E-Prescribing: A Feasibility Study for Redmond Dental, Inc.

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December 4, 2009
A research paper submitted in partial fulfillment of the requirements for the degree of Master of Science in Health Informatics:

E-Prescribing

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12/4/2009
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Introduction

The contention that the healthcare system in the United States needs to be better seems to be universal. Although health care providers, payers, consumers, and elected officials may fervently disagree on how best to accomplish this, most everyone agrees that there is ample room for improvement. Balancing the opposing trio of cost, quality, and access to care is a persistent problem (Sultz and Young 29-32). Drawing attention to the issue of quality, the Institute of Medicine famously released a report in 1999 “To Err is Human: Building a Safer Health System,” estimating that between forty-four thousand and ninety-eight thousand people die each year from medical errors. Even the lowest estimate exceeds the number of deaths caused by automobile accidents, AIDS, and breast cancer combined. Not only are these costly in terms of human lives, they are expensive in dollar amounts, too, costing between seventeen billion and twenty-nine billion dollars annually. These errors did not seem to be caused by carelessness on behalf of health care providers, but rather by flawed processes and conditions. Among other recommendations for improving medical safety, the IOM recommends “implementing safety systems in health care organizations to ensure safe practices at the delivery level” (Institute of Medicine).

Specifically, some of these deaths relate to prescriptions for medications written by clinicians to treat disease. Despite good intentions, the prescribing of medication can lead to medical errors and/or adverse drug events (ADEs), up to and including death. It is important to distinguish between the two: A medication error can include dosage, frequency or even drug choice. Writing Keflex 500 mg to be taken twice daily, instead of the correct three times daily is a medication error, but is unlikely to cause harm. Differently, an ADE might or might not result Gretchen Parisi
from a medication error. Writing a prescription for a patient with a previously unknown allergy to that particular drug will cause an ADE, but is not a medication error. Combined, the impact of medication errors and ADEs is severe:

- An estimated eight per cent of outpatient prescriptions contain an error.
- ADEs account for three per cent of emergency room visits.
- Approximately three to six per cent of hospital admissions are related to ADEs.
- About one-hundred-thousand deaths each year are from ADEs.
- For each dollar spent on medication in outpatient care, another dollar is spent to manage the consequences (Cusack).

Considering these facts and figures, the need for a safer, improved method of writing prescriptions becomes apparent. E-prescribing is "the use of an automated data entry system to generate a prescription, rather than writing it on paper." Prescribers, pharmacists, patients, and health plans would benefit from the adoption of e-prescribing. Patient safety would improve; through clinical decision support, prescriptions would be checked against a patient’s medical history for potential ADEs. Patients would have more convenience in filling their prescriptions. Formulary adherence would increase, as prescribers could check health plans when writing the prescription. Finally, communication errors between the prescribers and pharmacists would diminish as prescriptions would no longer be hand-written, and fewer clarifying phone calls would need to be made (Kilbridge 5).

**Application**

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E-prescribing can be applied to any health care provider who prescribes medication as a form of treatment and is not limited to a particular setting. In particular, dentists could use e-prescribing to improve oral health.

**Thesis**

*The purpose of this paper is to assess the feasibility of implementing an e-prescribing system at Redmond Dental.* This feasibility study was undertaken to identify obstacles and prospects, establish objectives, describe existing conditions, and analyze the costs and benefits of alternatives (Alan Thompson 185). First, an analysis of Redmond Dental and research about e-prescribing were conducted. Second, a market assessment analyzed competitors and identified barriers to entry. The potential of and alternatives to e-prescribing were also considered. Next, an examination of the regulatory feasibility was considered, taking into account privacy laws, prescription writing laws, and licensure issues. A technical feasibility study showed what types of e-prescribing software would be available for dental offices and would interface with the existing practice management software. To determine financial feasibility, costs were identified. Organizational feasibility dealt leadership and workflow. Finally, based on the regulatory, technical, financial, and organizational feasibility, recommendations and study conclusions are provided.

**Methods**

Work began on this project during the spring semester of 2009. The objectives included:

1. A review of literature and interviews with experts about e-prescribing.

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2. Assessment of the current prescribing procedures at Redmond Dental.

3. Development of a request for information for e-prescribing at the dental practice.

4. Contact with vendors about possible programs that would interact with the existing practice management software.

5. Compilation this information for a paper and presentation.

Over the past several months, all five of these goals have been accomplished. The products of the efforts are contained in this report and they will be presented to the MSHI faculty on December 4, 2009. The literature review consisted of compiling and reviewing articles pertaining to e-prescribing, using both internet and academic search engines. Experts in pharmacy, health information privacy, and dentistry were interviewed. Correspondence was exchanged with e-prescribing software vendors. Employment at Redmond Dental provided close knowledge of the organization’s policies and procedures, in particular those related to the prescribing of medication. A request for information was developed and was distributed to the vendors. The compilation of the research and efforts follows.

Redmond Dental

Redmond Dental opened in Moody, Alabama in August 2003. The dental practice was started by Dr. Nathaniel Redmond. He had graduated from the University of Alabama Dental School in 2002 and then completed a residency at the Veterans’ Administration the following year. When the practice opened, no patients in the area considered Dr. Redmond their dentist, and he relied on professional contacts, word-of-mouth, and print advertising to attract patients. On opening day, his brother worked as a receptionist and insurance coordinator; a dental

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assistant was the only other staff member. The practice was open for appointments three days weekly. Despite the riskiness of opening a practice, Dr. Redmond highly valued the independence and autonomy available to him (Redmond).

Dr. Redmond realized that managing a practice was complex and multi-faceted. He would need practice management software that addressed both clinical and administrative functions. At the recommendation of colleagues and peers, he selected Dentrix by Sullivan-Schein. Dentrix is the only software used at Redmond Dental, and it addresses all aspects of the practice, including scheduling, patient recall, billing, charting, insurance claims, patient records, management reports, treatment plans, referral tracking, and clinical progress notes (Henry Schein Practice Solutions).

Since the practice in Moody (Redmond Dental) grew slowly and did not immediately generate profit, he supplemented the practice and his income by working two days per week at West Alabama Dental. By 2004, his brother resigned and Dr. Redmond hired a part-time office manager. This person was to perform administrative functions, rework policies and procedures, and advise him about the practice. Later that year, he added a dental hygienist to the practice. In 2006, the assistant he originally hired had attained her dental hygiene license. This brought the staff total to one dentist, two hygienists, and an office manager. The practice continued to expand as shown. In July 2009, a second dentist joined the practice and worked in Moody, bringing the number of dentists to two and the number of days per week the practice was open to five. In the winter of 2009, the office will build an additional two operatories in hopes of increasing the number of hygiene appointments.
In 2008, the dentist who owned West Alabama Dental sought part-time retirement and offered to sell the practice to Dr. Redmond. On the first of July, the transaction was complete, and Dr. Redmond assumed ownership and management of this practice. This practice uses primarily paper record and charts, so it is excluded from the statistics and analysis in this report. To automate this practice would require extensive wiring, dentist and staff training, and IT investments. This portion of Dr. Redmond’s practice is mentioned here to show his plans for expansion; as he increases his practice, he will become more dependent on technology.

Redmond Dental provides all types of dental services, with the exception of orthodontics (braces). Combined, the dentists offer examinations, restorations, root canals, oral surgery, and prosthodontics; the hygienists perform regular cleanings on patients. The practice serves a rather rural, low-income community and therefore presents services needed by this demographic. Manufacturing dentures and performing emergency extractions comprise a large portion of the business. Pulling teeth and treating other dental emergencies requires the writing of prescriptions, usually for antibiotics and pain medication, often narcotics.

**Prescription Writing Process**

Between 2004 and 2008, the dentists at Redmond Dental wrote over four thousand prescriptions. The prescription writing process at Redmond Dental is neither uniform nor documented. As the entire dental record is electronic, the practice uses a rudimentary form of e-prescribing. The process has two components: first, the capabilities offered by the practice software, Dentrix; and second, the interaction among the dentist, staff, patient and Dentrix.
Dentrix Capabilities

In Dentrix, the prescription module enables the documentation and distribution of medications. This section of Dentrix is customizable, allowing the dentists to enter frequently used medications, dosages, and instructions. The prescriptions entered here are then available from a drop-down list in the patient’s chart. An advantage of this method is its repeatability. The dentist most often writes pain medication and antibiotics, usually following oral surgery and endodontic procedures, and often writes the same medication. This module is also useful for rarely written prescriptions, too; their names, spellings, and dosages are easily referenced and accessed.

To dispense a prescription to the patient, the staff member opens the prescriptions module. The customized list of prescriptions appears and then selects the appropriate medication. The prescription then prints on an 8.5 X 11 sheet of plain white paper. The dentist then hand signs each prescription. Finally, the patient receives the prescription to have filled at the pharmacy of his choice.

Patients will occasionally request that their prescriptions be called into the pharmacy. Called-in prescriptions also occur for patient ease and for after-hours care. If a prescription is written via telephone during business hours, this transaction is recorded in the patient chart. The same method for hard-copy prescriptions is used, except that it is not printed. This way, the dental record is kept current and accurate.

A patient may need treatment outside office hours, and may contact the dentist using the after-hours answering service. The dentist may choose to treat with medication and call in a prescription. These after-hour refills and new prescriptions are not entered into Dentrix and.

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therefore, are impossible to track or analyze. It is important to note that not all prescriptions may be phoned into a pharmacy. Drugs belonging to Schedule Two, such as Percocet, require that the patient carries a hard-copy prescription to the pharmacy (Ferris). Some offices fax prescriptions into pharmacies, but this has never been done at Redmond Dental.

