there was a lot of reluctance to be really thorough in tracking patients when we had to look through charts. It is easy now.

Kentucky: In our office, pulling charts from the files was never that time consuming; trying to find charts not in the files was always the real challenge.

Lewis: What are some major benefits derived from the integration of your imaging system with the practice management software? Do you use imaging as a marketing tool, a diagnostic tool, or both?

California: It has been a good marketing tool and a self-diagnostic tool for the prospective patients. When the patient leaves the first visit with a picture of their crooked teeth, it usually eliminates the "do I really need braces" issue.

Colorado: The imaging system is a valuable tool in many ways. First, it is a must for patient/parent education as you are describing your diagnostic findings and treatment recommendations. The old adage that a picture is worth a thousand words is really true. I think we owe it to our patients/parents to give them complete and easily understood information at your initial exams. Once you do this with the aid of imaging, you will not want to do it any other way. You will feel like you are cheating your patients if you cannot show them what you are talking about. I am constantly looking at our initial and progress images, chairside, throughout treatment and then again at the end of treatment as I am deciding what type of retention is appropriate for my patient. The patients are also reinforced as they check in at each appointment and see their initial photos again; reminding them of just how far their treatment has progressed (parents love this too)!

Florida: Being able to access photos and radiographs anytime and anywhere, while also having the ability to send letters, which have photos incorporated into them. We use our imaging system for both diagnostics and as a marketing tool.

Georgia: Attaching images to correspondence is fantastic. Now, dentists really know they have the right patient when they look at an extraction letter. Also, patient check-in is now a fun experience because people really like to see their picture on the screen. I like to look at pictures during treatment to gauge progress, and this is also quite informative for the patient. People

really do like to see that they are improving. I use imaging more as a diagnostic tool, but now that producing images is so easy, I am using it a bit more as a marketing tool. Primarily, I use "before and afters" as a sort of reward, or diploma.

Kentucky: The main advantage is being able to bring up the images at the chairside workstations as a diagnostic tool, when necessary, and not having to search through charts.

Lewis: Has operating in paperless mode caused your patients to perceive that your practice is more "high tech" and/or organized?

California: Very much so! The children enjoy seeing their picture on the computer, and they like to watch as the pictures are placed into the computer.

Colorado: For those of us who accept transfer patients, it is almost a certainty that you will receive a comment about how good the office organization and patient care is. Patients do notice differences among practices, and you can be sure they talk about this with friends. Referring dentists are very much aware of the technology in our office, and the response is always positive. Patients and referring professionals know that they are receiving up-to-date care.

Florida: Both. With perception and reality being closely related since our office is technologically advanced, and more organized, because operating a Paperless Practice requires both.

Georgia: The one thing that identified my practice before going paperless, was "organization." We always heard that comment. I think that the transition came so swiftly, and completely, that patients took it all in stride. Now that everyone on staff is so comfortable with the computers, I think that new patients don't even notice that we are paperless. And this is what I wanted. The computers are in the background, and are useful tools, but they do not define the practice. They have allowed us to more easily care for people, and that care is what improves the practice.

Kentucky: Absolutely - 100%!

Lewis: Has paperless operation enhanced communications with patients and/or parents? With staff?

California: Yes. Chairside, I can pull up the records at any time to show how much they have changed. Many times they forget what they originally looked like.

Colorado: There are myriad ways that a Paperless Practice enhances communication. Any staff member can access any patient's data with just a few keystrokes, enabling that staff member to answer a parent's questions - even if they have not worked directly with the patient. If a doctor calls and asks questions about several of his patients, the information is readily available without pulling charts. Parents and referring doctors are impressed with the organization and are assured that we are on top of the patient's care at all times. The staff enjoys being able to make individual reminder lists (i.e., to call a parent, order supplies, etc.). They simply put in the reminder and the date for action and the reminder will print out the morning the action is to take place, along with the notes and phone numbers. The advantages of being able to access the photos, radiographs, extraction requests, and such, always helps with communication with the parents and among staff members.

