dEHRm:

DERMATOLOGY ELECTRONIC HEALTH RECORD MANUAL

dEHRm MAP

USING THE dEHRm

The *Dermatology Electronic Health Records (EHR) Manual (dEHRm)* was developed for dermatologists and their practice staff to use when preparing to adopt an EHR. The *dEHRm* is a comprehensive toolkit designed to help dermatologists, practice administrators, and other dermatology practice decision-makers assess their practice needs and readiness to:

- **adopt** automated health information technology (HIT) systems;
- **identify and assess** needed functionality in an EHR before approaching vendors;
- **compare** quotations and bids from vendors for EHRs; and
- **understand** the level of effort and time required for implementation and training as well as support and maintenance.

As a flexible online resource, the *dEHRm* can be used in whole or in parts based on your practice needs. For optimal use, we recommend **referring to sections of interest as well as downloading and incorporating model tools (worksheets, tables and checklists) when needed for your EHR educational purposes.**

dEHRm Worksheets

Interactive pdf or customizable Word versions of all the worksheets are accessible via links within this pdf or at **www.aad.org/member-tools-and-benefits/practice-management-resources/hit-kit/dermatology-electronic-health-record-manual**.

Each section of the *dEHRm* includes a brief explanation and each tool has an introduction about its purpose and instructions for use. The *dEHRm* is a flexible and scalable resource; use will vary in accordance to your needs.

GETTING STARTED: INTRODUCTION

The *Dermatology EHR Manual (dEHRm)* provides dermatologists and their practice staff with background support, practical guidance, thoughtful strategies and handy tools to use when preparing to adopt an EHR. It provides specific strategies for those desiring to earn federal incentives for making meaningful use of certified EHR technology, as well as tips for those who simply seek other value from acquiring an EHR. The *dEHRm* offers a customized, step-by-step approach to help dermatology practices assess their specific needs and readiness to adopt health information technology (HIT); identify and assess what they will need from the an EHR before approaching vendors; compare bids from vendors for EHRs; and understand the level of effort and time required for implementation and training; as well as support and maintenance.

The *dEHRm* provides dermatology practices with a systematic approach to benchmarking their practice needs and making informed decisions about when to adopt EHRs by delineating the steps needed to automate the practice, including:

- conducting EHR readiness assessments;
- charting and mapping clinical and administrative workflows;
- evaluating potential return on investment (ROI);
- choosing among and comparing the costs of products;
- providing guidance on vendor contracting and structuring software licensing agreements;
- highlighting pitfalls to avoid when implementing EHR systems;
- offering advice from lessons learned from HIT early adopters.

The *dEHRm* supplements the body of knowledge already provided at Academy meetings, as well as through regional practice management courses. By developing the *dEHRm*, the Academy is helping to position dermatology at the forefront of health information technology, and provide its members with a better understanding and appreciation of HIT needs.

Table A: Most- and Least-Wired Specialties

	Percent of practices reporting to have fully implemented EHR for all physicians and locations.	Practices that have reported not implementing EHR and have no planned implementation in the next two years.
Radiology	36.0 percent	20.0 percent
Cardiology	14.7 percent	28.3 percent
Orthopedic surgery	9.9 percent	31.4 percent
Otorhinolaryngology	28.3 percent	34.0 percent
Family practice	16.7 percent	35.5 percent
Dermatology	7.5 percent	57.5 percent
Nephrology	3.1 percent	59.4 percent
Allergy/Immunology	3.8 percent	61.5 percent
Surgery: Cardiovascular	19.0 percent	61.9 percent

Source: MGMA and University of Minnesota, "The adoption of electronic health records and associated information systems by medical group practices," 2005.

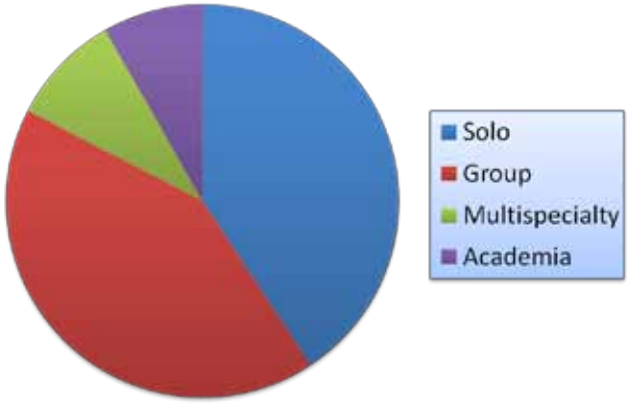
There certainly are significant challenges facing dermatology practices considering EHRs. None of these challenges represent insurmountable barriers to successful adoption, but they will need to be addressed nevertheless.

Acquiring, implementing and using an electronic health record (EHR) system is a challenging process to navigate. The *dEHRm* will guide dermatology practices through EHR adoption. The information provided will help dermatology practices determine the level of readiness to acquire an EHR system and offers easy-to-use tools to help you.

A dermatology practice staff that is considering an EHR should:

1. **Plan for the process of selecting, implementing and using an EHR in the practice.**
2. **Instill the necessary culture change to gain adoption of the EHR throughout the practice to achieve desired goals.**
3. **Redesign applicable workflows and processes to most effectively and efficiently use the EHR.**
4. **Select the most appropriate product for the size and type of practice.**
5. **Retain professional legal services when negotiating and reviewing software licensing contracts to ensure favorable terms and conditions.**
6. **Implement the EHR in a manner that ensures minimal disruption to the practice.**

Table B: Dermatology Practice Types



Source: AADA 2009 Dermatology Practice Profile Survey

The majority of dermatologists practice in small and medium-size office-based settings. However, HIT needs vary considerably by size of practice. A solo dermatology practice may benefit from a relatively simple system, whereas larger dermatology groups may require more sophisticated functionality. Dermatologists in multispecialty practices or academic settings may find that they will need a generic product customized to fit their unique requirements.

Many factors must be considered by the practice to develop an approach to practice automation (see Table C: Key Factors).

No two dermatology practices are alike, but all dermatology practices share some things in common. The "ABCs of EHRs" demonstrates some of the functionalities that many dermatologists will likely expect their EHRs to offer.

Table C: Key Factors

The mind-set: when starting to think about adopting an EHR system for your dermatology practice, develop a strategic and tactical approach:

- **Strategically:** Perform an analysis of, and change to, the underlying clinical information processes of your practice (current workflow versus workflow redesign, and physician and staff education needed to integrate the EHR).
- **Tactically:** Maintain a goal to transform a mixed environment (paper chart with current practice management system) to a practice-wide EHR system.
    - Get the entire practice community involved.
    - Consider how you are going to select an EHR systems vendor.

Key factors:

- **Strategic goals.**
- **Practice size.**
- **Dermatologists, management, clinical and administrative staff's comfort with technology.**
- **Specialty needs (scope of clinical and cosmetic dermatologic services).**
- **Workflow (current practice design and operations; impact of automation: What will change and how).**
- **Product features/functions.**
- **Usability (the user-friendliness and the level of effort expended by the end user).**
- **Costs of software/hardware (direct and indirect).**
- **ROI (savings reaped through efficiency gains and cost-savings).**
- **Contractual terms and details.**
- **Training and technical support requirements.**
- **Product upgrade and maintenance.**
- **HIPAA privacy and security standards as related to data protection, authentication, contingency planning (data back-up and downtime operations), disaster recovery planning, and data-sharing policies and procedures with other providers and patients.**

The ABCs of EHRs:

- **A**dministrative: Productivity and revenue management reporting, line-item specific.
- **B**illing module: Tracking full-cycle — front to back.
- **C**are management: Evidence-based guidelines.
- **D**ecision support: Clinical reminders and alerts; diagnostic decision aids.
- **E**lectronic prescribing: Automate prescription orders/refills through point-of-care access to patient medication history, drug interaction checking, and online formularies that can help reduce risk of medication errors and minimize risk of potential for fraud or tampering.
- **F**inancial: Coding tools to document level of service.
- **G**eneral management and communications: Clinical/cosmetic charting templates, appointment scheduling and reminders, resource allocation, referral letters, claims attachments, quality reporting, and data-sharing with patients.
- **H**ealth records: Notes, labs, consults, problem lists, patient portals, et al.

From both a patient care and practice management perspective, dermatology practices have unique clinical and administrative HIT requirements, such as imaging needs and a variety of patient workflows due to a diverse scope of practice. ***The need for photo documentation and digital imaging management capability is what sets the specialty apart.*** Dermatology shares basic EHR functionalities with other medical specialties, but it has specific needs that reflect its full scope of clinical and cosmetic services and workflow, which include:

1. The specialty comprises an extensive and varied scope of practice that includes medical, surgical, cosmetic and dermatopathology care. For dermatologists, any EHR system has to be able to support and meet the needs of these varying levels in dermatology.

2. As a highly descriptive, visually oriented and procedure-intensive specialty, dermatology benefits from digital imaging, photo-documentation (i.e., digital imaging capture, storage, display, management and transmission), and anatomic graphic-management capacities (anatomic drawings and mapping). The ability to capture, integrate and manage photo documentation and digital imaging is a key functionality component. Some dermatologic functionality features may include:

    - A dermatology anatomic image mapping functionality: the EHR system should be able to locate an anatomic site, capture clinical lesion details, map graphic image(s) of lesion(s), save and archive them.

        - *The system should ideally be able to include photo-archiving capability, and have touch-screen drawing ability built in for use and management of online drawings.*

        - *The end user should have the ability to pick a pertinent image/diagram to select and enlarge, if desired, and automatically delete others from screen to allow better visualization of multiple sites. Additionally, the option of a WiFi camera can greatly enhance this functionality for direct capture and annotation.*

        - Photo documentation functionality: Consider when digital photographs are taken of lesion(s) in preoperative/postoperative stages, having them embedded in the report as thumbnails and enlargeable as needed, which may be a helpful feature.

    - Medication management: The EHR system should have electronic prescribing capability, auto-printing of prescriptions and auto-generation of medication logs/lists.

Table D: Dermatology Practice Patient Throughput

In 2007, dermatologists reported an average of 136 patients per week during an average of 47.6 weeks per year. This translates to approximately 6,470 patient encounters per year.

Source: AADA 2007 Dermatology Practice Profile Survey.

Table F: Practice Size Adoption Rates

Examining EHR adoption rates by size of practice:

- 19.5 percent for practices of 21 or more physicians;
- 18.9 percent for practices of 11-20 physicians;
- 15.2 percent for practices of six to 10 physicians; and
- 12.5 percent for practices of five or fewer physicians.