**Weaknesses**

The process of writing and delivering prescriptions is at best open and free-form, and at worst chaotic. The current method has some fundamental flaws.

**Workflow Problems**

- Prescriptions can only be printed from the computer station at the reception desk. This is despite the fact that the process would be more streamlined if the prescription were printed, signed, and delivered to the patient in the operatories in the back.

- No staff member is assigned to preparing prescriptions. Typically, this task would fall to the dentist himself or to the assistant assigned to him. Since Redmond Dental has no assistants, but rather two hygienists and an office manager, the task simultaneously belongs to everyone and no one. This often means that the patient is ready to be dismissed, but has to wait for prescriptions.

- After the prescription has been printed, it requires the prescribing dentist’s signature.

Since no particular person prepares the prescription at a particular time, actually assembling the dentist, the paper prescription(s), and a pen is a feat of Olympic proportion.

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• Not recording after-hours prescriptions is sloppy record-keeping. Taken to extremes, this could create liability for the prescriber, or could lead to an adverse drug reaction or interaction.

**System Problems**

• The drop-down list, although seemingly foolproof, can present problems. The prescriber may select a similarly spelled drug, or may inadvertently click on the entry immediately above or below the desired drug.

• Since the prescription has its source in the electronic health record and is stored there, it could be considered e-prescribing. But it falls short of clinical decision support (CDS). For example: a patient has listed an allergy to amoxicillin and this has been recorded as a Medical Alert in Dentrix. If amoxicillin is selected from the Drop Down list in the Prescriptions Module, no alert will occur.

**Liability Issues**

• The prescription is printed on white copy paper and therefore can be easily reproduced and is not tamper-resistant.

• The completed prescription is dispensed at the time of check-out. If multiple prescriptions are signed and waiting for patients, handing one patient’s prescription to another patient is likely. This is a violation of HIPAA, inconvenient for the patient, and embarrassing for the office.

**Strengths**

Despite these categorized problems, the current prescribing protocol has some advantages:

**System**

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• At the medication dispensing screen, the patient’s medical alerts are available by one mouse click. The dentist can readily check for drug allergies.

• The patient’s prescribing history is kept in one place, rather than dispersed throughout a paper chart.

• Since the prescription is printed through Dentrix, it is always legible and clear to the pharmacist.

Although Dentrix cannot directly send a prescription to the pharmacy, its prescription module functions well. Many of the current problems pertain to workflow, rather than faulty or insufficient information technology.

Research

Definition

“A true e-prescribing system is a closed-loop system in which the entire process of prescribing a medication is electronic from beginning to end: a clinician prescribes medications, those prescriptions are sent electronically to a pharmacy, and feedback comes back to the clinician when the patient collects the prescription. Intermediaries of paper printouts, faxes, and emails are unnecessary. No information is re-entered. Prescriptions undergo medication checking for errors and formulary compliance, and are legible” (Cusack). New drugs are added each year to the pharmacy to treat all-types of disorders. The proliferation of new drugs, and the amount of patients taking multiple drugs for multiple conditions mandates the need for providers to stay abreast of the new medications, how to use them, how to prescribe them, and any possible

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side effects (Little). In 2007, 1.47 billion prescriptions were eligible for e-prescribing, but only approximately 35 million prescriptions were actually filled that way, or about two per cent (Conn). Only six percent of physicians were using e-prescribing systems (Kuehn).

Six levels of implementation show the progression from the most basic forms of e-prescribing to the full integration.

Level One: Electronic drug reference.
Level Two: Separate prescription writer, apart from patient medication history
Level Three: Database of limited information, such as allergies and demographics
Level Four: Medication Management showing all of a patient’s medications
Level Five: Interoperability and linkage among prescribers, pharmacies, third-party payers, and patients
Level Six: Integration with a complete EHR (Teich and Marchibroda).

Benefits

Patient Safety
Electronically generated prescriptions should be clear and have no ambiguities. Pharmacists would not have difficulty reading hand-written prescriptions. Pharmacists make an estimated one hundred fifty million calls to physicians annually for alerts or clarifications (Tennant). The time and labor intensive practice of telephoning prescribers to clarify medication, dosage, and instructions could be eliminated (Sipkoff). Information contained the patient’s electronic health record (EHR) is used with decision-support software to reduce errors. The EHR stores all drug allergies, current medications, and potential ADEs. Every time a

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prescription is written, this information is reviewed to instantly detect any potential problems (Fox, Figge and Tribble). This is called clinical decision support. The Henry Ford Health Clinic claims to have “prevented tens of thousands of medications errors after a year of testing an electronic prescribing system with three hundred primary care physicians” (Chin).

Costs
E-prescribing promises to lower healthcare costs by encouraging adherence to drug formularies and by encouraging the use of generic options (Vesely). Although patient safety and human life are invaluable, e-prescribing can reduce costs for patients and insurers. Elderly and impoverished patients can find paying for the medications to be a financial hardship. E-prescribing can help reduce prescription costs by prompting physicians to select a generic version. A more sophisticated e-prescribing system may include the insurance formulary and recommended medications. The patient and the insurance company will receive financial benefits, but the prescriber does not (Fischer).

Insurance companies may sponsor e-prescribing in hopes of achieving those cost reductions. “For example, the Health Alliance Plan of Michigan estimated a five year ROI of more than $14 million, based on the 2005 and 2006 improvements in its generic use rate. A new study based on e-prescribing in Massachusetts found that physicians who adopted e-prescribing systems with the ability to check formulary status increased their prescribing of generics and other lower-cost options, resulting in a conservative estimate for consumers and insurers of $845,000 per 100,000 patients per year” (Friedman, Schueth and Bell).

Physicians may find that hand-writing a prescription is quicker, easier-to delegate, and less hassle (Scalise). A study conducted at the Everett Clinic in the Puget Sound region may
support their belief. A time-motion study showed that prescribers who use e-prescribing spent less time writing prescriptions, but spent more time on other computer-based duties. E-prescribing took very slight longer (twelve seconds) than hand-written prescriptions, and extrapolated, may add three to five minutes to the clinician’s time (Hollingworth, Devine and Hansen). However, a survey of Swedish physicians using e-prescribing systems showed that ninety-one percent of them believed e-prescribing to be time-saving and ninety-two percent expressed that through e-prescribing, patients received better service (Hellstrom, Waern and Montelius).

Medicare Incentives

In 2007, the American Health Information Community recommended that Medicare require physicians to use e-prescribing (DoBias). In December of that same year, the House Ways and Means referred the Medicare Electronic Medication and Safety Protection Act, H.R. 4296 to the Subcommittee on Health. This plan would have created financial incentives for Medicare providers who used e-prescribing but a ten per cent reduction in fee schedule for those do not. This particular bill never became law (Schwartz).

Then, on July 15, 2008, the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) became law (CMS). Section 132 of this bill employs a “carrot” and “stick” method for physician adoption of e-prescribing. MIPPA offers encouragement for providers who adopt e-prescribing 2009 through 2013. The law mandates e-prescribing in 2011 and beyond by reducing payments to providers who do not elect to e-prescribe. It does, however, provide a two per cent bonus in 2009 and 2010 for adoption, which is reduced to one per cent

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then in 2011 and 2012. MIPPA dictates penalties of negative one per cent in 2012, negative one and a half per cent in 2013, and two per cent in 2014 and afterwards for physicians who do not e-prescribe. The law makes exception for physicians who rarely write prescriptions, and allows the Secretary of Health and Human Services to make exceptions for hardships (those unable to use a qualified e-prescribing system) (American College of Cardiology).

**Barriers**

**Liability Concerns**
Despite improvements in patient safety with e-prescribing, the liability for physicians may increase. With information from the pharmacy, prescribers will be able to tell if and when the patient picked up the prescription. Will doctors have to deal with compliance issues? States Catherine Deemer, president of DrFirst, an e-prescribing vendor: “There’s a significant concern on the physician side in two areas. One is straight liability: If I [physician] tell you to take a drug and someone tells me you’re not taking it, am I liable if I don’t do something about that? The other problem is that physicians may be suddenly saddled with a new expectation of provision of care that they’re not being reimbursed for” (Terry).

Implementing an e-prescribing system consumed extensive personnel and monetary resources. Requiring customization, there is no “plug and play” software available (Robeznieks).

**Pharmacist’s Perspective**
The network among clinician offices and pharmacies is incomplete. Approximately two-thirds of pharmacies are able to accept online prescriptions (Terry). Most of the chain
pharmacies can, but independent pharmacies trail behind, with only two per cent being ready for e-prescribing in 2006 (Lowes).

Workflow within the pharmacy can also be a detriment to e-prescribing’s success. Pharmacists and staff must be familiar with their role in the transaction and have explicit training in order to prevent call-backs to the originator (Terry). Another problem, according to Andrew Weis, a pharmacist, with e-prescribing is the “cook-book” nature involved. The software can be used as a crutch: prescribers may rely too heavily on the prompts and suggestions, rather than on their clinical experience. For example, after entering a child’s weight and other information, the system may prompt a prescribed dose of 437.5 mg of an antibiotic, when 500 mg would be the usual dose in a high-safety margin antibiotic like amoxicillin. He further reported that there can be great variation in the dosing algorithms or drug information from e-prescribing program to program.