Florida: Communication has been both improved and enhanced with patients and parents because you have all the information available at chairside, or at any of the workstations. You can use both visual and written information in your interaction with the patient and parent, and the staff is more ready and willing to communicate the information since it is so readily available.

Georgia: Patient and parent communications may be somewhat better, though I think we did a pretty good job before going paperless. I do think that patients learn a lot more about their treatment when they view the computer screens with all their information displayed, but I think the improved communication is more indirect. We always did chairside letters, etc., but it took longer because we had to transmit the information on a "buck" sheet, which went up to the checkout desk. The "to do" staff lists that get printed each morning are absolutely fantastic! These lists are printed, along with the day's schedule, the first thing in the morning. Some notes were written 6-9 months ago regarding things like "remembering to have un-erupted teeth exposed in a timely manner." We are not forgetting the little details anymore.

Kentucky: Our previous system allowed posting communication letters when scheduling, so this was not new. The "to do" lists for doctor and staff has proved a tremendous tool and has significantly reduced "forgetfulness."

Lewis: In your practice, are treatment notes entered at chairside upon completion of treatment? Who enters them, you, the assistant, or both?

California: Yes, the doctor and assistants both enter information. The staff doesn't need to convey anything to the front office.

Colorado: The orthodontic technicians complete all the treatment notes at the time of the appointment. In fact, it is not possible to check the patient out or schedule an appointment without filling out the treatment notes. The treatment charts are much more standardized, legible, and easier to read using the computer format. Once the treatment notes are entered, they cannot be changed due to medical-legal considerations. If corrections or additions need to be entered later, this can be done; but just like a paper chart, you would not erase but make a note of corrections to the initial entry. The technicians, treatment coordinator, or office manager can also add notes to a "notes" area, at any time, to record conversations with parents, insurance companies, etc.

Florida: Notes are entered at the time of treatment by either the assistant, or myself. The notes are now legible and more standardized, which enhances the accuracy of the information.

Georgia: Everything is entered at chairside! It is the assistant's responsibility to record all entries. I will often tell the assistant to add an extra note in the confidential section. I enter notes in the confidential (extended) notes section of the program regularly, but usually do not do that at chairside. I have found that we save time entering notes in the computer, since so much is standardized and does not have to be rewritten each time; e.g., archwire sizes that carry forward until changed.

Kentucky: The assistants enter treatment notes following each appointment. We developed a list of abbreviations when we went on the system for standardization. By having the assistant who worked with the patient make each entry, accuracy has been improved in documentation and appointment scheduling.

Lewis: How do patients react to seeing all their treatment information and visual records on the chairside workstation?

California: They love it. Some patients like to send notes to their friends.

Colorado: Patients and parents are always commenting on how organized we are as we access their photos, radiographs, referring doctor's letters, and such, chairside. They really do relate organization to quality care - and they are right!

Florida: They are impressed.

Georgia: Patients think it is neat to see their notes. However, the downside is that we must be careful to put nothing negative in the entry.

Kentucky: There is really nothing on the screen that they shouldn't see. Before, patients would pick up their charts on occasion and sometimes read things that they shouldn't see.

Lewis: Does your practice schedule appointments chairside? If so, what are the major advantages of doing it this way?

California: Yes, we do. It frees up the traffic jam that sometimes occurs at the front desk.

Colorado: As many times as possible, we schedule the patient's next appointment, chairside. This works the best for our adult patients; teenagers who make their own appointments, and children whose parents are in the treatment bay. It is so quick that the technicians do not object to doing this, and it relieves the congestion at the front desk.

Florida: Yes. Scheduling at chairside decreases scheduling errors, which saves time while enhancing communication opportunities. Since the person scheduling the next appointment is the same individual who worked with, and on, the patient, it allows for a direct, immediate, and accurate transfer of information to the parent.