Source MGMA and University of Minnesota, "The adoption of electronic health records and associated information systems by medical group."

Table E: Dermatology EHR Functions

Dermatology is visual specialty. Traditionally notes and diagrams are completed with freehand drawings, stencil drawings and/or photographs. The use of annotatable images within a software program in an intuitive manner is a high-priority functionality for a dermatologist's EHR system of choice. Standard drawings in the notes of an exam will provide better documentation. Furthermore, the ability to include photos in the system will improve photo archiving/management and may eliminate the need for additional cumbersome photo-editing software.

3. With a relatively high patient volume, dermatology requires efficient workflow processes and streamlined steps to manage patient throughput efficiently. Seamless interoperability and user-friendly interface between/among the EHR and other information technology (IT) applications, platforms and systems is critical. The EHR should facilitate efficient capture of coding information including appropriate modifiers, documentation and quality measures.

4. Dermatology practices generate large numbers of tissue specimens. Order-entry requests for testing and diagnosing must flow efficiently to pathology information systems within or outside the practice. Reports must be received efficiently from the primary pathology system and associated image repositories. To the extent that dermatologists interact with dermatopathologists in managing lab results, functionalities that can effectively interface both enhance the continuum of care.

A snapshot benchmark of EHR adoption

Industry studies have revealed a number of useful indicators of EHR adoption, including how practice size affects the implementation rate, what types of practices are most and least likely to have EHRs, how cost remains a significant barrier to EHR adoption, and how costs are affected by size of practice.

In 2005, a comprehensive study conducted by the Medical Group Management Association (MGMA) found that just 14.1 percent of medical group practices reported using EHRs. At that time, MGMA found that practices without EHRs cited financial cost — an average of almost $33,000 per physician — as the top barrier to adoption; whereas practices that had already purchased EHRs reported lack of physician support as a major hindrance to implementation. As Federal incentives (followed by the potential for sanctions) loom closer, adoption has grown dramatically. A report generated by SK&A, a health care information solutions and research provider, found that by January 2010, adoption had grown to 36.1 percent across all medical offices, and that by October 2010 adoption grew another 3 percent, to 38.7 percent.

Adoption rates

Group size seems to be an indicator of practice readiness to adopt EHR. The MGMA study reveals an existing disparity between the EHR haves and have-nots: The larger the practice, the more likely it is to have adopted an EHR. SK&A also found that solo practitioners were much less likely to have an EHR, although that number at 28.5 percent was nearly double the 2005 findings from MGMA.

Even two-physician offices had considerably higher adoption (36.8 percent). Small practices with three to five physicians were at 42.7 percent adoption, medium-sized practices of six to 10 physicians at 54.4 percent, large practices of 11 to 25 physicians at 65.2 percent, and those with 26 or more physicians at 71.0 percent. Also, high adoption rates were found in any size medical offices owned by hospitals and health systems at 54.9 percent and 61.2 percent respectively.

Even those specialties considered at the bottom of the adoption scale (psychiatry, plastic surgery, general medicine, general surgery and allergy/immunology) were still higher in 2010 that the 2005 MGMA findings, ranging from 27.8 percent to 29.0 percent. Other findings from SK&A included that the leading states for adoption are Minnesota (62.6 percent, which has a state mandate for adoption by 2014), Utah (55.4 percent) and Wisconsin (52.3 percent).

Costs and barriers

The MGMA study confirmed that the cost of adopting EHR is not cheap. According to the study, the average purchase and installation cost per full-time-equivalent (FTE) physician for an EHR was $32,606, with larger practices spreading the cost of the technology over many doctors and paying less per FTE physician, but smaller practices have a much higher per-doctor installation cost.

Medical practices with five and fewer FTE physicians reportedly paid an average of $37,204 per FTE physician. In addition to the implementation costs, monthly maintenance costs averaged $1,177 per FTE physician, with larger practices paying more than smaller medical groups, most likely due to the added complexity of EHR systems designed for multiple locations and clinical modalities. These figures, adjusted for inflation, however, are still lower than the Federal incentive payment that provides a maximum of $44,000 per provider under Medicare (or $63,750 under Medicaid).

The MGMA study also examined how the vendor's initial estimate compared to the actual costs. The average cost overrun was 25 percent more than the initial vendor estimate, with the largest medical groups reporting the highest difference. More current estimates are not available, but these results illustrate the importance of careful planning in advance of acquisition.

Table G: EHR costs by practice size

Practice size	Implementation cost per physician	Maintenance cost per physician/month	Cost overrun above vendor initial estimate
21 or more physicians	$24,988	$1,371	36.6 percent
11-20 physicians	$32,700	$1,496	25.5 percent
Six to 10 physicians	$29,846	$1,267	22.2 percent
Five or fewer physicians	$37,204	$896	23.4 percent
Overall	$32,606	$1,177	24.8 percent

Source: MGMA and University of Minnesota, "The adoption of electronic health records and associated information systems by medical group practices," 2005.

Most practices do not retain earnings, and as such they fund capital equipment directly from physician incomes. It is no surprise that "lack of capital resources to invest in an EHR" was rated by MGMA as the most serious barrier to adopting an EHR by practices that do not yet have the technology. At the same time, groups that already had EHR cited another type of barrier: "Lack of support from practice physicians," perhaps reflecting that, once the economic justification for an EHR is made, serious operational problems remain. These include concern about physicians' ability to enter data into the EHR; concern about loss of productivity during the transition to an EHR; and inability to easily input historic medical record data into EHR. Each of these barriers needs to be addressed when planning an EHR installation.

Table H: Return on Investment (ROI) Expectations

Think about defining ROI expectations …

- **Tangible financial returns:**
  - Increased productivity.
  - Medical errors reduction.
  - Reduced order entry/results reporting.
  - Improved coding and documentation.
  - Improved billing accuracy and charge capture.
  - Improved patient record management.
- **Clinical returns:**
  - Improved patient care.
  - Improved standardized care.

Table I: Overcoming EHR Market Barriers

According to industry reports, one of the biggest barriers to adoption of EHRs for physicians in small- and medium-sized practices continues to be cost. Moreover, information required to make informed purchasing decisions — features, usability, vendor stability and cost — may be difficult for individual dermatology practices to attain. In addition to the large number of products, there also has been a turnover in companies due to financial insolvency, inability to keep up with regulatory demands, and industry mergers and acquisitions. Finally, new requirements for EHRs (especially for product certification under the Federal incentive program), improved functionalities, and the rapid evolution of hardware, make it difficult for buyers to keep up with developments in this industry. The average dermatologist seeking to implement an EHR needs to consider not only which vendor is providing the technology, but whether even a certified product has the unique functionalities to meet their practice needs. Physicians face numerous product choices with more than several hundred vendors competing for the outpatient practice market today. The criteria for product certification under the Federal incentives reflect the minimum capabilities needed to earn the incentives. These criteria do not necessarily include other desirable functions. It is important to recognize that there are distinct categories of products and many types of functions. Considering these realities carefully will enable the dermatology practice to navigate the adoption process successfully.

WHY ACQUIRE AN EHR SYSTEM?

Clinicians across the United States are increasingly adopting electronic health record (EHR) systems for a variety of reasons:

Table J: Rationale for EHR acquisition

Quality improvement and patient safety	Administrative management
• **Earning federal incentives for making meaningful use of certified EHR technology.** (Often referenced as "meaningful use" incentives). Although earning the incentives will help pay for the technology, this should not be the primary reason for acquiring an EHR. If practices will not fully take advantage of the features and functions of an EHR, getting the Federal government to pay for something that will not be used or will frustrate the practice is not very meaningful. • **Improving quality of care and patient safety.** Most early adopters of EHR cite improvement in quality of care and patient safety as the primary benefit. Just the ability to always have access to lab results often provides sufficient rationale for EHR adoption. Legibility, documentation aids that provide reminders, and other forms of clinical decision support (CDS)help physicians and other health care professionals make clinical decisions that enhance patient care. CDS features of EHR are based on clinical knowledge of interest ranging from simple facts and relationships to best practices for managing patients with specific diseases, medication needs, new medical knowledge from clinical research and other types of information. They oftentimes provide a reminder system that contributes to health maintenance as appropriate for patients. They permit retrieval of patient lists for follow up, recalls, and other needed contacts with patients. Clinical decision support can improve the quality of care while reducing risks of medical errors. • **Helping document patient encounters** quickly and completely to assure safe and effective treatment planning. The ability to capture digital images, drawings, and photo-documentation (for example, anatomic digital graphic drawings and mapping, imaging capture, storage, display, management and transmission) can aid in diagnosing lesions and tracking patient progress. If desired, they can enable e-visits through a secure patient portal.	• **Improving and streamlining communication**. EHR systems incorporate workflow tools to direct and queue work according to practice preferences. • **Increasing productivity.** Because there is no more looking for a pathology report, the last set of pictures, or a referral/consultation letters more patients can be seen without decreasing the amount of time you spend with each patient. • **Frees up storage space.** Since all patient records will be confined to EHRs, there will no longer be a need to store paper files or cumbersome charts on the premises.

Table J continued: Rationale for EHR acquisition

Quality improvement and patient safety	Administrative management
• **Ordering and managing lab requests** by generating and tracking orders directly from the desktop and receiving results directly back into the EHR. Urgent results can be flagged and routed to appropriate person by the system for immediate handling (e.g., dermatopathology lab interface for biopsy tracking and management). • **Providing reminders** that help track follow up needs of patients with both acute and chronic illnesses. • **Coordinating referrals and consultation requests** to/from dermatologists to primary care physicians to ensure continuum of patient care.	
Financial	**Compliance**
• **Expediting billing** through E&M coding support. For example, treatment of multiple lesions in one visit can be easily tracked. • **Eliminating chart-pull and archiving costs.** EHRs provide tools to completely document dermatology problems, support dermatologic procedures, write prescriptions, and aid in capturing, storing, displaying, managing, and transmitting digital images, photographs, and anatomical drawing and maps. • **Significantly reducing transcription costs.** EHRs provide specific templates and tools to modify or build additional templates. These templates capture structured data for use in clinical decision support as well as to populate narrative notes and various reports, letters, and other documents that were once typically dictated.	• **Improving documentation practices** in the face of potential audit reviews by Medicare and private health plans. • **Enabling participation in pay-for-performance** programs through capturing, managing, and reporting data to support quality measures.