Successful Implementations

Five fundamentals are critical to the success of e-prescribing. First, at implementation, users must be well-trained and supported in order to incorporate the system into the office workflow and to identify and resolve any immediate problems. Second, third-party payers must support the initiative through programs such as pay-for-performance, in order to encourage adoption by clinicians. Third, e-prescribing suppliers must aggressively market and improve their offerings. Fourth, workflow must be considered, as e-prescribing generally falls directly on the health-care provider rather than support staff. Finally, users must realize that an e-prescribing system is a
cooperative effort and cannot be accomplished by either the pharmacy or provider alone (Scalise).

In 2004, a panel of experts from the fields of “medicine, nursing, pharmacy, managed care, pharmacy, benefit management, consumer advocacy, medical informatics, health care oversight, health care quality and safety, and health economics” assembled to develop a list of the ten most desirable features in an e-prescribing system. They include:

1) Patient Identification: More identifying criteria than simply the patient’s name should be visible.

2) Patient History: A list of prescribed medications, from all prescribers and the pharmacy, assist the provider in avoiding ADEs.

3) Medication List: Recommended or frequently used prescriptions should be available first.

4) Alerts: Clinical decision support should be used prudently. While some recommendations are helpful, too many can be ignored.

5) Patient Education: Printouts should be available to patients, with clearly and easily-understood terminology.

6) Data Transmission: The prescriber’s and pharmacist’s systems must be able to exchange data, and both parties should be informed if a transmission fails.

7) Patient Oversight: Prescribers should know if and when a prescription was picked up.

8) Transparency. Rationale and logic underlying clinical decision support should be free from biases.

9) Prescriber Feedback: Doctors should be able to data-mine for trends in prescribing.
10) Security and Confidentiality: All HIPAA requirements should be carefully applied (Bell, Marken and Meili).

A Cooperative Approach
Prematics, located in Bethesda, Maryland is working to overcome the barriers to e-prescribing. Realizing the benefits, they developed an approach to encourage physician adoption. Rather than simply selling a software package, Prematics “installs the Wi-Fi access points, the wireless connections, the Internet access, provides the printers, provides the PDAs, and then monitors that environment and supports it.” The company spreads the risk of the investment between the health plans and the physicians, by invoicing the health plans a fee for each prescription sent electronically. Currently, their efforts are focused in Pennsylvania, Florida, and Texas, but the CEO envisions their service being used nationwide (Hutchinson and Lundberg).

Market Analysis

Competitors
Redmond Dental is located in Moody, Alabama. Nine other dental providers are located within a ten mile radius, including a periodontist and a denture center. A competing dental office is next door to Redmond Dental. Other dental offices could be opened nearby, as there is no Certificate of Need required, as there is for hospitals (Cauchi, Hanson and Thangasamy).

Barriers to Entry
The Board of Dental Examiners of Alabama, however, limits the practice of dentistry by only permitting dentists to own dental practices (Board of Dental Examiners of Alabama). For example, a corporation could not open Teeth for Alabama Centers all over the state and employ dentists. However, a dentist could do this.

Potential

E-prescribing has the potential to improve the patient experience. Patients would no longer leave with the dental office with prescriptions in hand and personally deliver them to the pharmacy. E-prescribing would eliminate this step. Patients could not lose or misplace the slip of paper, and would avoid waiting at the pharmacy with the contagiously ill. Some patients may even be impressed with the technological sleekness of the system.

E-prescribing also has the possibility, for some, to detract from the patient experience. Privacy concerns could pose an impediment to patient acceptance (Lohr): having their personal information sent over the internet may cause some patients to feel insecure or exposed. Prescriptions written by a dentist are fairly benign and unrevealing, and usually only include antibiotics, pain medication, or prescription toothpaste or mouthwash. In this case, patients may feel more comfortable having e-prescribing at their dentists’ rather than physicians’ offices. Some still would balk at so obvious an electronic use of their health information.

If implemented, e-prescribing would be a unique feature to Redmond Dental. No other dentist in the ten-mile radius currently offers this service. But questions remain. First, would it attract new patients to the office? Probably not. Existing patients or new patients referred or gained through other means would use the service. Patients seemingly select dentists based on Gretchen Parisi

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location, office hours or referrals, rather than in-office technology. To leverage prescription writing could be considered unprofessional, as prescription writing is not a dentist’s primary focus, but rather a tool to be used. Focusing on prescription writing may attract patients whose primary interest is not their oral health, but recreational drugs. Second, would it increase revenue? Again, probably not. E-prescribing would be a service provided by this office, rather than a treatment performed by the dentist. Redmond Dental could not charge the patient for using the e-prescribing system.

**Alternatives to E-Prescribing**

In considering the market feasibility of this project, an investigation of alternatives must be undertaken. What other methods of writing prescriptions exist? Would there be a better use of resources?

While e-prescribing might be the most technologically advanced method of writing prescriptions, it is not the only option for providing patients with medication. One choice would be to have the dentist hand write the prescription on a prescription pad. If only the dentist himself writes the prescription, the opportunity for fraud by staff would be largely reduced, as would the prospect of having to re-write incorrectly staff-prepared prescriptions. Despite these modest benefits, the dentist’s handwriting scripts would be technologically regressive. Also, the patient’s chart would be incomplete. A method for documenting which prescriptions had been written and to whom would have to be established. Since the current software Dentrix so easily tracks and prints prescriptions, reverting to a hand-written method seems inefficient.

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As described, Dentrix offers a prescription module that is completely customizable, which Redmond Dental has utilized. Staying with the current protocol is an alternative that should not be overlooked. The existing process has, from all appearances, worked fairly well for the past five years. A critical look does show many flaws, but no system can ever be perfect. Yet another option would be to stay with this technical system of writing prescription and to change the workflow. Arguably, the problems with the existing process are organizational in nature, rather than technological. An in-depth examination and changes to policies and procedures may address key problems. For example, if the patient received the prescription while still in the operatory, the risk of handing another’s patient’s prescription at checkout is mitigated. Or, adding a printer near the operatories would streamline the process.

Having hand-written prescriptions, maintaining the existing process, or modifying workflow only offer options which address the internal processes of the dental office. Any or all of these would have little impact on the patient experience. The patient would still leave the office with a paper prescription to hand-carry to the pharmacy. To address this, another option would be to store and dispense medication on site. While this might be convenient for the patient, the office does not possess the resources necessary to support this effort. Combined with the increased risk of theft, the federal and state regulations and licensure issues involved alone make this option implausible (Office of Diversion Control).

Another way to eliminate patients’ toting the paper prescription would be for staff to call the prescriptions into the pharmacy. The advantage to the patient is clear, but this method is not without drawbacks. First, not all prescriptions may be phoned into the pharmacy. (i.e. Percocet) and require a paper prescription, eroding some of the benefit to the patient. Identifying the Gretchen Parisi
patient’s preferred pharmacy and placing the phone call would interrupt the workflow at the office. Documenting a phoned-in prescription requires the same protocol as printing a prescription from the Dentrix module, with the lone exception of actually printing it.

Before overhauling a procedure, examining all possible alternatives is prudent. With any of these prescription-writing options, advantages and disadvantages exist. Some are better for the patient; others are better for the administration of the office. Balancing these needs is a constant struggle, and certainly extends beyond prescription writing.

**Overall Improvement**

The analysis presented merely addresses options for one aspect of all the services this dental practice offers. Making changes, reforming procedures, or purchasing new technology all consume valuable and scarce resources. Before embarking on any project, one must just not consider only the alternatives for the one piece, but must also reflect on how critical this piece is to the whole puzzle. In this case, should the prescription writing process be the focus of examination, consultation, and reform? Or is there something else that would benefit the practice and patients more? Cases in point: should more operatories be added to increase patient revenue? Should a hygienist position be eliminated? Should the office hours be changed? Really, what is best for the practice? No clear answer emerges. The focus of this study is e-prescribing, but not seeing the prescription writing process in the context of the entire practice is unwise.

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Regulatory Feasibility

In order to protect patients, healthcare providers face government regulations. Relating to e-prescribing, what regulations might apply?

Protecting Patients’ Privacy

E-prescribing requires the use of the internet to relay the patient’s name and information as well as the medication name, dosage, and instructions. Health information is inherently private, so safeguards are necessary to protect the patient’s privacy and to maintain confidentiality among the patient, clinician, and pharmacist. The disclosure of health information must have boundaries and be secure. Consumers should have control over who has access to their health information. Users of information should be held accountable as to whom, why, and how that information is disclosed. A balance must be achieved so that research and public health is served, providers and health plans have sufficient information to carry out their duties, and patient privacy is protected (Berner).

In April 2003, federal standards to safeguard patient’s privacy went into effect and provided a uniform, basic protection for healthcare consumers nationwide. This law, the Health Insurance Portability and Accountability Act of 1996 (HIPAA), limits the ways that “health plans, pharmacies, hospitals, and other covered entities” may use patients’ health information. HIPAA protects patients’ information by granting them access to their own medical records, informing them of privacy practices, placing limits on how health care information may be used, prohibiting marketing, encouraging confidential communications, and offering a protocol for complaints. Providers, health plans, and other covered entities must have written privacy

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procedures, and offer employee training on privacy laws and rules. The Health and Human Services Office for Civil Rights administers and puts into force the regulations (U.S. Department of Health & Human Services).

Two years later, in April 2005, another part of HIPAA, Security Standards for the Protection of Electronic Protected Health Information (known as the Security Rule) became effective. This rule provides a consistent floor of protection for all individually identifiable health information that is transmitted electronically. Covered entities must “ensure the confidentiality, integrity, and availability of all electronic protected health information (ePHI) the covered entities creates, receives, maintains, or transmits” (HIPAA Security Rule). The Security Rule does not prescribe a specific technology to be used and therefore is technologically neutral. The rule applies to all sizes of covered entities, from the smallest to the largest (Centers for Medicare and Medicaid Services).