Georgia: We try to schedule every appointment from chairside, but find that we can do so only about 80-90% of the time. Young patients are a problem. We do not encourage parents to enter the treatment area every time. So, with the young

patient, we complete an entire checkout at chairside, leaving only the actual appointment scheduling to be done at the front desk. This does save time, since the description of the next appointment shows up at the front desk, instantly. Scheduling at chairside eliminates a lot of confusion and front office vs. clinic staff conflict. The people who have to work the schedule are actually creating the schedule as they make appointments. They know what they can, and cannot, accomplish in a given time, and they can make the proper adjustments without much discussion. Adolescent and teenage patients seem to enjoy the control this process gives them. It puts them in charge of at least a small part of their life.

Kentucky: Yes, we do, and improved accuracy in scheduling subsequent appointments has occurred because the person doing the scheduling worked on the patient. Also, parents are forced to come back to the treatment area, and we can discuss treatment progress more frequently.

Lewis: Are the electronic check-in and on-deck stations valuable components?

California: The check-in is cool, but we don't use the on-deck station.

Colorado: We could not get through our daily schedule in an efficient manner without the patient check-in screen and the on-deck screen in the treatment bay. The technicians know who is there and if they are early, on time, or late. The person who sterilizes instruments and helps seat patients knows what tray setups are necessary from the data on the on-deck screen. Patient flow is much smoother with this system. Patients and parents are continually reinforced about their treatment progress each time they check-in and see their pretreatment photos.

Florida: Yes. They allow everyone (in both the clinical and reception areas) to have an understanding of what is going on within the practice: who is in the reception room, whether we are on time, available chairs, etc.

Georgia: Electronic check-in is fun and very effective. Still, the office has to constantly work at being friendly and greeting every patient. It would be very easy to let a patient check-in without having anyone smile and greet them, but doing so would depersonalize the experience entirely, and that is not what any orthodontist wants. On-deck screens are kept at every chairside workstation when there is not a patient in the chair. This is the screen we all work from during the day. It is fantastic to no longer have the problem of a receptionist failing to notify the clinic that a certain patient has arrived. However, if a patient does not check-in, and is not noticed, we still have a problem. Fortunately, this rarely happens.

Kentucky: Yes. I always hated asking patients to "sign in." It's more personable when their name is in front of them, as if we're expecting them, and then they see their photo as they check in. In addition, knowing the time of a patient's arrival is a real help in bringing patients back for treatment.

Lewis: Does having all the treatment information and records on the computer help your practice field phone calls from patients? From referring dentists?

California: Yes...if patients are having a problem with something, we can identify what the problem is by looking at their last appointment. The computer is much quicker than pulling the chart. Dentists can call and obtain patient information from us when we are in either office, for example: extraction orders and treatment notes.

Colorado: As I answered earlier, a big advantage of having access to all patients' records at each workstation is that any staff member can field questions from patients, parents, and referring doctors with just a few keystrokes. Again, this shows our organization and our individual attention to everyone's needs. When I am speaking to a doctor about his or her patient, I have all the pertinent data at my fingertips. And, as quite often happens, they will ask if a certain patient has made an initial appointment yet, or how another patient's treatment is progressing, and I can answer them within seconds. Being organized shows that we care. We care enough to be organized and take the best care of their patients.

Florida: No doubt about it. One has full and complete access to all information, immediately. Therefore, you are able to answer questions efficiently, accurately, and effectively. This goes for everyone in the office.

Georgia: I personally find it a great help to have all information on hand when taking a phone call. My staff also tells me that they can give appointment information, account status, and things like rubber band size and use, to a caller in less than 15 seconds. Our patients really do appreciate getting an answer immediately, rather than being asked to hold until someone familiar with that part of the practice can pickup the phone.

Kentucky: This is wonderful, because we, once again, don't have to search for charts or pull them for a phone call. This saves an incredible amount of time for us and the caller.

Lewis: How has paperless operation benefited your satellite locations?