Note: Electronic health record (EHR) is the term now used by the federal government, interoperability standards-setting organizations and product certification bodies to describe a computerized system used to capture data from multiple sources. It aids in clinical decision support at the point of care, enables exchange of data with other providers and patients for care coordination, and supports quality measurement, reporting and improvement. EHR focuses on more than just replacing the paper chart by providing an enhanced platform for improved clinical utility. Vendors may continue to refer to EHRs as electronic medical record (EMR) systems as old habits die hard.

dEHRm "BEST PRACTICE" TICKLER

Thinking about implementing EHR in your practice? Your final decision should follow a thoughtful approach and careful consideration based on a number of factors including but not limited to strategic business goals, physician and staff consensus, a comprehensive internal practice readiness assessment, vendor due diligence, prudent financial affordability, legal protection and a feasible project implementation rollout.

Many dermatology practices have taken this approach and adopted similar processes to successfully introduce the practice automation technology to their staff and patients. Consider these best practice approaches when thinking about taking the EHR plunge:

Table K: Best practices approach to EHR

Decision-making	Decide as a group to implement EHR
Consider your practice's long-range planning. If possible, make your practice management, billing and EHR decisions at the same time. Especially as the new version of the claim and other HIPAA transactions as well as ICD-10-CM requirements come into effect in 2012 and 2013 respectively. Is this a proper goal, based on your financial status? 1. Understand the costs of paper medical records, such as printing, paper and other hidden expenses. 2. Understand the level of change required for using an EHR and whether everyone in the practice can support such change. 3. Perform a benefits analysis that includes both financial and efficiency/effectiveness indicators.	***Consider the potential benefits:*** 1. Easier to comply with regulations. 2. Transfer of information (site to site) easier and more efficient. 3. Improved access to data. 4. Reduced risk of medication errors (e.g., allergy and other contraindication alerts). 5. More accurate E&M coding and documentation. ***Consider the downsides, too:*** 1. Implementation of computer systems can be challenging operationally and financially. 2. The time and resources required to implement an EHR, do you have what it takes? 3. Can your cash-flow strength withstand and EHR implementation? 4. Do you have the patience for the training and practice required to return to or even improve productivity? ***Get all your physicians, practice manager/ administrators and staff on board*** 1. Hold a meeting to discuss and make everyone a part of the decision. 2. Listen to issues, comments and suggestions. 3. Agree to implement with positive attitudes from all staff.

Table K continued: Best practices approach to EHR

Selection	Implementation
1. Plan for selection by gaining a complete understanding of the workflow as performed today in your practice and what improvements you desire. 2. Fully identify the functionality you need in your practice, including the ability to interface with your existing practice management system, if desired. 3. Learn as much as you can about EHRs from a variety of sources. Attend conferences where products are discussed among peers and vendors demonstrate a variety of products. Locate a local practice using EHR and ask questions. • Talk to physicians. • Talk to administrators. • Ask how they use it and whether they like it. • What improvements do both groups recognize? • Did documentation improve as a result of the implementation? 4. Locate a vendor that meets your price and service needs. • Does it provide on-site training? • What kind of warranty is offered? 5. Ask for references and ask the clients to: • Identify the successes and challenges experienced during implementation. • Talk about the level of service provided by the vendor. • Discuss maintenance issues (what has happened since the implementation?) • Review their experience integrating the EHR system with other vendors' products. 6. Plan to negotiate the contract to meet your price, payment schedule and terms. Make sure you incorporate service agreements into your contract. Ensure that you have the ability to get your data back from the vendor in a format able to be transferred to another information system in the event the vendor goes out of business.	1. Create a plan to include: • Timeframe for implementation. • Tasks and responsibilities. • Mandatory training for all staff. • Commitment of key physicians and staff. 2. Implement EHR with a vendor representative on site. 3. Schedule and complete training. 4. Ensure vendor support is available. 5. Security considerations for both hardware and software.

Maintenance
1. Know the limitations of the service contract. 2. Accept upgrades as they are offered to you, or you will pay the consequences of not having a current system and paying more for upgrades later. 3. Maintain the system to your specifications, including any necessary customizations and interfaces.

READINESS ASSESSMENT

About 7.5 percent of dermatology practices and 11 percent of dermatologists use an EHR. But, is **YOUR** practice ready?

Table L: Dermatology EHR adoption rates

- **Some 7.5 percent** of dermatology practices have fully implemented EHRs (MGMA and University of Minnesota, "The adoption of electronic health records and associated information systems by medical group practices," 2005).
- **Around 11 percent** of office-based dermatologists have reported using EHRs in practice (Catherine W. Burt et al, *Health Affairs* 2004; 24(5): 1334-1343).

Define the current situation of your practice! The dEHRm offers a number of tools to assess the readiness of your practice for an EHR:

- *EHR attitudes and beliefs survey description and EHR attitudes and beliefs survey* may help you determine if the organizational culture of your practice is accepting of an EHR. Distribute this to all clinicians and staff within the office. For a very small group, ensure anonymity of all respondents to gain the best snapshot. For a larger practice, you may want to determine if there are differences in attitudes between dermatologists, other clinicians, administrative/managerial staff and clerical staff. Use the results to support education and communication.
- *Management and leadership analysis description and management and leadership analysis tool* may help you understand the process to gain the most benefit from an EHR. When used by your leadership, the results provide insights into risks and opportunities, ROI potential, budgetary and financing considerations, and value for quality improvement and care management.
- *Operational checklist* may help you recognize steps you have already taken to help prepare for an EHR, or those that need to be addressed prior to going to market.
- *Technical evaluation* may help you determine if existing technology will support an EHR, what additional IT resources may be needed and making the decision about adopting an EHR.
- *Computer skills assessment* may help you begin the process of introducing computers to your staff.

EHR ATTITUDES AND BELIEFS SURVEY DESCRIPTION

Purpose: The purpose of conducting an attitudes and beliefs survey is to help you understand your practice's readiness to acquire an electronic health record (EHR) system. Determining the attitudes and beliefs about and level of prior knowledge about EHRs can help overcome staff resistance and concerns. The assessment identifies risk areas that you will want to monitor continuously.

Instructions for use:

1. If your practice is very small, ignore or delete the section of the form that contains the position checkbox feature because the number of individuals in each category will be too small to retain anonymity of responses and will not be sufficient to identify trends. Practices with at least three or more physicians (for example) may choose to keep the position checkbox.
2. Distribute the survey (form only, not the interpretation of results) to everyone in the practice and request full response within one to two weeks at most. The response rate, in addition to actual responses, can help reveal readiness for an EHR.
3. Once all responses have been returned, tally the responses to each question and compare with the "interpretation of results" key.

WORKSHEET #1: EHR ATTITUDES AND BELIEFS SURVEY

Purpose: The purpose of this survey is to help us understand our readiness for adopting an electronic health record (EHR) system. Your attitudes and beliefs about EHRs, and even your level of familiarity with an EHR, can help us provide more education and information about what an EHR is and how it will help our practice.

Instructions: *Please complete this survey and return to* _____ *by*_____

Please indicate your position:

- ☐ Physician leaders (dermatologists/dermatopathologists)
- ☐ Management staff (i.e., executive director, administrator, practice/office manager, assistant manager, and other managers/supervisors)
- ☐ Clinical staff (i.e, nurse practitioners, physician assistants, registered nurses, licensed practical nurses, medical assistants, histotechinicians/lab technicians, medical assistants)
- ☐ Administrative staff (i.e., billing coordinator, certified coder, insurance coordinator, receptionist, medical records file clerk, communications/customer service representatives, and other clerical support staff):
- ☐ Front office (i.e., front-office tasks include front desk, scheduling, patient registration, chart pull/file, patient collections, sales and marketing, et al.)
- ☐ Back office (i.e., back-office tasks include coding, billing, and insurance coordination, accounting, information technology (IT) support staff, and human resources).

Concerning electronic health records (EHRs), check ["✓"] the column that most closely describes how you feel about each of the following statements:	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	**Don't Know**
1. They increase efficiency.						
2. They are not as secure as paper records.						
3. Our patients are expecting us to use them.						
4. They will improve my personal productivity.						
5. They are difficult to learn how to use.						
6. Their use in front of patients is depersonalizing.						
7. Their cost is beyond our budget.						
8. They improve quality of care.						
9. They reduce staffing requirements.						
10. Computerized alerts can be annoying.						
11. We are in an age where we must exchange data electronically with other physicians and payers.						
12. Health care is too complex anymore without access to evidence-based support.						
13. The government is requiring their use.						

WORKSHEET #2: INTERPRETATION OF THE EHR ATTITUDES AND BELIEFS SURVEY

Tally the number of responses in each of the shaded areas. Where a majority of responses are in the dark orange or dark orange and light orange areas, the statement does not suggest a risk area. If a majority of responses are in the blue or blue and light orange areas, the statement suggests an area of risk. Overall, the more statements that identify risk, the less the practice is ready for EHR. The specific areas of risk suggest topics for further education and involvement. In addition, you might consider the statements below the scoring tool as further interpretation. Note that in some cases, strong agreement and disagreement may suggest risk, where a more middle of the road position affords a healthy dose of reality!

Tally Sheet

Concerning electronic health records (EHRs):	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
1. They increase efficiency.						
2. They are not as secure as paper records.						
3. Our patients are expecting us to use them.						
4. They will improve my personal productivity.						
5. They are difficult to learn how to use.						
6. Their use in front of patients is depersonalizing.						
7. Their cost is beyond our budget.						
8. They improve quality of care.						
9. They reduce staffing requirements.						
10. Computerized alerts can be annoying.						
11. We are in an age where we must exchange data electronically with other physicians and payers.						
12. Health care is too complex anymore without access to evidence-based support.						
13. The government is requiring their use.						

Interpretation

1. **EHRs increase efficiency:** There are many ways practices are made more efficient having an EHR in place through greater access to data, more complete and legible documentation, and reduction of duplicative work. Disagreement with this statement may require more specific examples of EHR functionality and expectation setting.

2. **EHRs are not as secure as paper records:** EHRs can be made more secure than paper records if policies about security access controls, audit trails and proper workstation utilization measures are adopted. Agreement with this statement suggests need for education about computer security and commitment to policy enforcement.

3. **Our patients are expecting us to use an EHR:** Many patients use computers and may wonder about how well their clinicians are keeping up to date if they are not using computers. In some markets, hospitals or large group practices are advertising that they have adopted an EHR, so the public is becoming much more aware as well. Strong disagreement with this statement identifies the need for managing change. Some disagreement or a neutral position also suggests the need for managing change, even though patients may not yet be directly asking about your use of EHR.