The Security Rule Standards include five categories: “administrative safeguards, physical safeguards, technical safeguards, organizational standards, and policies. procedures. and documentation requirements.” The highlights are summarized:

Administrative Safeguards:

- Address security risks and have protocols that prevent, identify, and correct violations
- Establish disciplinary measures for violations
- Appoint a person responsible for the covered entity’s security measures and policies
- Make information available to people so that they can carry out their job duties, but no more than necessary
- Establish procedures allowing access to ePHI

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- Mandate privacy and security training to affected personnel
- Establish policies and procedures for handling security breaches and incidents, and responding to emergencies (system failures)
- Audit adherence to the policies and procedures, document any findings, and take correction actions
- Ensure that entities receiving ePHI have necessary security measures

Physical Safeguards:
- Limit access to physical equipment and locations containing ePHI
- Have security measures for the use and disposal of hardware that may contain ePHI
- Protect workstations from unauthorized use

Technical Safeguards:
- Install software and have hardware that monitors systems with ePHI
- Prevent ePHI from being destroyed or altered
- Limit access to only those people or programs that need the ePHI to perform job duties

Organizational Requirements:
- Be able to prove that business associates adhere to appropriate security measures regards ePHI
- Store written policies and procedures documenting compliance with the Security Rule for at least six years (HIPAA Security Rule).

Privacy and confidentiality are primary points to address when considering e-prescribing.

Prescribers and pharmacists both are considered HIPAA covered entities, and therefore must

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comply and document their compliance, with all aspects of the privacy and security regulations. Aside from meeting federal standards for patient privacy and confidentiality, state laws that extend beyond the federal HIPAA could also apply. However, Alabama laws pertaining to e-prescribing are not more restrictive than those set forth by the federal government (Clements).

Although Redmond Dental currently transmits electronic claims to dental insurance providers, the organization does not meet the standards set forth in the Security Rule. Security training is neither provided nor required. There is no written documentation about any ePHI. Computers are left on continually, with no individual logins and passwords. Screens are not protected from view. The server is readily available, and the old server is not stored in a protected area. Clearly, this should be addressed immediately, because the organization is in violation of federal law.

Beyond law-breaking, however, the failure to comply with the Security Rule will be an impediment to having a fully-functioning e-prescribing system. The Security Rule requires that a covered entity's business associates have appropriate measures to protect ePHI. That is, a covered entity must be sure that the recipient of any ePHI also meets the Security Rule. With Redmond Dental not meeting those requirements, pharmacies should not be willing to exchange ePHI with Redmond Dental until Redmond Dental can document compliance. This issue is critical; Redmond Dental must address this issue immediately.

**Drug Enforcement Agency**

Despite e-prescribing's potential for reduced costs and decreased errors, the U.S. Drug Enforcement Agency (DEA) presents an impediment for universal adoption: the DEA requires

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hand-signed prescriptions for Schedule II narcotics. The organization has traditionally contended that technology creates more opportunities for errors, prescription fraud, and a decreased control (Miller 32). The DEA must develop regulations that would enable and encourage e-prescribing, but must maintain high standards for “authentication, non-repudiation, and record integrity” (King). On July 27, 2008, the DEA made available a proposed change in the Federal Register that would permit e-prescribing of controlled substances (Adler).

Stakeholders currently wait for the final rule. The outcome is critical, as it will largely establish whether or not the benefits of e-prescribing outweigh the costs. If the DEA continues to require hand-written prescriptions, prescribers may choose not to implement e-prescribing. Conversely, the DEA may decide to permit Schedule II narcotics to be e-prescribed. If so, the DEA requirements will likely become the standard for all e-prescribing systems, because users and vendors will not tolerate having separate systems for controlled and non-controlled substances (Friedman, Schueth and Bell).

**Request for Information**

In order to determine feasibility, role of a consultant undertaking an e-prescribing feasibility study was assumed. E-prescribing vendors were identified and a Request for Information (RFI) was developed and distributed to the vendors. The thirteen companies included Allscripts, American Medical Software, Axolotl, CVS Caremark, Daw Systems, InteGreat, MedPlus, New Crop, OA Systems, PracticeIT, Pulse Systems, Purkinje, and SSIMED (Physician's Practice). Of the thirteen companies contacted by phone or by email, only three worked with dental practices. Despite follow-up phone calls and emails, of the three willing to Gretchen Parisi
work with dental practices, only one, Daw Systems completed and returned the RFI. The response was underwhelming, but may reflect the market. With the Medicare incentives and penalties, vendors may be focusing all their efforts on physician practices. To be optimistic, with only one company to evaluate, decision making becomes much simpler and more straightforward.

E-prescribing simultaneously complicates and simplifies the prescribing process. One way e-prescribing increases complexity is by adding to the number of stakeholders. The existing list of stakeholders includes prescribers, pharmacists, and patients. With e-prescribing, the number doubles as technology vendors, information sources, and information routers are added (Brown 3). Before implementing a system, the added involvedness exacerbates the need to ascertain that the vendor’s product compliments the organization’s environment and expectations.

**ScriptSure by DawSystems, Inc.**

Founded in 1998, ScriptSure by DawSystems, Inc. is a privately-owned e-prescribing vendor headquartered in Latham, New York, with offices in Ballston Lake, New York, Fort Lauderdale, Florida, and Atlanta, Georgia. The company has fourteen full-time staff, with three consultant programmers offsite. The staff is stable; remarkably, no one has ever left the company. Annual total revenue exceeds $3 million. The company’s software has been adopted by two hundred ninety locations, with seven hundred seventy physicians, and twenty-six hundred total users (Forman).
Technical Feasibility

Aligning the technical specification of ScriptSure with the current environment at Redmond Dental is necessary for a successful installation. Below is a comparison:

<table>
<thead>
<tr>
<th>Scripture System Requirements</th>
<th>Redmond Dental</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating System</strong></td>
<td></td>
</tr>
<tr>
<td>Compatible with Microsoft XP, Vista, and Windows 7</td>
<td>Uses Windows XP</td>
</tr>
<tr>
<td><strong>Internet Browsers</strong></td>
<td></td>
</tr>
<tr>
<td>Compatible with Internet Explorer and FireFox</td>
<td>Uses both Internet Explorer and FireFox</td>
</tr>
<tr>
<td><strong>Incompatibilities</strong></td>
<td></td>
</tr>
<tr>
<td>None known.</td>
<td>None known.</td>
</tr>
<tr>
<td><strong>Special Network Requirements</strong></td>
<td>None.</td>
</tr>
<tr>
<td><strong>Memory Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>4 Gb of RAM</td>
<td>2 Gb RAM**</td>
</tr>
<tr>
<td>8 Gb of hard disc space</td>
<td>100 Gb Hard drive internal</td>
</tr>
<tr>
<td><strong>Minimum Processing Speed</strong></td>
<td></td>
</tr>
<tr>
<td>Intel Pentium Dual Core 1.8 Ghz</td>
<td>Intel Xenon 3060 2.4Gh</td>
</tr>
<tr>
<td><strong>Telecommunication Connectivity</strong></td>
<td></td>
</tr>
<tr>
<td>High Speed Internet Access</td>
<td>Has DSL.</td>
</tr>
</tbody>
</table>

**Additional RAM would have to be purchased. The cost is estimated in the Financial Feasibility section.**

Installation: Installation could be handled by Redmond Dental locally, or ScriptSure can assist by a hosted application, which would be accessed through the World Wide Web.

Security: The ScriptSure database is encrypted. Users have passwords, and security can be set-up by user type.

Updates: Major software updates are available once or twice per year. These may be downloaded and installed with user permission, or may be scheduled with a support representative.

Hand-Held Devices: Prescribers who use a PC or PDA to transmit prescriptions to pharmacies must ascertain that their device is interoperable with the pharmacies' devices.
(Davino). Because of the limitations of handheld devices, ScriptSure does not currently accommodate hand-held devices (Forman).

**Organizational Feasibility**

The most technologically advanced IT system is valueless if it is not incorporated in the organization’s workflow. Simply selecting and purchasing the best system is insufficient. Rather, that is but the very beginning. The project must be given appropriate priority by the organization’s leadership. Processes may have to be re-engineered to accommodate and incorporate the application. Staff must be trained on the appropriate use of the system.

**Leadership**

As with any project, implementing an e-prescribing system at Redmond Dental would require a project sponsor. Because Dr. Redmond owns the practice and makes all decisions pertaining to investments, improvements, and expansion, this role would presumably fall to him. He would need to have enthusiasm for the project, wholeheartedly believing that it would benefit him and his contracted dentists, the practice’s financial status, and the patients. He must believe that spending time and money on this project are the best uses of that time and money, and that this effort is more important than other projects that would consume available resources.

Assuming he opted to pursue e-prescribing, he would need to appoint a project manager. Dentistry is billed on a service-based fee schedule. This means that unless his or a contracted dentist’s hands are working in someone’s mouth, no revenue is being generated. So, from a financial standpoint, he should continue to practice dentistry and delegate the day-to-day

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administration of this project to a qualified individual. At one time, his office manager was pursuing a degree in health informatics, so she would have been a logical choice. She has since resigned from this position, though, and the replacement is not an expert in information technology. Therefore, an e-prescribing project manager would need to be hired. Had he been able to draw on the expertise of the former office manager, Dr. Redmond would have incurred no additional personnel costs related to this project. However, hiring a project manager would increase the project’s total costs. The project manager’s fee should be considered in the financial feasibility of this project. It is possible that the selected vendor may provide these services, maybe even at no additional costs.