California: It no longer matters which office the patients come to, we are always prepared.

Colorado: I neither have a satellite office, nor do I wish to have one. But if I did, I wouldn't think of not being paperless.

Florida: We only have one office.

Georgia: My practice may be a little unusual. Patients can use either office and do so according to the needs of their schedule, although they do usually sort themselves to one office or the other. Paperless operation has made it possible to see the unscheduled walk-in patient, with full access to every bit of treatment information. This really beats making excuses for "not having that part of the record at this office." Also, calling patients have absolutely no way of knowing which office we are in, since full information is available to every staff member, at all times. I really believe that there are some patients in our primary practice who are unaware that we spend our Wednesdays at the satellite office. The best part of paperless operation at the satellite is that I no longer have to be responsible for two or three boxes of charts to carry with me the night before we go there.

Kentucky: The need for pulling charts in our main office and "schlepping" them to the satellite is no longer necessary. We do take the laptops to our satellite, but each assistant is responsible for one, and it has worked out well.

Lewis: A Paperless Practice makes it possible to have a complete backup of all the patient records stored offsite. Is that an important advantage?

California: Yes. Now we always have a complete copy of all the information in each office. Our records are very secure.

Colorado: We backup our computer daily, weekly, and monthly. The back ups are kept off the premises. If there were a fire, we would have all of the pertinent data on each patient immediately. Our server is "daisy-chained" which means that the computer is continuously backing up to our "reserve" hard drive. This is another very important safety feature.

Florida: It is a nice safety net that provides stress relief and peace of mind, even if this advantage is never used, and an unbelievable benefit if it ever needs to be used!

Georgia: I think this is one of those advantages that is so obvious that a comment really isn't needed. Offsite storage of the entire practice gives more peace of mind than any double-lock, fireproof system.

Kentucky: Yes, and our being able to take all the patient records to the satellite office is a good example.

Lewis: Has paperless operation made your practice more efficient?

California: Yes. As explained earlier, we have reduced the number of staff.

Colorado: Orthodontics is a unique specialty in that we see more patients than most other types of practices. Therefore, organizational challenges are great. I personally feel that it would be very difficult, if not impossible, to achieve an optimum level of organization within our practice without a paperless system.

Florida: There are definite time savings benefits associated with the Paperless Practice, which revolve around having all the information available at anytime and at any workstation. This also provides stress relief.

Georgia: A Paperless Practice forces the doctor to constantly improve his organizational skills, and rewards standardization and simplification with tremendous timesavings. Every time you save 15 seconds for each patient seen, you save anywhere from 12-30 minutes per day for the practice. Wow! Just having a printed appointment slip that also gives account information, and a work/school excuse, saves a tremendous amount of time over any written system, or even a computerized system that just gives appointment information.

Kentucky: It's not just more efficient - it has improved the quality of what we can do for our patients. As I said earlier, parents come to the treatment area more often for better communication. New patients are scheduled in a conference room for banding appointments, instead of at the front desk. No more lines and waiting at the front desk to schedule. Also, if someone needs copies of treatment notes, I'm not embarrassed by the handwriting!

Lewis: Would changing your office design allow the practice to better benefit from paperless operation?

California: No.

Colorado: I was fortunate that the original office design I worked with had patient flow and computers in mind. The remodeling I am currently undertaking is finishing space that was not previously utilized, and it will blend very nicely with our current arrangement. If you have the opportunity to design a space with the paperless system in mind, you will want to begin with patient flow from the check-in screen to the patient making their next appointment. The routing of new patients to your office is also very important. What they are exposed to on their first visit is very important.

Florida: There is no doubt that office design is an important part of maximizing the full advantage of a Paperless Practice.