4. **They will improve my personal productivity:** Setting realistic expectations about productivity is important. Some clinicians have "heard" that using a computer takes longer; others expect to see many more patients. Disagreement with this statement may signal the need for EHR demos and reassurance that typing skill is not required.

5. **They are difficult to learn how to use:** Some skepticism about the difficulty of learning to use an EHR is healthy; being overconfident of one's ability to learn to use an EHR can work against its adoption. Any set of middle-of-the-road answers to this question is generally considered a good sign of readiness.

6. **EHR use in the examining room is depersonalizing:** Studies demonstrate that this is a clinician perception not shared by most patients. In fact, there is evidence that for certain age groups (e.g., teenagers) and certain behavioral conditions, patients are more receptive to entering their own information into a computer than directly to a person! Agreement with this statement signals that clinicians may not be confident in their computer skills or generally resistant to change. New forms of communication with patients may need to be introduced.

7. **EHR cost is beyond our budget:** A healthy skepticism about cost is important. Strong disagreement suggests an unrealistic view of resource requirements; strong agreement may be used as an excuse not to acquire an EHR for other reasons. The meaningful use incentives should help overcome some of these concerns, although the incentives will not necessarily cover all costs or be applicable to all practices.

8. **EHRs improve quality of care:** Improvement in quality of care is probably the primary long-term benefit of an EHR. Disagreement with this statement may suggest that current quality issues are not recognized, or suggest a lack of appreciation for EHR functionality.

9. **EHRs reduce staffing requirements:** Some vendors have attempted to sell EHRs on the basis of staff reduction when only productivity/quality of care improvements is feasible. Strong agreement with this statement is unrealistic, especially for small practices; strong disagreement, however, may suggest reluctance to adopt changes that truly achieve cost savings.

10. **Computerized alerts can be annoying:** Provision of alerts is an inherent (but not the only) part of clinical decision support. Too many alerts can be annoying, but having none defeat the purpose of the EHR. Strong agreement may demonstrate resistance to change; strong disagreement, however, may put an undue burden on the practice.

11. **We are in an age where we must exchange data electronically with other physicians and payers.** Cautious optimism might be the best response about exchanging data electronically, especially as systems are not fully interoperable and full-blown interfaces may not be necessary where the ability to view data or interact with an application may be sufficient. Disagreement suggests resistance to change and a lack of understanding about some of the available technology for supplying patients with summary information or providers with referral information electronically.

12. **Health care is too complex anymore without access to evidence-based support:** Responses to this statement may vary by specialty. Agreement is a strong indicator that the value of an EHR is understood; disagreement may foster fragmentation of health care.

13. **The government is requiring their use.** Although the government is promoting adoption of EHR through incentives, it is not requiring their use. Agreement with this statement may be viewed as a risk: Either someone is trying to convince the practice that may not otherwise be ready, or may suggest resistance due to resentment.

MANAGEMENT AND LEADERSHIP ANALYSIS DESCRIPTION

Purpose: In addition to the readiness assessment (attitudes and beliefs) that may exist in the practice, there are cultural, leadership, operational, and technical challenges to introducing, selecting, and successfully implementing an EHR. This tool is designed to help especially small practices start a discussion about these factors.

Instructions for use:

1. Have a trusted administrative staff member prepare, receive and tally individual responses to this tool. It is advised that this staff person destroy the surveys received after results have been tabulated to ensure anonymity.
2. Ask each member of the group **responsible for approving the EHR acquisition** to read and independently check the statement in each row that seems most applicable to the practice.
3. Collect responses and tally the total number of checks in each column.
4. Present the aggregate results to the group responsible for approving the EHR acquisition and discuss what steps need to be taken prior to embarking on an EHR project.

Analysis of results: A high number of items checked in the BLUE (left) column indicate risk that management and leadership approaches may not be conducive to EHR adoption. Alternatively, a high number of items checked in the BROWN (right) column suggest strong readiness for EHR. Items checked in either the BLUE or CREAM (middle) columns need attention. Plans should be made to adopt management and leadership approaches that put the office in the BROWN position of readiness for EHR.

Tip: In an office-based practice setting, sometimes the reality of cultural and leadership issues can be an eye-opening discovery, challenging the status quo and requiring a problem-solving approach. Use of this tool is best prefaced by an acknowledgement that it may reveal things that have been buried or may represent needed changes. Approach use of this tool in an environment of openness — with no one being blamed for any position anyone takes. Sometimes this might be best conducted by an external facilitator.

WORKSHEET #3: MANAGEMENT AND LEADERSHIP ANALYSIS TOOL

In understanding our practice's readiness for an electronic health record (EHR) system, it is helpful to determine how leadership and management approaches may contribute to success. **In each row, check the one statement you believe is most applicable to our practice.** All responses will be kept confidential and only aggregate data will be reported back to the group for further discussions.

Organizational culture	☐ EHR is viewed as a requirement by insurance companies, government, or IPA	☐ EHR is viewed as a technology primarily to solve office efficiency problems	☐ EHR is viewed primarily as a tool to enable healthcare quality and achieve strategic business goals
	☐ Physician involvement in EHR discussion has been limited	☐ One or more physicians have attended EHR product demos	☐ Physicians are actively engaged in planning and driving the EHR project
	☐ Office manager is driving the EHR project	☐ Several staff are involved in organizing the EHR project effort	☐ Staff are engaged with physicians, and all staff input is considered in goal development
	☐ Patient involvement in EHR has not been discussed	☐ Patient satisfaction surveys have triggered interest in EHR	☐ Patient experience is one of primary goals of EHR and a plan to communicate with patients about the EHR is under development
	☐ Level of planning required for successful adoption of EHR has not been discussed	☐ A vendor-supplied project plan is expected to be used for the EHR project	☐ Practice understands commitment required to plan for EHR prior to vendor selection and ongoing
Management and leadership	☐ Dermatologist(s) and management staff relies on vendor information to select EHR for practice	☐ Executive management delegates EHR planning to a manager or a specific team to select EHR	☐ Executive management devotes substantial time to planning and developing expectations for EHR
	☐ EHR is seen as an expense and not an investment, with no ROI analysis performed	☐ A cost/benefit for an EHR has been conducted but an appropriate financial ROI has not been identified	☐ EHR is seen as an investment where the value proposition incorporates non-quantifiable values, e.g., efficiencies, increase in staff and patient satisfaction, improved recruitment and retention, competitive advantage, etc.
	☐ An EHR budget has not been identified or discussed	☐ An EHR budget has been funded using flexible funds	☐ Annual budget addresses capital earmarked for EHR acquisition and ongoing maintenance
	☐ Practice is not accustomed to setting specific, measurable goals and being accountable for their achievement	☐ Practice has used broad, general objectives in the past when making major investments	☐ Practice has experience or is willing to work on setting measurable goals for benefits realization
	☐ There is no clear understanding of how quality/care management may benefit practice, or is not current focus	☐ Quality/care management objectives have been established, but not clearly defined goals	☐ Quality/care management is a key focus of practice, with compensation tied to improvement in key clinical measures
Operations	☐ Workflow redesign for an EHR has not been discussed	☐ Areas for potential redesign have been discussed and identified. Some functional requirements for EHR have been identified through thinking about workflow redesign	☐ Some workflow and process mapping has been started to fix "broken" processes prior to EHR, to enable product evaluation, and to begin the change management process for EHR
	☐ There is no standardization in practice, for scheduling, care management, or documentation	☐ Some standardization, such as standard order sets, has been successfully introduced into practice	☐ Physicians value use of standards for efficiency and quality/care management measurement. Documentation standards have been introduced in preparation for chart conversion pre-EHR implementation
	☐ Policies, procedures, and job descriptions are generally not documented. Security in any existing information technology applications is weak to modest	☐ Plans are in place to address formalization of policies and procedures. Improvement is recognized as need for information security	☐ Policies exist for applicable medical record functions, HIPAA privacy rule requirements, and security best practices
	☐ There is minimal experience in managing a capital acquisition of the scope of an EHR	☐ There is a general understanding of EHR vendor selection and contract negotiation issues. Publicly available tools have been reviewed	☐ Experience exists to fully evaluate EHR vendor offerings, or there is a willingness to seek outside assistance
	☐ Introducing previous changes has been difficult in the practice	☐ Specific training and communication plans have aided achievement of important changes in the past	☐ The practice is characterized by a willingness to make the clinical transformation that is reflected by using an EHR
Technology	☐ The practice management system (PMS) is used only for scheduling and billing	☐ The PMS has been used for productivity reporting and to improve patient access	☐ The PMS is fully optimized and updated. Additional modules that support patient management have been acquired. Reports have been generated on patient populations
	☐ Need for new hardware is understood but not evaluated	☐ Some understanding of amount of hardware, upgrades to network, and potential physical plant changes have been identified	☐ Analysis of technology requirements has been confirmed by an expert and those requirements are now included in the EHR acquisition strategy
	☐ Relies totally on external resources for all aspects of IT hardware and software decision-making, installation, and maintenance	☐ Utilizes external resources to fill gaps in areas not able to be accomplished by staff	☐ Dedicated staff or good relationship with external resources to fill gaps. Effective at issues resolution and uses "super users" to consolidate expertise in practice
	☐ Minimum computer skills exist in practice, with virtually no user skills in clinicians	☐ A skills inventory has been taken and training identified to build skills	☐ Computer skills are strong throughout practice
	☐ There is no experience with use of EHR in practice	☐ Young staff have had experience using an EHR in training	☐ Non-EHR users have an open mind to approaching use of EHR
	Total # items checked in this column _____	Total # items checked in this column _____	Total # items checked in this column _____

WORKSHEET #4: OPERATIONAL CHECKLIST

Use this checklist to identify tasks to be performed in assessing readiness, planning, selecting, implementing, maintaining and gaining benefits with adoption of an EHR. An estimated time requirement is supplied, although this varies significantly for each practice, and later for the vendor selected. Record your anticipated start and end dates, and adjust as necessary throughout the project.