Training and Support

ScriptSure has been top-rated for ease of use among all e-prescribing programs the AC Group and contends that anyone can be comfortable prescribing and navigating our point-and-click user interface. Training classes, conducted in either individual or group sessions, are offered online by way of a support portal. Other training materials include an integrated help menu, a quick start guide, and video tutorials.

Support services are located at the corporate office in Latham, New York. Support hours are weekdays from 8:00 AM – 7:00 PM. ScriptSure guarantees same day response to requests. All support staff have more than ten years of experience in support and product development, and are closely involved in development, design, and maintenance of the software. Therefore, support representatives assigned to an account are able to address most, if not all questions. This
company does not have multiple levels of support; instead it offers one level that is comprehensive (Forman).

**Reporting and Analysis**

One of the ten desired features for an e-prescribing system is the ability to data-mining (Bell, Marken and Meili). This is helpful for prescribers to be able to detect trends or analyze a patient’s or a group’s prescribing history. To this end, ScriptSure allows data to be exported to Microsoft Excel.

**Workflow**

As stated, ScriptSure has been top-rated for ease of use. ScriptSure could be interfaced with Dentrix to have the patient’s information in ScriptSure. This means that the patient information would not need to be re-entered in ScriptSure, eliminating duplicate efforts and errors. All users have individual login and passwords. Once logged-in, the user would select the patient, either by last name, chart number, or another identifier. To write a prescription, the user would navigate to the Chart Screen, where the medication history for the patient is stored. Not only does ScriptSure show the prescriptions at written at this location, but it downloads drug history for the patient from the internet. Next, the user would search for the drug either by name, drug group, from a favorites list, or an alphabetical listing. Once the name of the drug is selected, the dosing options, generic alternatives, and the insurance formulary is viewed by a double-click of the mouse. ScriptSure includes clinical decision support, and checks for allergies and drug-drug interactions, reducing the potential for medication errors or ADEs.
Once the prescriptions are selected, the user proceeds to the Prescription Preview Screen, which is largely customizable. It identifies the pharmacy to which the prescription will be sent, allows for comments to the pharmacist, displays the patient’s co-pay, and suggests Class Alternative medications. From here, the user can print, fax, or send the prescription directly to the pharmacy over the internet.

Since each user has an individual log-in and password, roles and responsibilities can be assigned during setup. For example, a nurse could prepare all the prescriptions, with the doctor logging in only to approve them.

**Financial Feasibility**

ScriptSure’s prices its product not by the number of workstations but by the number of users, with each user having no more than three computer installations. The company offers two pricing options, monthly or flat-rate. The monthly plan includes installation, training, support, updates and upgrades, and costs $99 each month for each DEA Licensed user. The flat-rate plan costs $2,900 for the first DEA licensed user, with additional users charged $1,500 each. Installation, training, support, updates, and upgrades are included for the first twelve months. Afterward, the cost for support is twenty per cent of the total cost. Users on the flat-rate plan must also pay $180 annually per user for drug database maintenance. In order to interface with Dentrix, ScriptSure estimates costs up to $2,500, depending on the level of complexity and the interface needed, whether one-way or two-way. The company offers some customization at no

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charge. To accommodate other requests, a charge would be quoted, with the typical rate being about $100 per hour (Forman).

For Redmond Dental, comparing these two options shows that for the first year the monthly plan costs requires less outlay, but over three years, the flat-rate plan appears to be the better option:

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monthly Plan</strong></td>
<td>$2,376.00</td>
<td>$2,376.00</td>
<td>$2,376.00</td>
<td>$7,128.00</td>
</tr>
<tr>
<td>Customization Charge</td>
<td>$2,500.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional RAM</td>
<td>$130.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Total Costs</td>
<td>$5,006.00</td>
<td>$2,376.00</td>
<td>$2,376.00</td>
<td>$9,758.00</td>
</tr>
</tbody>
</table>

| **Flat Rate Plan**  | $4,000.00  | $980.00    | $980.00    | $5,960.00  |
| Customization Charge| $2,500.00  |            |            |            |
| Additional RAM      | $130.00    |            |            |            |
| Potential Total Costs| $6,500.00 | $980.00    | $980.00    | $8,460.00  |

(Best Buy; Pro Memory Upgrade). Implementing an e-prescribing system would be an expense, not an investment. No costs savings, such as reduced energy costs or reduced labor costs, would offset the costs of the system. Neither would any revenue be generated by this endeavor.

Notably, the prescriber pays for the system and any updates and maintenance fees, but the pharmacist may be more likely to see reduced labor costs as the number of clarifying call-backs decreases.

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Analysis

The purpose of this paper was to assess the feasibility of implementing an e-prescribing system at Redmond Dental. After thoroughly examining the environment and opportunities, we must address two basic questions: Is it indeed feasible? If so, is it to be recommended?

Implementing an e-prescribing system at Redmond Dental is indeed feasible. The technology is available. To be successful, though, some problems would have to be addressed. To identify some glaring ones: Additional RAM would need to be added to the server. Not meeting the standards of the HIPAA Security Rule would require immediate attention. A qualified project manager would have to be assigned or hired. Dr. Redmond would need to allocate funds to this project. But, if he believed that this endeavor was priority, these impediments could be overcome. So to answer the primary question: is it feasible? Yes, but simply installing the software would be insufficient; more effort is required.

More important than feasibility, though, is necessary to ask if such a system makes the best use of resources. Implementing e-prescribing may not have exceptionally high financial costs, but it does have considerable opportunity costs. In saying yes to e-prescribing, the dentist would be saying no to other projects. A dollar can be spent any way, exactly once (Brothers).

The dollars and other resources expended on e-prescribing could not be spent on other projects for the dental practice. In implementing e-prescribing, the dentist would be expressing that improving the prescription writing process was more critical and advantageous than any other project in which the same amount of money and effort could be invested.

Considering that, e-prescribing does not seem to be the best course of action for two reasons. First, it would be a poor use of resources. The costs might indeed be affordable, but Gretchen Parisi

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writing prescriptions does not generate revenue. Purchasing a Zoom whitening light or adding additional operatories are examples of investments, not just expenses. If Dr. Redmond were a physician, he would need to consider the Medicare incentives and penalties related to e-prescribing, but he is dentist, so these do not apply. Time, money, and effort would be better spent on a revenue-generating project. Second, the problems with prescription writing are process problems which can be addressed by thoughtful re-structuring. Using information technology to replace a faulty process can only exacerbate an existing problem.

**Alternative to ScriptSure**

Rather than purchase the application from Daw Systems, Redmond Dental should employ a process focused improvement. As described, many of the problems with the existing process stem from staff responsibility and work flow. A better solution would be to install computers in each operatory along with a shared printer near the operatories. The benefits of this would extend beyond prescription writing, as charges, treatment estimates, and clinical notes could also be entered and printed without involvement from the front desk. Counter space for the terminals is available in all the operatories, and the necessary wiring is in place. Dentrix software allows from installation on ten terminals (Henry Schein Practice Solutions), and these additional computers would bring the total to seven, certainly within the allowable.

Then Dr. Redmond should enter, sign, and deliver all prescriptions to patients himself. Since he is responsible for writing prescriptions, his writing and delivering them is appropriate, streamlines the process, and largely reduces the opportunity for staff fraud. His owning this

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process also eliminates the potential for a mix-up at the front desk, because the patients would be handed the printed prescriptions while they are still in the dental chairs.

The issue that this resolution would not address is that of not recording after-hours prescriptions. Again, this falls back on the dentist's responsibility. He should be documenting his treatment of patients for accurate record-keeping and to protect his professional liability. Simply writing these down, and then entering them, or having a staff member enter them in Dentrix without printing them would be an appropriate measure.

To apply the same feasibility test used for ScriptSure, installing computers in the operatories proves to be regulatorially feasible, technically feasible, and organizationally feasible. Financially, the costs are less than ScriptSure:

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compaq Presario Desktop with 18.5&quot; Widescreen LCD Monitor</td>
<td>3</td>
<td>$350</td>
<td>$1,050</td>
</tr>
<tr>
<td>Brother Wireless Laser Printer</td>
<td>1</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Estimated Costs</strong></td>
<td></td>
<td></td>
<td><strong>$1,150</strong></td>
</tr>
</tbody>
</table>

(BestBuy).

Between the two choices, adding computers to the operatories appears to be the better choice.

**Recommendations**

Despite determining e-prescribing not to be in the best overall interests of Redmond Dental, the efforts on this study were not without merit. In closely examining Redmond Dental and dental e-prescribing, some opportunities arise:

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1. Dr. Redmond must make immediate efforts to comply with the HIPAA Security Rule. Even if not one action is taken to improve the prescribing process, Dr. Redmond would be remiss not to address the violation of federal regulation.

2. Dr. Redmond should also restructure the prescribing process. As described, this could be accomplished for less than $1200 and would require no additional technology purchase or staff training and time.

3. The lack of e-prescribing vendors willing to work with dentists was surprisingly low, so an entrepreneurial opportunity exists there. Since financial incentives from Medicare do not pertain to dentists, vendors would have to sell convenience as the benefit of e-prescribing. Some dentists are eager to try new technologies in their practices, so these dentists may be the ones for vendors to approach first.