Georgia: If I could remodel now, I would try to eliminate every rigid partition in the practice and use movable modules whenever possible. It is impossible to visualize where we will be in the evolution of paperless operation in 2-3 years. Everything I planned in designing two new offices, and in one remodeling, could be altered to work better. Where I designed a check-in area does not work as well now that we are paperless. Clinic space requirements seem to be best handled now by using mobile cabinets, cable and supply lines entering near a chair base without hindering movement around the chairs, and letting work areas define themselves. Both the doctor and assistant need to have access to the computer, so putting in a rigid stand does not make much sense. I would like to be able to move the computer to the user, rather than moving the user to the computer, so I think the use of laptops will be a major consideration in my next remodel. Chart storage space in the front office can be reduced significantly. All you need is a small folder for keeping signature documents such as initial insurance forms, consent to treatment, and the signed financial contract. I still use models, but expect that in 5-10 years this will not be needed, once the 3D model systems are perfected. They will allow model storage in a remote area of the office, and that will let me eliminate a lot of storage cabinets around the clinic area. The bottom line: design as much flexibility into the office as you can, realizing that there is never going to be a totally-perfect solution to the problem of providing sterile treatment areas, which are accessed by multiple people, in short time frames.

Kentucky: Yes. I would be more inclined to store more records and models off-site and utilize the space better in the office. More room in the treatment area for workstations is something many offices may need.

Lewis: Please summarize your feelings about operating a Paperless Practice?

California: It has made us more efficient, looks more high tech, increased our ability to communicate more effectively, and enhanced our work environment.

Colorado: At this point, I do not feel like I could ever return to practicing the way we did four years ago. I do not feel that we would be able to meet all of our patients' needs in an organized and professional manner. The time restraints on myself and my staff would be overwhelming.

Florida: While there are challenges and considerations with operating a Paperless Practice, the benefits significantly outweigh those challenges. I could not - nor would I - go back.

Georgia: I love finding solutions to problems, and the transition to paperless operation has provided me a tremendous opportunity to solve numerous problems. I still use paper, but I am using it less every day and continue to find new ways to let electronic machines make my life easier. My advice to anyone anticipating a switch to paperless mode would be that he or she spend all the time they can organizing their practice, before trying to put that practice into a computer. Look at the schedule. Look at, and perfect, your letters. Set up staff communication systems. Think about what you want your imaging system to accomplish. In other words, look at every aspect before trying to find a software vendor. Paperless Practices are here - and they work. But, it is not something you can pick off the shelf to fit instantly. I have found the evolution of my practice, to its current stage, to be equally as fascinating as the process of correcting malocclusions and facial deformities. I guess a summary would be that I just enjoy trying to find a better way to do whatever I am doing, and paperless operation has certainly proven to be a better way.

Kentucky: Paperless operation will become as routine as having a copier or fax machine. Why? Because it is a practical, logical and efficient method of record keeping, allowing record keeping to trigger other systems by simply having files entered electronically. It also eliminates the redundancy of manual record keeping. Never again will one of my assistants ask me, "Can you read this entry to me? I never could read your handwriting!"

Conclusion

This interview makes it apparent that paperless operation positively influences every area of the practice, although these doctors operate in different ways. Many people have the mistaken idea that an increased use of computers in the practice will lead to less interaction with the patient - not more. Yet, the doctors taking part in this interview have consistently emphasized that their paperless operations have led to increased communications with patients and referring doctors, and to serving their patients better. Along with providing the best treatment possible isn't this what every practice strives to accomplish? It also appears unanimous that paperless operation is cost effective, improves efficiency, and reduces stress for patients, doctor, and staff. Still, only you can ultimately decide whether operating in paperless mode is right for your practice. In closing, I want to express my appreciation to each of these authorities in Paperless Practice operation for participating in this interview. Hopefully, the questions asked were at least some of those that you would have liked to ask if you were given the opportunity.

Reference: 1 Hamula, Warren, DDS, MSD, Hamula, David W., DDS, MSD, Orthodontic Office Design: The Paperless Practice, ***Journal of Clinical Orthodontics***, pg. 35-43, January 1998.