Step	Task	Tools available in dEHRm	Staff person responsible	Estimated time	Start date	End date
Assessment	Get practice educated about EHR through discussion of "Why an EHR" at initial meeting.	Why acquire an EHR system Table J: Rational for EHR acquisition		Two months/ one year.		
	Use Web-based vendor demos to acquaint practice members with an EHR (**Note:** When signing up for a Web-based demo, use a commercial email address rather than name of practice to reduce early vendor calls).					
	Conduct readiness assessment to determine when the practice will go forward with EHR planning.	EHR attitudes and beliefs survey				
		Management and leadership analysis tool				
		Operational checklist				
		Technical evaluation				
		Computer skills assessment				
		Meaningful use assessment				
Planning	Organize project.	Project management responsibilities		Three to six months.		
	Consider using a migration path to achieve EHR in a staged manner.	Consider a migration path to EHR. Table M: Migration path				
	Develop and use a communications plan.	Communications planning tool				
	Conduct goal setting to identify specific, measurable goals and establish expectations for meeting those goals.	Set goals and establish expectations for achievement key clinical processes tool				
	Initiate change management through a strategy of staff engagement by assessing current workflows, identifying current data collection processes and reporting requirements, describing chart conversion needs, and addressing HIPAA and other legal/regulatory requirements.	Workflow and process-mapping workflow questionnaire				
		Chart conversion				
		HIPAA and other legal/ regulatory requirements				
	Develop a cost/benefit analysis that addresses total cost of ownership (TCO), ROI and value proposition.	Business case for EHR worksheet				
	Obtain approval to proceed to vendor selection.					

Step	Task	Tools available in dEHRm	Staff person responsible	Estimated time	Start date	End date
Selection	Introduce code of conduct for EHR vendor selection to ensure objectivity in acquisition process.	Understand the marketplace		One to three months		
	Understand the marketplace for EHR products and identify vendors to send RFP.					
	Develop and distribute request for proposal (RFP).	Request for proposal template		One month		
	Identify key differentiators for evaluating EHR proposals.	Vendor analysis tool				
	Review RFP responses.			One month		
	Perform additional due diligence on selected vendors.	Demonstration plan		One to three months		
		Site visit plan				
		Reference check plan				
	Identify vendor(s) of choice and obtain approval to negotiate contract.	(Continue to use vendor analysis tool above)				
	Negotiate conduct with primary vendor of choice.	Negotiate an Effective Contract		One month		
	Secure financing.	Identify Financing Sources		One month		
	Obtain approval to sign contract.			One month		
Implementation	Harmonize practice's plans for implementation with vendor's implementation plan.	Implementation and training. Table R: Common implementation problems and solutions		One to three months[1]		
	Plan to document issues during implementation to ensure resolution.	Issues management				
		Issues log				
		Change control				
	Obtain training for super users					
	Complete vendor "workbooks" for table build.	Change control		One to two months[2]		

[1] Harmonization of implementation plans should not take more than a few days, however, many vendors take one to three months to get a practice on its implementation schedule.

[2] Vendor "workbooks," which may go by other names, are tools vendors supply practices to record information about their practice for pre-loading into the EHR. These workbooks capture, for example, lists of clinicians, their identification numbers and credentialing information; fax numbers of local pharmacies; appointment scheduling rules; list of orderable items; and many other details. Again, completion of these workbooks should not take very long, however, time must be allotted for staff in the practice to compile this information. This notation is made to observe that the timeliness of the implementation is not exclusively dependent upon the vendor; the practice has many responsibilities as well.

WORKSHEET #4: OPERATIONAL CHECKLIST

Step	Task	Tools available in dEHRm	Staff person responsible	Estimated time	Start date	End date
Implementation	Install hardware, software, network and data storage capabilities.			One to three months[3]		
	Review templates, clinical decision support rules and report formats					
	Map revised workflows and processes to reflect EHR capabilities	Workflow and process mapping				
	Develop test plan and test scripts or scenarios for testing	Testing plan tool				
	Conduct "system build," modifying templates, rules and reports to fit practice needs					
	Build and test interfaces					
	Conduct unit and system testing					
	Document changes in workflow and processes, policies and procedures, and job descriptions					
	Begin chart conversion	(see chart conversion tool above)		One month[4]		
	Plan rollout	Rollout strategy				
	Train end users	Training plan tool				
	Rehearse go-live	Go-live checklist				
	Go live.					
Maintenance	Acceptance testing.	Acceptance testing checklist including meaningful use readiness.		One to three months[5]		
	Perform software patching and upgrading as applicable to maintain integrity of system and compliance with maintenance agreement.			Ongoing (at least annually)		
	Continuously address user preferences, changes in clinical practice, and other requirements by making appropriate modifications to EHR.					
	Perform hardware upgrades and maintenance as required.					
	Test backup and disaster recovery plans periodically.					

Step	Task	Tools available in dEHRm	Staff person responsible	Estimated time	Start date	End date
Benefits	Perform benefits realization to celebrate successes and take corrective action as necessary to improve adoption and outcomes.	Benefits realization		One to six months post go-live		
	Contribute data for external reporting.			Ongoing		
	Monitor quality improvements, patient safety, care management, and make modifications to EHR, policies, processes as applicable.					
	Participate in health information exchange (HIE) initiatives (where available) across the continuum of care.					

[3] Time required to install equipment is relatively short, but again, must be scheduled into the practice timeline. It is also important to be aware of the differences in hardware requirements of vendor products. Some vendors will short-change the requirements for hardware to make a quick sale of their software, only for the practice to find later that the hardware is insufficient to fully support the product's use. This may be especially true for dermatologists because of the bandwidth and storage requirements for large numbers of drawings and other images. Even EHR products that may not require more than normal capacity may exceed their minimal requirements when used by dermatologists in comparison to family practitioners or other specialists.

[4] Chart conversion is a task that should be planned early, and then carried out "just in time" for roll out. The more paper charts that can be prepared in advance for chart conversion the easier and more effective chart conversion will be. Further discussion is provided with the Chart Conversion tool.

[5] Acceptance testing is actually not a "test" in the formal sense of the word, but a process anywhere from 1 to 3 months after go-live that ensures the practice is actually using the system as intended. This process should trigger the final payment to the vendor, although many vendors will attempt to negotiate a final payment on go-live. Further discussion is provided with the Contract Checklist tool.

WORKSHEET #5: TECHNICAL EVALUATION

Use this form to record information about your current hardware, software and physical plant. Then, incorporate at least the hardware and software description in your request for proposal (RFP) sent to vendors to enable a side-by-side comparison of requirements for each vendor under consideration.

Technology (Hardware)	Current	Proposed
Database server(s)		
CPU type and speed		
Memory size		
Disk configuration		
Hard drive type and size		
Operating system		
Network server and components		
Server CPU type and speed, memory size		
Operating system		
Gateway capabilities (e.g., wireless access point, firewall, VPN)		
Hub or switch		
Protocol		
Backup solution		
Other servers		
Fax server		
Email server		
Backup server		
Other:		
"Clients" (desktops, notebooks, tablets, slates, smart phones, etc.)		
Processor		
CPU speed		
Memory		
Disk configuration		
Operating system		
Peripherals (e.g., speech recognition microphone, wireless card)		
Other peripherals		
Printers		
Document scanners		
Copier with scanner capability		
Card scanners		
Wireless access points		
Docking stations		
Battery chargers		
Communications		
Internet service provider		
Private network type (e.g., T1, frame relay, dial-up)		

Technology (Hardware)	Current	Proposed
Private network bandwidth		
Other hardware:		

Technology (Software)	Current	Proposed
Licenses		
Operating system		
Current applications (e.g., PMS, lab, pharmacy)		
EHR applications (including: DBMS, toolsets, report writers)		
Microsoft Office		
Drug databases		
Patient education materials		
CPT		
Other vocabularies: SNOMED, Medcin, LOINC, RxNorm		
Code sets:		
Other third-party software:		
Interfaces (specify standard and uni-directional/bi-directional)		
PMS		
Lab(s)		
Hospital		
Imaging center		
Other:		

Technology (Physical plant and furnishings)	Current	Proposed
Data center controls (e.g., HCAC, fire suppression)		
Power (e.g., UPS, surge protectors, backup generator)		
Data center security (e.g., racks, mountings, locks)		
"War room" location for implementation team to work		
Training room or place to set up several PCs for training		
Reconfiguration of space due to workflow changes		
Private areas/kiosks for patients to conduct self-histories		
Other:		

Tip: If you have very moderate technology today, you may want to have a technical consultant conduct a brief analysis of your environment. The EHR vendor should be able to identify the technology needed to run the EHR, but because they primarily want to sell software, they may either not have the expertise or not want to describe an optimal technical solution. As a result, some practices have bought minimum necessary hardware only to find they really need more robust servers or network capacity, resulting in unnecessary replacements.

WORKSHEET #6: COMPUTER SKILLS ASSESSMENT

Purpose: The purpose of this survey is to help us identify computer skills needed as the practice plans for implementation of an electronic health record (EHR) system.

Instructions: Please complete this survey and return to _____ by _____

Name:_____ **Location:** _____

Functions For each function, identify whether you need basic training, refresher training, or you feel you have mastery of the function and do not need training. Note, not all functions may be required for using EHR.	**Need Basics** (I don't know how to do this.)	**Need Refresher** (I have a general understanding but need some review.)	**At Mastery Level** (I know how to do this and do not need review.)
Turn on and safely turn off computer.			
Restart computer if it becomes locked (i.e., reboot).			
Launch a program using the start menu.			
Recognize basic Windows icons (e.g., create a new document, open file, print).			
Use scroll bars: move, resize and close windows.			
Use help functions in software programs.			
Use "explore" in start menu to navigate among folders, create and name folders, delete folders.			
Copy or move (drag and drop) a file from one folder to another.			
Search for a file.			
Save a file to a flash drive; safely remove a flash drive from the USB port.			
Use Outlook to manage calendar, tasks, contacts, notes, email.			
Use word processing functions to cut/copy and paste text, check spelling.			
Use a Web browser to access websites.			
Use a search engine (e.g., Google, Yahoo) to locate information on the Internet			
Use back and forward buttons to move through Web pages.			
Locate and click on links in a Web page.			
Recognize and type a URL in an open box.			
Create a bookmark or save a favorite website.			
Use medical bibliographic references.			
Open and save attachments in email; attach a document to an email.			
Check virus protection.			
Please specify any other skills you might like to learn:			

PLANNING FOR EHR

Former President Dwight D. Eisenhower is quoted as saying: *"In preparing for battle, I have always found that plans are useless, but planning is indispensable."*

In describing EHR implementations, other admonishments are becoming widespread:

- Planning needs to start earlier than you think!
- If I had to do it again, I'd have spent more time planning.
- Don't expect what you don't plan for.