After thorough analysis, implementing e-prescribing at Redmond Dental may be feasible, but would not be the best use of resources. This conclusion does illustrate and fulfills the aims of a feasibility study, which are "identifying problems and opportunities, determining objectives, describing situations, defining success outcomes and assessing the range of costs and benefits associated with several alternatives to solving a problem" (Alan Thompson).

Redmond Dental notwithstanding, e-prescribing is the best option for medication safety for the far-reaching health care delivery system. As always, information technology should be applied prudently to health care, with the safety and well-being of the patient always being the ultimate goal.

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Conclusion

Returning to the classical version of Hippocratic Oath, physicians solemnly vow to do no harm to their patients. The exact wording of the relevant part of the ancient oath is “I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice” (Hippocrates). While many parts of the original oath have become outdated, patient safety is still a relevant, even critical issue. The span of two-thousand years merely changes the methods of preventing harm to the patient, rather than the goal. To align e-prescribing with the Hippocratic Oath: E-prescribing helps to prevent medication errors and ADEs that potentially injure patients. Simply, e-prescribing helps clinicians to not harm their patients. Viewing e-prescribing as simply another automated process cheapens it. Conversely, it should be considered a weapon in the arsenal used to defend patient safety, or more lofty, a means for physicians to heal - and not to harm - the diseased.

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Acknowledgements

To my parents, whose idea graduate school was in the first place, and who generously paid my tuition.

To my husband, for your unfailing love and support.

To my cat Bumble, who faithfully sat on my desk as I studied.
Attachments

1. Redmond Dental Male/Female Patients Pie Chart
2. Redmond Dental Insured/Non-Insured Pie Chart
3. Redmond Dental Patients Seen Line Graph
4. Redmond Dental Total Revenue Bar Graph
5. Redmond Dental Number of Prescriptions Bar Graph
6. Redmond Dental Prescriptions and Patients Seen Line Graph
7. Redmond Dental Denture Marketing Brochure
8. Redmond Dental Sample Printed Prescription
9. Distributed Request for Information
10. ScriptSure, Inc. Quick Start Guide
11. Presentation Slides
Redmond Dental
Number of Patients

- Number of Female Patients
- Number of Male Patients

Total Patients = 3,805

Redmond Dental
Insured Patients

- Number of Patients with no insurance
- Number of Patients that have primary dental insurance only
- Number of patients that have secondary dental insurance

82
2029
DENTURES:

Economy Denture
Full Set: $325  Single Plate: $195
- Built to properly fit and function in your mouth
- Limited tooth shade and shape selection
- Economy grade materials

Standard Denture
Full Set: $550  Single Plate: $295
- Larger tooth shade and shape selection
- Higher quality denture base than the economy denture

Deluxe Denture
Full Set: $750  Single Plate: $380
- High quality denture base
- Better wear-resistant teeth
- Best denture to wear against natural teeth

Premium Denture
Full Set: $1000  Single Plate: $600
- Highest quality acrylic teeth and denture base available
- Full selection of tooth shade and shape available

Totally Customized Denture
Full Set: $1600  Single Plate: $800
- Patient has total input of location of each tooth and appearance of denture
- Assures greatest success in function and fit
- Requires 5-7 office visits

PARTIALS:

Acrylic Partial  $395
- Thicker than the metal based partial
- Can be used to replace teeth pulled on the same day
- Supported completely by the gums

Metal Based Partial  $800
- Thinner than the acrylic partial
- Supported by the teeth and gums for more comfort
- More resistant to breakage

Valplast Partial  $800
- All plastic, but a thin material
- Provides the most natural look
Rx
Amoxicillin 250 mg
take one four times a day until gone
Refills: zero

Dispersed as written

Signature of Prescriber

PATIENT: Gretchen B. Parisi
ADDRESS: 577 Woodruff Parkway
          Leeds, AL 35094
TELEPHONE: (205) 702-7668
DOB: 09/22/1977
DATE: 06/08/2009

PATIENT: Gretchen B. Parisi
DATE: 06/03/2009
PRESCRIPTION: Amoxicillin 250 mg
PRESCRIBED BY: Nathaniel D. Redmond, D.M.D.
Request for Information (RFI)

Redmond Dental, Inc.
c/o Gretchen Parisi
577 Woodruff Parkway
Leeds, AL 35094

Request for Information

November 2, 2009

Gretchen Parisi
gparisi@uab.edu
205-577-1058
Purpose

This document provides ample information for vendors to decide whether they’re willing to participate in a more detailed selection process. It will enable the vendors to provide sufficient information for Redmond Dental to select a shortlist of vendors to which a Request for Proposal (RFP) will be issued. **Vendors do not need to prepare detailed proposals at this stage.** Vendors should provide basic information regarding capabilities and an indication as to how they would approach working with Redmond Dental to achieve this document’s outlined objectives.

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### Company Overview

#### History:

Redmond Dental opened in Moody, Alabama in August 2003. The dental practice was started by Dr. Nathaniel Redmond, who had graduated from the University of Alabama Dental School in 2002 and then completed a residency at the Veteran’s Administration the following year. When the practice opened, no patients in the area considered Dr. Redmond their dentist, and he relied on professional contacts, word-of-mouth, and print advertising to attract patients. On opening day, his brother worked as a receptionist and insurance coordinator, and a dental assistant was the only other staff member. The practice was open for appointments three days weekly. Despite the riskiness of opening a practice, Dr. Redmond highly valued the independence and autonomy available to him (Redmond).

Dr. Redmond realized that managing a practice was complex and multi-faceted. He would need practice management software that addressed both clinical and administrative functions. At the recommendation of colleagues and peers, he selected Dentrix by Sullivan-Schein. Dentrix is the only software used at Redmond Dental, and it addresses all aspects of the practice, including scheduling, patient recall, billing, charting, insurance claims, patient records, management reports, treatment plans, referral tracking, and clinical progress notes (Henry Schein Practice Solutions).

Since the practice in Moody (Redmond Dental) grew slowly and did not immediately generate profit, he supplemented the practice and his income by working two days per week at West Alabama Dental. By 2004, his brother resigned and he hired a part-time office manager. This person was to perform administrative functions, rework policies and procedures, and advise him about the practice. Later that year, he added a dental hygienist to the practice. In 2006, the assistant he originally hired had attained her dental hygiene license. This brought the staff total to one dentist, two hygienists, and an office manager. The practice continued to expand, as shown. In July 2009, a second dentist joined the practice and worked in Moody, bringing the number of dentists to two and the number of days per week the practice was open to five. In the winter of 2009, the office will build an additional two operatories in hopes of increasing the number of hygiene appointments.

Redmond Dental provides all types of dental services, with the exception of orthodontics (braces). Combined, the dentists offer examinations, restorations, root canals, oral surgery, and prosthodontics; the hygienists perform regular cleanings on patients. The practice serves a rather rural, low-income community and therefore presents services needed by this demographic. Manufacturing dentures and performing emergency extractions comprise a large portion of the
Pulling teeth and treating other dental emergencies requires the writing of prescriptions, usually for antibiotics and pain medication, often narcotics.

**Project Overview**

Redmond Dental: E-Prescribing

Redmond Dental is seeking to improve its prescription writing process. Redmond Dental is considering implementing an e-prescribing system and has hired a consultant to perform a feasibility study.

Responses to this document are requested by November 6, 2009.

Based on responses to the RFI, a Request for Proposal (RFP) will be issued to a shortlist of vendors, currently planned for early December which will contain more detailed requirements for the product, contractual details, and key criteria for successful bidders.

From the replies to the RFP document, a shortlist of possible vendors will be selected who will then be asked to present demonstrations of their offerings. We project that these meetings will be completed by mid-November 2009.

Specific objectives of the project include:

- Prevent prescription fraud by patients
- Prevent prescription fraud by staff
- Reduce staff time in refilling prescriptions
- Increase patient ease in (re)filing prescriptions

**Requirements**

Business background of the project: (i.e. to improve a particular process done by the help desk.)

Redmond Dental’s core requirements are:

- Interoperability among existing Dentrix software, eRx vendor, and pharmacies
- Ease of use
- Remote access to facilitate after-hours usage

Integration considerations:

The product will have to interface with Dentrix G2 (www.dentrix.com).

Integration considerations:

The product will have to interface with the following existing systems:

- Dentrix G2 (www.dentrix.com)
Instructions for Vendors

This documentation should be delivered back to Gretchen Parisi by November 6, 2009. Please enclose copies of your company’s financial statements for the previous three years.

Send completed RFI documentation to Gretchen Parisi at 577 Woodruff Parkway, Leeds, AL 35094. Send two copies of marketing brochures describing your organization and your product offerings in the areas of health information technology and e-prescribing.

Please contact Gretchen Parisi by telephone at 205-577-1058 or gparisi@uab.edu should you have any questions.

Answer the following questions to the best of your ability and return to Gretchen Parisi by the date specified above.