This section of the dEHRm helps you:

- *Organize the EHR project* This tool may help you ensure that the right people are at the table to carry out a successful EHR project, including identifying who should serve as a project manager. Even though your practice may be very small, someone must have responsibility, authority and available time for carrying out myriad tasks that are necessary to achieve success with an EHR. A practice that does not address such needs up front will not gain its expected return on investment.
- *Consider a migration path to EHR* If you determine you are not yet ready, for any reason, to adopt an EHR yet, it may be appropriate to consider alternative technologies that can add value and ease your practice into the electronic age.
- *Develop and use a communication plan and communications planning tool* This tool may make change easier for all concerned; and keep everyone informed of the current status of the EHR project.
- *Set goals and establish expectations for achievement and key clinical processes tool* This tool describes the critical ingredients for achieving value from the EHR. Many practices shy away from setting explicit goals; or if goals are set, shy even further away from establishing expectations to use the EHR. No totally new technology comes without a learning curve. The EHR, however, comes with a learning curve that significantly alters the status quo. The EHR is a clinical tool — used at the point of care, by clinicians, in support of their clinical decision-making. The EHR truly represents a clinical transformation.
- *Initiate change management* These tools may enable you to carry your preset goals and expectations to their realization. It has been observed that many organizations wait too long to attempt transformations, doing so only when the signs of trouble have become obvious. Increasing capacity for change, generating confidence in change, overcoming resistance to change, and accelerating behavior changes are characteristic of high-performance organizations.
- *Develop a cost/benefit analysis and value proposition* This tool enables your practice to realistically understand the total cost of ownership (TCO) of an EHR and, through education about the full capabilities of an EHR, articulate both monetary and non-monetary benefits. Building the business case for use of an EHR in a small practice must encompass a value proposition.

ORGANIZE THE EHR PROJECT

EHR project management team: In a small practice, the EHR project management team will likely be comprised of:

- ☐ All clinicians (or in a slightly larger office one or two representative dermatologists)
- ☐ Office manager
- ☐ Clinical staff (PA/NP/MA representative, if applicable)
- ☐ Administrative/financial representative, such as biller
- ☐ One person should be designated the project manager (see section on project management responsibilities)

Some small practices may wonder why it is important to have a designated EHR project management team or workgroup. However, without a formalized group that meets regularly and is assisted by a person designated to be the project manager, the tasks necessary to plan effectively, make informed product decisions and prepare thoroughly for implementation often do not occur or remain incomplete.

Some practices also may wonder why it is important to have persons other than the dermatologist(s) on the EHR project management team. Although EHR is certainly a clinical tool and clinicians must be engaged in the decision-making process, the EHR is used by virtually everyone in the office. Furthermore, support staff may be able to anticipate some needs better than the clinicians.

PROJECT MANAGEMENT RESPONSIBILITIES

A small office will generally not be able to support a full-time project manager; however, the role of project management is very important. Someone must be given some dedicated time to project management functions. This person should be designated the "project manager." Project management may take just an hour or so a week during the early stages of the project, and then potentially as much as 40 percent to 60 percent of their time during selection and implementation.

A project manager does not need to have intimate knowledge of EHRs or information technology. Rather, the project manager needs to be able to perform the following functions:

- ☐ Plan project steps at the strategic and tactical levels. The project manager must be comfortable at both the macro and micro levels, seeing the big picture while being very detail-oriented. The project manager typically facilitates the practice in identifying goals, critical success factors, assumptions, risks and obstacles.
- ☐ Manage project from start to finish. The project manager is responsible for getting the project completed on time and on budget. This includes:
  - Initial planning efforts, including:
    - o Overseeing process mapping;
    - o Identifying EHR functional requirements;
    - o Coordinating technical requirements; and
    - o Planning for chart conversion.
- ☐ Support project team. While the project manager may not chair the project management team, the project manager must have the leadership skills to keep forward momentum.
  - During vendor selection, the project manager:
    - o Aids in surveying the marketplace and narrowing the field of candidates.
    - o Coordinates sending an RFP and analyzing results.
    - o Coordinates due diligence activities.
    - o Assists in identifying cost/benefit, financing and value proposition.
  - During implementation, the project manager:

- Establishes progress reporting system
- Maintains issues log problem-escalation
- Installs change control process
- Harmonizes project plan w/vendor's
- Develops turnover strategy
- Monitors task completion
- Develops and oversees training plan
- Develops and oversees test plan
- Supports system build
- Plans and manages go-live

☐ Build stakeholder relationships. The project manager must effectively build teams and get work done through others.

☐ Effect necessary change to accomplish project goals. The project manager must be creative about how to effect change in subtle, yet powerful ways.

Tip: A person dedicated to the project management function will help the practice save money by ensuring comprehensive planning and eliminating rework. A project manager will ensure implementation costs are kept within budget.

CONSIDER A MIGRATION PATH TO EHR

A migration path is the series of steps needed to move from one situation to another. As a goal-oriented process, an EHR migration path would describe and outline the systems required to be in place to move from a paper-based health record environment to an automated EHR system environment.

Some practices may decide to implement HIT in an incremental manner, due to financial constraints, an organizational culture of resistance to change, etc.

The most common applications on the EHR migration path considered by other physicians prior to adopting a complete EHR system include (in no recommended order):

☐ Automated patient self-assessment (for history taking and review of systems)

☐ Automated procedure consent

☐ Clinical messaging (encrypted e-mail capability)

☐ Digital or speech dictation system (if EHR adoption is a long-term goal)

☐ Disease registry

☐ Drug reference knowledge base (e.g., ePocrates, WebMD, *Thomson's Physicians' Desk Reference*, and other health information resources)

☐ Electronic document management system (for scanning paper documents, generally for archive purposes)

☐ E-Prescribing

- New prescriptions and renewals
- Formulary look-up
- Fill status notification
- For indication/contraindication/adverse/allergic reaction/drug-drug interaction

- ☐ E-Visits
- ☐ Clinician portal (for access to lab results and other digital documents)
- ☐ Patient portal (for requesting and/or scheduling appointments, email, education, information about practice, prescription refills, etc.)
- ☐ Public health portal (for medication recalls and reporting)

It is important to note that many of these functions are included in a "complete EHR," although some may be more basic than their stand-alone counterparts. For example, EHR products may include digital and/or speech dictation; however, since users are encouraged to enter structured data via "point-and-click" through a template in an EHR, the dictation component of an EHR may not have all the functionality of a stand-alone system. Ideally, the need for dictation should be significantly reduced if not eliminated by using an EHR.

In addition to which applications might be adopted first, a practice may also find that technology or operational processes may need to be implemented or upgraded prior to adopting certain applications. For example, a practice may find that its practice management system (PMS) is very old and does not interface well with any EHR product. It may need to acquire a new PMS prior to an EHR (ideally from the same vendor to be able to achieve integration). This may also be true of a laboratory information system the practice may have. The office may be using DSL or cable for Internet connectivity and need to upgrade to a T1, especially for dermatology offices that will want to manage digital images. The practice may also not be accustomed to following clinical practice guidelines and may decide it needs to review them prior to acquiring an EHR.

The following tool, the migration path, may help you plot your migration so you can see logical relationships. For example, a practice needs either clinical messaging or a secure patient portal to conduct e-visits. E-prescribing will include a drug knowledge base, so there is no need to acquire a drug knowledge base after acquiring e-prescribing. Any number of phases can be considered, and the duration of any phase can vary from months to years. A few examples are provided in italics as illustration.

Table M: Migration path

Migration path *(with examples)*	Current	Phase I	Phase II	Phase N
Applications - Financial/administrative - Operational - Clinical	Old PMS Old Lab IS	New PMS	New Lab IS Pt Portal e-Rx	EHR
Technology - Database - Network and Telecommunication - Interfaces - Devices	DSL Portal to hospital Desktops		T1 Tablets	
Operations - People - Policy - Process	Appoint Project Manager Standardize appt. scheduling	Physician champion/ EHR Project Management Team		

Tip: If the practice is not fully comfortable with all the functionality an EHR should have, it is important to enhance your education. Product demos and site visits can be helpful, but this often results in vendor contacts for which you are not ready.

Other resources to consider

The following list of resources may help your practice identify the EHR functionalities that are important to you. In addition, consider attending practice management EHR sessions and the EHR Vendor Demonstration Challenge at the Academy's Annual and Summer meetings. Local or regional trade shows can also be informative. Be advised that you may not want to give your business card to vendors, but rather collect business cards of attendees who you meet and already have an EHR. They can be great references and resources.

1. The Institute of Medicine (IOM) conducted its first patient record study in 1991. It report, titled, "The Computer-based Patient Record: An Essential Technology for Change," is a classic work. In 1997, it was reviewed for continued relevancy and a second edition was printed. Then, in 2003, the federal government asked the IOM to describe key capabilities of an EHR in a letter report to the Secretary of Health and Human Services (HHS). Visit the National Academy Press web site to view a copy of the key capabilities document free of charge at **www.nap.edu/catalog/10781.html**.

2. Health Level Seven (HL7) is the standards development organization responsible for creating interoperability standards for HIT. They have developed an EHR System Functional Model based on the 2003 IOM EHR key capabilities (above) that has become the industry standard. Access this model at www.hl7.org/ehr.

3. The Federal government's meaningful use incentive program provides a description of what a "complete EHR" should include to earn the incentives. Be aware, however, that these criteria ONLY include those elements for which providers must report use. They do not include some of the fundamental processes associates with patient registration, scheduling, billing or documenting progress notes. See www.healthit.hhs.gov.

4. The Certification Commission for Health Information Technology (CCHT) is a private organization that is one of several authorized by the Federal government to certify EHR products for meaningful use. However, CCHIT also has a "CCHIT Certified®" certification process that goes beyond the meaningful use criteria. It is also developing criteria for specialty EHRs, including for dermatology. The criteria CCHIT uses for its expanded certification are drawn from HL7's EHR System Functional Model as well as other standards development organizations. See: www.cchit.org.

DEVELOP AND USE A COMMUNICATIONS PLAN

Communication is very important when planning a project that results in the level of change introduced by an EHR. Even when all members of the practice state they are extremely interested in acquiring the EHR, there are important messages that must be conveyed, perhaps even to explain why it is taking so long or to set appropriate expectations for what the practice can actually afford!

Not only is communication important within the practice but there are stakeholders external to your practice with whom you may want to communicate. These might include the hospital(s) at which the physicians are affiliated (to consider portals, interfaces, or even donations through Stark relief) [*for more information on the* ***Safe Harbor exceptions to the Physician Self-Referral Law and the Anti-Kickback Statute,*** *which now govern donations of EHR systems from hospitals, health plans, and other entities to physicians and medical practices, please view this report titled* ***Safe Harbor: A Physician's Guide to EHR Donations***; other providers (perhaps those with whom you have referral relationships to exchange patient information electronically); reference labs (to achieve an interface for receiving lab orders and sending diagnostic results); perhaps the manager of the building in which you lease space (if telecommunications capabilities need to be upgraded or extra space is needed, perhaps temporarily); and potentially many others.

A communications plan can help anticipate and assure communications. It should:

- ☐ Identify the key messages the practice wants to get across to each stakeholder group. For example, to your clerical staff you may want to reassure them about their jobs, to practice leadership/senior management you will want to keep them apprised of important developments, to patients you may want to start communicating about calling the pharmacy for their refills, etc.
- ☐ The audiences to whom key messages are conveyed include all internal and external stakeholders. The number and frequency of messages will vary. Some will have many messages over time; some may have only a few occasionally. Some you will want to time just right. For example, you'll want to be careful about how much you discuss which vendors you are considering, or what your budget is, or when you plan on actually making an acquisition decision.
- ☐ Having multiple people convey the same message can also be important. A practice leader, medical director, practice administrator, office manager, supervisors and others should all be communicating so staff appreciate that this is not just one person's idea or that some are not fully behind the idea. Of course, consistency across the messengers is very important. Messages must be consistent in content and delivery.
- ☐ Multiple media help ensure the messages are understood. Media might include newsletters, announcements at meetings, emails, posters, etc. It may be necessary to identify some messages as needing personal communications; others may be template communications with little personalization.
- ☐ The timing of the message is important as well. Some messages can be too early and not understood and become frightening to people; others may be too late and certain individuals may feel they were left out. Again, careful planning will ensure messages are sent at just the right time.
- ☐ Finally, in the course of all there is to do in a practice every day plus planning for and rolling out the EHR project, communications can get lost in the shuffle. Annotating when a message was accomplished can help assure they actually occur. Use the following template to help you plan your communications.

WORKSHEET #7: COMMUNICATIONS PLANNING TOOL

Key message	To whom	From whom	Medium	When	Date

SET GOALS AND ESTABLISH EXPECTATIONS FOR ACHIEVEMENT

One of the most important, yet probably the most difficult step a practice can take in planning for its EHR is to establish goals and expectations for what it aims to achieve with such a system. Unfortunately, many providers today think their primary goal should be to earn the Federal government's meaningful use incentive money. However, once the money has been received and used to reimburse the practice for its initial outlay, the money is gone and there need to be other benefits that accrue to the practice to sustain use of the EHR.

Goal-setting serves multiple purposes:

1. Initially, setting goals helps educate about EHR. Sometimes practices express goals like "we want to go paperless." While this is certainly something that can be achieved with an EHR, it is rather limited in scope. However, identifying a goal to "reduce telephone call backs from pharmacists" is something that requires understanding of how e-prescribing works.

2. Setting goals also helps initiate change. A practice identified that they had "heard" that an EHR could reduce transcription expenses by 85 percent. When they were asked how they would accomplish this goal, the clinicians had to stop and think that eliminating transcription meant eliminating dictation, which meant they would be entering data on the computer. When it was explained that data entry occurred through point-and-click templates and minimal typing was desirable, and that such data entry would enable reminder and alerts, the level of change hit home to them. But by giving them something in return for their efforts, they also became comfortable with change.

3. Goal-setting can also aid in describing functional requirements desired in an EHR. It is one thing to be able to use e-prescribing to be reminded about an allergy when writing a prescription and it is another to have a potential drug-lab interaction flagged. Virtually every e-prescribing part of an EHR has drug-allergy checking; yet only about half of all EHRs have drug-lab checking, because lab data are often not available in structured form to check against drug information. If drug-lab checking is important to your practice, articulating this level of specificity helps you identify a key differentiator for your product evaluation.

4. You may find that some of your goals cannot be accomplished by even the product that best seems to fit most of your requirements. There is no perfect product. But if you identify an important goal that the vendor claims will be addressed in the next version of the product, you may want to incorporate that into your contract negotiation.

5. As you develop your goals, you may also find you will need to customize the product to meet your specific needs. For example, if a vendor has most of the functionality you want, but does not have a template specific to documenting indications for a Mohs procedure, you will want to be sure you have the tools to develop such a template yourself, or the ability to engage the vendor to customize one for you.

6. A final purpose for writing specific, measurable objectives is benefits realization. Sadly, many EHR projects gain less than 100 percent adoption. One practice supplies a good example: Two young physicians often found they had to stay late, return after dinner, or even take charts home to finish. Their primary goal for getting an EHR was to finish charting and be home every night for dinner with their children. To ensure they achieved that goal, they devised a sign out sheet for themselves so they could track when they left the office. This example highlights the important point that having a specific goal and appropriate measurement system in place to meet the goal is key.

Writing specific, measurable goals for an EHR, however, is not an easy process. Goals should:

- State a specific outcome.
- Describe how the goal will be achieved.
- Establish a timeframe or milestones for achievement.
- Identify who will be accountable for achieving the goal.

To write effective goals it is necessary to have baseline data. For example, if it is desirable to generate a list of patients identified as at risk for reoccurring skin cancer to be contacted at specified intervals it is important to know what percentage of patients today are being contacted. If this is not done proactively, then an appropriate goal might be to phase in accomplishment of this follow up practice, with perhaps 50 percent being contacted within six months of acquiring the EHR and 100 percent within one year of acquiring an EHR.

The following key clinical processes tool can aid in writing specific, measurable goals for each process in the practice. It walks you through first thinking about the benefit to be derived from the EHR in general, asks you to identify specific ways you can measure what you are doing today (metrics), what those metrics are, and what you think you can accomplish with an EHR (goals).

WORKSHEET #8: KEY CLINICAL PROCESSES TOOL

Key processes	General benefits	Baseline metrics	Goals
VISIT-RELATED PROCESSES			
1. Pre-visit			
2. Check-in			
3. Patient intake			
4. Chart review			
5. Care planning			
6. Prescribing			
7. Staff tasking			
8. Surgical procedure			
9. Lab ordering			
10. Coding			
11. Charge capture			
12. Referral/consultation management			
13. Patient instruction			
14. Check out			
15. Clinical documentation			
NON-VISIT RELATED PROCESSES			
16. Lab/results review			
17. Refill requests			
18. Other phone calls			
19. Patient follow-up			
20. Release of information			
21. Chronic disease management			
22. Quality improvement			
23. Required reporting			
24. Pay for performance			

INITIATE CHANGE MANAGEMENT

Setting goals starts the change-management process, but there are several other *dEHRm* tools that can help you better prepare for the EHR:

- Workflow and process mapping This tool enables a practice to understand how information and processes "travels" from one place to the next in the current practice environment. The tool elucidates how these processes and information pathways will change when the EHR is implemented. Workflow process mapping also ensures that key control points in today's processes are retained in the EHR. It also helps identify which data are to be captured to be able to complete a form or develop a report. Finally, workflow process mapping can pinpoint variations in a practice and help introduce standardization where applicable.
- Chart conversion This tool describes the process the practice will employ to bring necessary information from paper charts into the EHR. While the actual performance of chart conversion will not occur until just before go-live, planning for chart conversion is very important. It helps anticipate the type of functionality needed in the EHR, as well as the hardware and staff resources. It also helps the practice prepare today for a more efficient and cost-effective process.
- HIPAA and other legal/regulatory requirements This information sheet discusses regulatory and legal requirements pertaining to the adoption of EHR. Distinguishing between myth and reality can help reassure clinicians that they are doing the right thing by acquiring an EHR and address any patient concerns.

WORKFLOW AND PROCESS MAPPING

An important premise relating to the scope of change brought about by EHR is that the practice is not automating the chart. Instead, ***what is being automated is the data, information and knowledge that supports clinicians in taking care of patients***. This is a crucial mind-set to have when beginning any phase of the change-management process for EHR. In fact, a study on patient records conducted by the Institute of Medicine (1991, 1997) noted:

> "Only automating the form, content, and procedures of current patient records will perpetuate their deficiencies and be insufficient to meet emerging user needs."

The IOM further noted:

> EHRs "encompass a broader view of the record than today, moving from notion of location for keeping track of patient care events to a resource with much enhanced utility."

Many organizations planning an EHR only "think about" processes, but it has been recognized that formal attention to workflow and processes is of the utmost importance. An article titled, "Unexpected Increased Mortality after Implementation of a Commercially Sold Computerized Provider Order Entry [CPOE] System" (Han, et al, Pediatrics, Vol. 116, No. 6 December 2005), drew criticism from readers for not recognizing the importance of understanding current processes and addressing the special needs of pediatric patients in calibrating medication doses as part of a CPOE initiative. Dr. Levick at Lehigh Valley Hospital noted in his commentary on this article that "the issue with CPOE is usually not in the software, but in the process change that is required to successfully implement such a complex system."

Workflow process mapping provides the means to identify all sources and uses of data and how these data flow through the practice. It is should be performed by those who perform the processes that will be impacted by the EHR. Hence, staff performing patient intake, for example, should map this process in detail. Clinicians, themselves, perform many of the data processes. While staff may be able to assist the clinicians in developing the maps, it is the clinicians who should review them for accuracy.

The following steps are typically performed to map current processes:

1. Identify processes to map; define process boundaries. A good place to start is the key clinical processes tool from your goal-setting.
2. Define process elements: inputs and outputs (sources and uses of information), tasks (processes that transform data into useful information and knowledge), and participants.
3. Brainstorm with your staff to ensure all tasks are identified, including critical tasks, those that don't belong and when and how people in the practice do things differently from one another.
4. Arrange tasks in sequence, including alternative paths.
5. Identify at what points errors, delays, communication breakdowns, repetition or rework occurs. These may be candidates for:
    a. Inspection points/quality checks that should be retained in the EHR.
    b. Unnecessary steps that can be eliminated through EHR.
6. Use process mapping to identify all forms and reports to ensure that data are collected to produce the desired forms and reports.
7. Obtain baseline data for benefits management.

The following steps are performed to identify opportunities for improvement once the first seven steps of mapping current processes have been completed. Opportunities for improvement may be accomplished immediately, they may need to wait for the EHR, or there may be intermediate improvements that can be made in preparation for an EHR.