*Note: Amend the following text as appropriate to reflect the type of product or service being requested.*

<table>
<thead>
<tr>
<th>Requested Information</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
</tr>
<tr>
<td>Company name</td>
<td></td>
</tr>
<tr>
<td>Company address</td>
<td></td>
</tr>
<tr>
<td>Parent company</td>
<td></td>
</tr>
<tr>
<td>Describe ownership and/or strategic partnerships of your company</td>
<td></td>
</tr>
<tr>
<td>Name of the person responsible for the information contained in this RFI</td>
<td></td>
</tr>
<tr>
<td>Phone number</td>
<td></td>
</tr>
<tr>
<td>Fax number</td>
<td></td>
</tr>
<tr>
<td>E-mail address</td>
<td></td>
</tr>
<tr>
<td>Web site URL</td>
<td></td>
</tr>
<tr>
<td>Company location (corporate office; other offices)</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Total number of employees (include breakdown per department, if possible)</td>
<td></td>
</tr>
<tr>
<td>Employee turnover rate</td>
<td></td>
</tr>
<tr>
<td>Employee satisfaction rating (if available)</td>
<td></td>
</tr>
<tr>
<td>Key employees names and employment contracts</td>
<td></td>
</tr>
<tr>
<td><strong>Total revenue:</strong></td>
<td></td>
</tr>
<tr>
<td>This year</td>
<td></td>
</tr>
<tr>
<td>Last year</td>
<td></td>
</tr>
<tr>
<td><strong>Total profit/loss:</strong></td>
<td></td>
</tr>
<tr>
<td>This year</td>
<td></td>
</tr>
<tr>
<td>Last year</td>
<td></td>
</tr>
<tr>
<td>When was your company’s initial year of operation?</td>
<td></td>
</tr>
<tr>
<td>How long have you been providing this type of product?</td>
<td></td>
</tr>
<tr>
<td>What are the details of your business continuity arrangements?</td>
<td></td>
</tr>
<tr>
<td>What is the total number of installations of the version of software being proposed?</td>
<td></td>
</tr>
<tr>
<td>Have you supplied this product to customers in a similar industry, with a similar growth profile that would act as a reference site for your product? If so, provide contact information for these references.</td>
<td></td>
</tr>
<tr>
<td>Does your organization have any third-party relationships/alliances? Describe these.</td>
<td></td>
</tr>
<tr>
<td>Is there any outstanding legal action against your company or partnering company(s)? If so, provide details.</td>
<td></td>
</tr>
<tr>
<td>Are there any acquisitions or mergers anticipated or pending?</td>
<td></td>
</tr>
<tr>
<td>What documentation is provided for the product?</td>
<td></td>
</tr>
<tr>
<td>Was your software written and acquired from a third party, or was it written by your organization?</td>
<td></td>
</tr>
<tr>
<td>Does any of your software use open source code?</td>
<td></td>
</tr>
<tr>
<td>Are there earlier versions of your product that are no longer supported?</td>
<td></td>
</tr>
</tbody>
</table>

**Technical Requirements**

| Can your product work effectively in our company’s described environment? |   |
| Is this system compatible with our operating system (OS)? What other OSs is it compatible with? |   |
| What server software is compatible/incompatible with this system? |   |
| How does this software work with software- and hardware-based security applications? |   |
| What browsers are compatible with this product? |   |
| Are you aware of any incompatibilities that this product might have with any specific hardware or software? Provide details. |   |
| Is there any additional hardware that should be purchased for optimal performance? |   |
| Are there any special network requirements (LAN or WAN)? |   |
| What is the amount of memory required by the workstation and/or server? |   |
| What is the minimum processing speed? |   |
| What telecommunication connectivity speeds are needed for ideal operation of this product? |   |
| How secure is this software? |   |

**Training & Support**

<p>| Please provide information on your implementation methodology. |   |
| Can this product be used with other technologies (smart cards, barcodes, wireless, handhelds, etc.)? |   |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please describe your project managers, including years of experience,</td>
<td></td>
</tr>
<tr>
<td>location, wait time, etc.</td>
<td></td>
</tr>
<tr>
<td>What level of training do you recommend?</td>
<td></td>
</tr>
<tr>
<td>Do you offer formal user training?</td>
<td></td>
</tr>
<tr>
<td>What type of courses do you offer and what is their duration?</td>
<td></td>
</tr>
<tr>
<td>Do you provide training materials? Describe them. Are training materials</td>
<td></td>
</tr>
<tr>
<td>available at no cost?</td>
<td></td>
</tr>
<tr>
<td>Where are support services located?</td>
<td></td>
</tr>
<tr>
<td>What are the hours of operation and response times of support services?</td>
<td></td>
</tr>
<tr>
<td>What levels of support are available? Define each level.</td>
<td></td>
</tr>
<tr>
<td>Is there an extra charge associated with product support?</td>
<td></td>
</tr>
<tr>
<td>Does support include product updates, as well as bug fixes?</td>
<td></td>
</tr>
<tr>
<td>How often are major software upgrades available?</td>
<td></td>
</tr>
<tr>
<td>How are software and/or database updates transmitted to customers?</td>
<td></td>
</tr>
<tr>
<td>What is the helpdesk escalation procedure?</td>
<td></td>
</tr>
</tbody>
</table>

**Total Cost of Ownership (TCO)**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is your product priced by the number of users, or by the number of</td>
<td></td>
</tr>
<tr>
<td>workstations?</td>
<td></td>
</tr>
<tr>
<td>If the cost is based on the number of users, what is the rate?</td>
<td></td>
</tr>
<tr>
<td>Please provide a detailed breakdown of the cost of your product.</td>
<td></td>
</tr>
<tr>
<td>What are the licensing costs of the product?</td>
<td></td>
</tr>
<tr>
<td>Do you offer discounts for volume purchasing?</td>
<td></td>
</tr>
<tr>
<td>Is there additional software or hardware that should be purchased for</td>
<td></td>
</tr>
<tr>
<td>optimal performance and what is</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>the approximate cost of each component?</td>
<td></td>
</tr>
<tr>
<td>What are your consulting rates to help with implementation?</td>
<td></td>
</tr>
<tr>
<td>What is the charge for training?</td>
<td></td>
</tr>
<tr>
<td>What are the maintenance and support costs? Please give a breakdown.</td>
<td></td>
</tr>
<tr>
<td>What do you charge for customization?</td>
<td></td>
</tr>
<tr>
<td>Describe some customization work that you have completed.</td>
<td></td>
</tr>
<tr>
<td>Do you charge for product or services during the evaluation period?</td>
<td></td>
</tr>
<tr>
<td>Are there any other costs that would contribute to the total cost of ownership of your product?</td>
<td></td>
</tr>
</tbody>
</table>

Source: RFI Template: http://www.infotech.com/sem/download/itatool-request-for-info-template-0308?user=gparisi@uab.edu
SCRIPTSURE VERSION 7.5

Welcome to ScriptSure!
Below are screenshots of the software screens:

ScriptSure by Daw Systems, Inc.
(866) 755-1500
sales@dawsystems.com

THE BEST IN PRESCRIPTION WRITING AND EMR SOFTWARE
Point-of-Care Solutions for Medical Professionals – Helping you Save Time, Money and Improve Patient Care.
LOGIN WINDOW:
Each user has their own unique login and password.

PATIENT SEARCH SCREEN:
Easily search for a patient by last name, chart number or any other field.
Patient Chart Screen:
The Chart screen retains all activities performed for a patient. It includes medications written for the patient at the practice but also features medication history for the patient downloaded from the internet.

GELLER, Ross

| Birth 12-May-1965 (44y) Gender Male Office 5/12-- |
| Address 200 Friends Road, No... Phone and email (555) 555-5555 Insurance (1) |

| ScriptWriter | |

| Allergies | Comorbid | Diagnoses | Information Source | Insurance Details | Med History | Werner | | | |

### All Chart Medications

#### Print Drug History Deleted Drug History

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Visit Date</th>
<th>Fill Date</th>
<th>Drug Name</th>
<th>Drug Form</th>
<th>Prescriber</th>
<th>Substitution</th>
<th>Dispenser</th>
<th>Dispenser Date</th>
<th>Doctor</th>
</tr>
</thead>
</table>

### Drug History Download

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Drug Name</th>
<th>Drug Form</th>
<th>Prescriber</th>
<th>Substitution</th>
<th>Dispenser</th>
<th>Dispenser Date</th>
<th>Pharmacy</th>
</tr>
</thead>
</table>
Search for a Medication:
ScriptSure was designed to make finding a medication as easy as possible:

1. **Search for medication** box allows users to enter a medication name.

2. **Drug Group Screens** at the top of the screen organize medications by group.

3. **Favorite List** of medications lists medications a user has added to their favorite list.

4. **A-Z Rolodex** allows for searching by the first letter of medication name.

---

Type a medication name in the search box (brand or generic) and any matches will appear. A minimum of 4 characters is required.

Click on one of the pictures and you will enter that Drug Group Screen where medications specific to the group will be listed alphabetically. (Roll-over the picture and the Drug Group name will appear.)

Click to view Brand and/or Generic names

Each user can create a Favorite list. Click this button to show the Favorites for the User.

Find a medication by clicking of the first letter of the drug name. (For example, Click A to find Amoxil.)
Sample Medication List Screen – Antibiotics:

This screen lists all Antibiotic Medications alphabetically. ScriptSure indicates the formulary status for each medication:

Easily select a medication from the pre-programmed formats:
Prescription Preview Screen:
Preview of medication selected- Users can modify any fields on this screen: Quantity, SIG, etc. Users can Print, Fax or Electronically Send the prescription to a retail or mail order facility.

(NOTE: Formulary compliance and class alternatives are shown on this screen)
FOR MORE INFORMATION PLEASE CONTACT SALES AT:

Phone: (866) 755-1500 Ext. 1
E-mail: sales@dawsystems.com
E-Prescribing: A Feasibility Study for Redmond Dental

Gretchen Parisi
December 4, 2009
1:00 PM

The Case for Medication Safety

Institute of Medicine - 1999
- 44,000 - 90,000 deaths from medical errors annually
- $17 - $19 billion annually
- "Implementing safety standards in health care organizations to ensure safe practices at the delivery level"
- 8% of outpatient prescriptions contain an error
- ADEs account for 3% of ER visits
- 3-6% of hospital admissions related to ADEs
- $1 on medication => $1 to manage consequences

Thesis

"The purpose of this paper is to assess the feasibility of implementing an e-prescribing system at Redmond Dental."

Feasibility Study

- Establish objectives
- Describe existing conditions
- Identify obstacles and prospects
- Analyze costs and benefits of alternatives

Outline

- Analysis of Redmond Dental
- Research about E-Prescribing
- Market Assessment
- Alternatives to e-prescribing
- Regulatory Feasibility
- Technical Feasibility
- Financial Feasibility
- Organizational Feasibility
- Synthesis and Analysis
Existing Conditions

Redmond Dental

Number of Patients

- Number of Female Patients
- Number of Male Patients
Total Patients = 3,805

Redmond Dental

Insured Patients

- Number of Patients with no insurance
- Number of Patients that have primary dental insurance only
- Number of patients that have secondary dental insurance

Redmond Dental

Practice Management Software

DENTRIX

Redmond Dental

Patients Seen

Number of Patients Seen

- 2004: 128
- 2005: 198
- 2006: 2987
- 2007: 2100
- 2008: 2388
**Precription Writing Process**

- Weaknesses
  - Workflow
  - System
  - Liability
  - Dispensing
  
  Many could be addressed through process improvements.

- Strengths
  - Medical alerts
  - History
  - Legibility

**Sample Prescription**

**Existing Conditions**

**Definition**

"A true e-prescribing system is a closed-loop system in which the entire process of prescribing a medication is electronic from beginning to end: a clinician prescribes medications, those prescriptions are sent electronically to a pharmacy, and feedback comes back to the clinician when the patient collects the prescription. Intermediaries of paper printouts, faxes, and emails are unnecessary. No information is re-entered. Prescriptions undergo medication checking for errors and formulary compliance, and are legible."

**Prescription Writing Process**

<table>
<thead>
<tr>
<th>Dr. Redmond</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Date</td>
<td>Prescriptions are entered online.</td>
</tr>
<tr>
<td>2. Prepares</td>
<td>Preparations are made.</td>
</tr>
<tr>
<td>3. Reviews</td>
<td>Prescriptions are reviewed and approved.</td>
</tr>
<tr>
<td>4. Admin.</td>
<td>Prescriptions are administered.</td>
</tr>
<tr>
<td>5. Date</td>
<td>Prescription is delivered.</td>
</tr>
<tr>
<td>6. Prescriber</td>
<td>Prescription is delivered.</td>
</tr>
</tbody>
</table>

""
## E-Prescribing: Levels of Implementation

<table>
<thead>
<tr>
<th>1. Electronic drug reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Separate Rx writer</td>
</tr>
<tr>
<td>3. Limited information (allergies and pt. info)</td>
</tr>
<tr>
<td>4. Medication Management</td>
</tr>
<tr>
<td>5. Interoperability among prescribers, pharmacies, insurances, and patients</td>
</tr>
<tr>
<td>6. EHR</td>
</tr>
</tbody>
</table>

### Adoption Level (2007)

- 35,000,000 Prescriptions Eligible for E-Prescribing
- 2% Prescriptions E-Prescribed

### Patient Safety

- Communication between prescribers and pharmacists
  - 150 million clarifying phone calls annually

**Success Story: Henry Ford clinic estimates eliminating 10,000s of medication errors.**

### Patient Safety

- Clinical decision support - intervention
**Costs**

- Generic drugs
- Adherence to insurance formularies

*Success Story: Health Alliance Plan of Michigan estimated a 5-year ROI of more than $14 million, based on the 2005-6 improvements in its generic use rate.*

**Liability Issues**

If the physician tells a patient to take a drug and someone/something tells the prescriber that the patient is not taking it, is the prescriber liable if no action is taken?

**Medicare Incentives**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonus</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>-1%</td>
</tr>
<tr>
<td>Penalty</td>
<td>-1%</td>
<td>-1.5%</td>
<td>-2%</td>
<td>-2%</td>
<td>-2%</td>
</tr>
</tbody>
</table>

**Pharmacies**

- 2/3 of pharmacies can accept online prescriptions
- Only 2% of independent pharmacies (2006)
- Prompt-dependent prescribers

*"...the software tends to be a crutch where prescribers rely too heavily on the content and not enough on their clinical experience."*  
Andrew Weil, PharmD

**E-Prescribing**
Successful Implementation

1. Marketing by e-prescribing vendors
2. Well-trained users
3. Payer support
4. Prescriber workflow
5. Cooperate

Outline

- Analysis of Redmond Dental
- Research about e-prescribing
- Market Assessment
- Alternatives to e-prescribing
- Regulatory Feasibility
- Technical Feasibility
- Financial Feasibility
- Organizational Feasibility
- Synthesis and Analysis
Prescription Writing Options

- Internal Improvements
  - Hand-written prescriptions
  - Maintain existing process
  - Improve existing process
- External Improvements
  - Phone-in prescriptions
- E-prescribing

Drug Enforcement Agency

- Requires hand-signed prescriptions for Schedule II narcotics
- 2008 proposed rule change
- Outcome critical

Feasibility Test

Privacy and Security

- 2003 - HIPAA
- 2005 - Security Rule
  - Administrative Safeguards
  - Physical Safeguards
  - Technical Safeguards
  - Organizational Requirements
- Redmond Dental: FAIL
  - No security training
  - No written documentation about ePHI
  - Easy access to hardware
  - PROBLEM

Request for Information

- No Dental Applications
- Dental Applications
- Responding
ScriptSure, Inc

- Founded in 1998
- Headquarters in Latham, NY
- 14 full time staff
- $3 million annual revenue
- 290 locations, 770 physicians, 2600 users

Other Considerations

- Installation
- Security
- Updates
- Hand-held devices

Feasibility Tests

Technical

Organizational

Technical Requirements

<table>
<thead>
<tr>
<th>Operating System</th>
<th>ScriptSure System</th>
<th>Redmond Dental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>Compatible with Microsoft XP, Vista, and Windows 7</td>
<td>Uses Windows XP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internet Browsers</th>
<th>ScriptSure System</th>
<th>Redmond Dental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>Compatible with Internet Explorer and Firefox</td>
<td>Uses both Internet Explorer and Firefox</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incompatibilities</th>
<th>ScriptSure System</th>
<th>Redmond Dental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>None known.</td>
<td>None known.</td>
</tr>
</tbody>
</table>

| Special Network       | ScriptSure System | Redmond Dental |
| Requirements          | None.             | None.          |

<table>
<thead>
<tr>
<th>Memory Requirements</th>
<th>ScriptSure System</th>
<th>Redmond Dental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>4 GB of RAM</td>
<td>2 GB RAM**</td>
</tr>
<tr>
<td></td>
<td>8 GB of hard disk</td>
<td>100 GB Hard drive internal</td>
</tr>
</tbody>
</table>

| Minimum Processing    | ScriptSure System | Redmond Dental |
| Speed                 | Intel Pentium Dual Core 1.8 GHz | Intel Xeon 3060 2.4GHz |

| Telecommunication     | ScriptSure System | Redmond Dental |
| Connectivity          | High Speed Internet Access | Has DSL |

** Additional RAM may have to be purchased. The cost is estimated in the Financial Feasibility section.

Organizational

- Leadership
- Training and Support
- Reporting capabilities
**Feasibility Tests**

**Synthesis**

**Outline**
- Analysis of Redmond Dental
- Research about e-prescribing
- Market Assessment
- Alternatives to e-prescribing
- Regulatory Feasibility
- Technical Feasibility
- Financial Feasibility
- Organizational Feasibility
- Synthesis and Analysis

**Costs**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Plan</td>
<td>$2,376.00</td>
<td>$2,376.00</td>
<td>$2,376.00</td>
<td>$7,128.00</td>
</tr>
<tr>
<td>Customization Charge</td>
<td>$2,500.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional RAM</td>
<td>$130.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Total Costs</td>
<td>$5,006.00</td>
<td>$2,376.00</td>
<td>$2,376.00</td>
<td>$9,758.00</td>
</tr>
<tr>
<td>Flat Rate Plan</td>
<td>$4,000.00</td>
<td>$980.00</td>
<td>$980.00</td>
<td>$5,960.00</td>
</tr>
<tr>
<td>Customization Charge</td>
<td>$2,500.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional RAM</td>
<td>$130.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Total Costs</td>
<td>$6,500.00</td>
<td>$980.00</td>
<td>$980.00</td>
<td>$8,460.00</td>
</tr>
</tbody>
</table>

**Analysis**

Feasible? | Yes.  
Recommended? | No.
If not e-prescribing...

- If you can't be with the one you love, love the one you're with and try to improve him.

A Better Solution
- Terminals in each operatory with shared printer
- Dr. Redmond assume responsibility
  - Writing and dispensing prescriptions
  - Record after-hours prescriptions

Conclusion:

Hippocratic Oath:
"I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice."

Improvement Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compaq Presario Desktop with 18.5&quot;</td>
<td>3</td>
<td>$350</td>
<td>$1,050</td>
</tr>
<tr>
<td>Widescreen LCD Monitor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brother Wireless Laser Printer</td>
<td>1</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Total Estimated Costs</td>
<td></td>
<td></td>
<td>$1,150</td>
</tr>
</tbody>
</table>

Acknowledgements:

E-Prescribing: A Feasibility Study for Redmond Dental

Recommendations and Opportunities

1. Redmond Dental must comply with HIPAA Security Rule.
2. Dr. Redmond should install computers in operatories and a shared printer.

Questions?