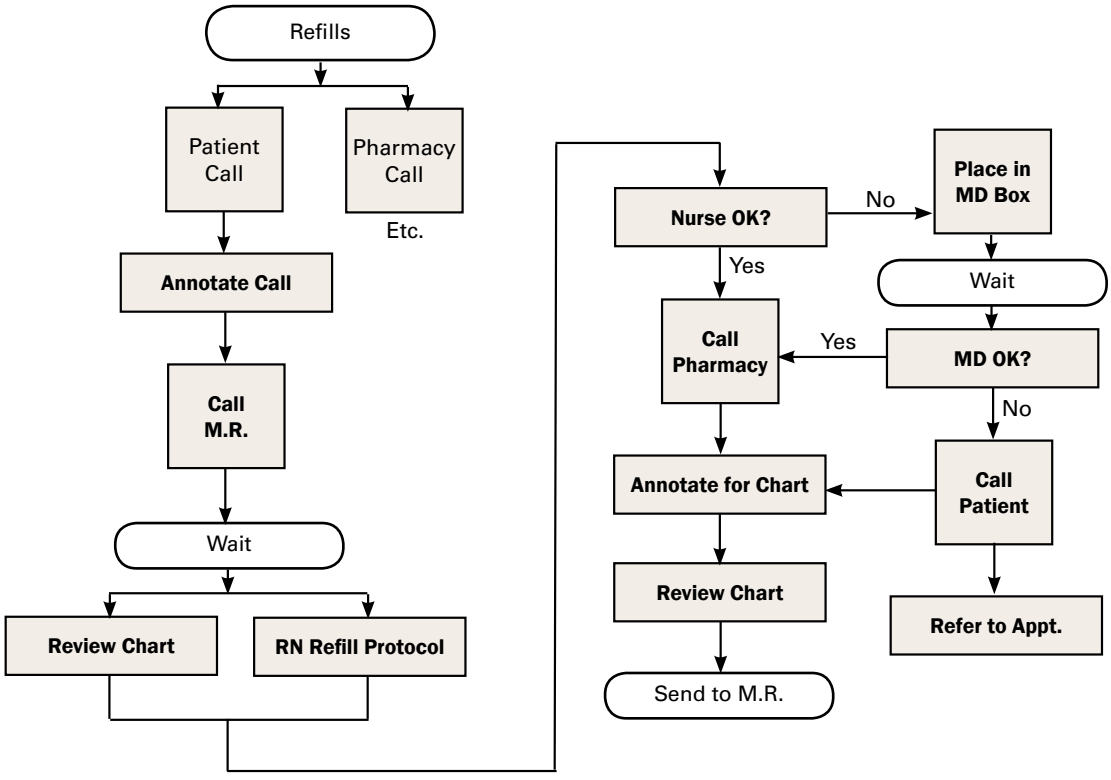
8. Identify problems needing improvement, such as patient wait time, variations among the same process, frequently missing documentation, lack of quick reference information, etc.
9. Determine the root cause(s) of problems.
10. Document changes in an "improved" process map.
11. Use new processes to identify EHR functional specifications, and later to build out the EHR system to achieve improvements.
12. Create use cases for system build and testing.
13. Test new workflows and processes.
14. Train all on new workflows and processes.
15. Incorporate changes into policy and procedure.
16. Conduct benefits realization and celebrate successful change/correct course as necessary.

The two most common ways to conduct a workflow and process map are via narrative lists or flow charts (see examples below). The workflow questionnaire can help the practice map out a more comprehensive patient workflow. To minimize risks of disruption and to manage workflow changes necessary to launch the EHR system, it is helpful to identify clinical process flow and develop modeling processes that will aid in process improvement.

Narrative list, where each decision point is indented. The following is an example of the start of a map for managing refills:

1. Refill request received.
    i. Patient call (Average: five per day).
        1. Take note of patient name, medication for which refill is requested, date, time and desired pharmacy; tell patient you will call pharmacy with approval by the end of the day or call the patient back.
        2. Call medical records to request chart.
        3. Wait for chart to be pulled (Average: 30 minutes).
        4. Review chart against nurse protocol for approving refills and approve if possible.
            a. Annotate in chart approval for refill.
            b. Call pharmacy of patient's choice.
        5. Review chart against nurse protocol for approving refills and if not possible for nurse to approve, place request and chart in physician inbox.
            a. Wait for physician review and return of request and chart:
                i. If physician approves, call pharmacy. Annotate in chart.
                ii. If physician does not approve, call patient. Annotate in chart.
                    1. Refer patient to appointment clerk.
    ii. Pharmacy call, etc.

Flowcharting is an even more common form of process mapping. A flowchart for the above example is provided below:



WORKSHEET #9: WORKFLOW QUESTIONNAIRE

The workflow questionnaire is designed to help your dermatology practice identify desired EHR functionalities and appreciate the nature of the change an EHR may bring. The following tool asks a series of questions associated with each of the key clinical processes tool. Use the answers to help map out and focus your workflow process for each key administrative function and clinical process. Be sure to document when there are any variations between different persons performing the task (e.g., among dermatologists, between dermatologist/physician assistants/nurse practitioners, or among clinical support staff). Identify the reasons for variation (e.g., credential, conditions treated, personal preference, time of day, etc).

Tip: To obtain a more accurate snapshot of your practice's workflow, it is advisable to focus selective portions of this questionnaire on the appropriate front-office/back-office departments, and clinical professional teams. For example, you may want to target the front-office staff to help you complete the pre-visit and check in portion. As this tool is scalable and flexible, please adapt it to meet your needs.

WORKFLOW QUESTIONNAIRE
1. Pre-visit (Scheduling)
How are appointments scheduled? ☐ Phone scheduling in advance ☐ Online scheduling in advance ☐ Phone for same-day/walk-in appointments (open-access scheduling) ☐ Previous visit (returning established patient)
Does anything happen between the time an appointment is scheduled and when the patient arrives? ☐ Cancellation ☐ Rescheduling ☐ Call in prescription
Do you remind patients of upcoming appointments? If so, what method is used? ☐ Telephone calls ☐ Letters/postcards ☐ Automated reminders
Do you send registration forms to the patient for completion before their visit? ☐ Yes ☐ No Do you collect (or record as patient declined to provide) all the demographic data necessary to earn meaningful use incentives, including preferred language, gender, race, ethnicity, and date of birth? ☐ Yes ☐ No
What do you do to prepare for the next day's appointments? ☐ Review schedule to determine patient load/mix (cognitive visits, consultations, procedures, Mohs, and/or cosmetic, other) ☐ Convene staff meeting to determine next day's game plan ☐ Prepare charts ☐ Prepare charge tickets
Who pulls the charts? ☐ Front desk staff ☐ Clinician ☐ Nurse/MA/PA

WORKFLOW QUESTIONNAIRE
When chart is pulled do you: ☐ Check when last visit occurred ☐ Check for latest lab reports ☐ Check for missing consults ☐ Check for missed appointments ☐ Check for notes from patient ☐ Check for outstanding balance ☐ Add blank forms ☐ Other:
What do you do if something is missing?
Where do you put the next day's charts?
What do you do if you can't find charts for upcoming visits?
Do you verify the following insurance issues prior to visit? ☐ Eligibility ☐ Deductible ☐ Co-pay amount ☐ Prior authorization ☐ Other:
Is there anything else? Add additional questions here:
2. Check-in
What do you do about no-shows? ☐ Call no-shows immediately to reschedule missed appointment ☐ Call no-shows next day to reschedule missed appointment ☐ Add to no-show list ☐ Document on problem list (paper) ☐ Document and track on scheduling system ☐ Document in chart notes ☐ Generate a no-show charge
What do you do with the "no-show" chart?
What is the process for check-in once the patient arrives? Demographic information verification (how is this done?) ☐ Are there documents the patient must sign or receive a copy of (list them)? ☐ Do you add forms to the chart before making it available for either the clinical support staff (MA, LPN, RNs, PAs, NPs) and/or dermatologist(s)? ☐ Do you collect co-pay at check-in (or at check out)?
What do you do with papers the patient brings in or forms the patient signs? ☐ Amendments are made to the record ☐ Forms to be completed (e.g., back-to-work forms) ☐ Reference information ☐ Personal health record content ☐ Other:

WORKFLOW QUESTIONNAIRE
How do you let the clinical support staff/dermatologist(s) know the patient is ready to be seen (i.e., that the patient and their paperwork are ready)?
Do you do things differently when prepping for any other clinical support staff (MA, LPN, RN, PA, NP, et al)
Is there anything else? Add additional questions here:
3. Patient Intake
Clinical support staff begins visit (include where these items are done, as applicable to your practice): ☐ Height ☐ Weight ☐ BMI ☐ Growth charts for 2 to 20-year-olds' vitals: TPR ☐ Blood pressure ☐ Review medications ☐ Review medication allergies ☐ Smoking status ☐ Capture reason for visit ☐ Other (e.g., surgical procedure setup): Identify if any information captured is automated.
What does the clinical support staff document in the chart versus on a sticky note?
How does the clinical support staff notify the dermatologist the patient is ready (and in which room)? ☐ Chart in door ☐ Walkie-talkie ☐ Whiteboard ☐ Other:
4. Chart review
What information does the dermatologist advance review in chart prior to entering examining room?
Where does this chart review take place? ☐ In the hallway ☐ In the dermatologist's office ☐ Other:
Is any of the following reference information sought? ☐ Formulary information ☐ Drug information ☐ Clinical practice guidelines or evidence-based medicine ☐ Other clinical decision support aids:
Where does the dermatologist go if s/he needs something or needs the clinical support staff during the visit? ☐ Lab ☐ Equipment ☐ Assistance with exam ☐ Other:

WORKFLOW QUESTIONNAIRE
What is the process if a patient has to leave the room for lab work or surgical procedure (and then return back to the exam room)?
What does the dermatologist document?
Does the dermatologist or their clinical support team put anything else in the chart after the patient leaves?
Is there anything else? Place additional questions here:
5. Care planning
What does the dermatologist document in the examining room review: ☐ Chief complaint/reason for visit ☐ History of present illness ☐ Review of systems ☐ Differential diagnosis ☐ Update medication list/reconcile medications when patients are received from another setting of care ☐ Other history information ☐ Results of physical exam ☐ Diagnosis ☐ Update problem list ☐ Update care plan ☐ Other:
When was your last documentation audit? What were the results?
How frequently does the dermatologist illustrate a patient's progress using: ☐ Photographs ☐ Graphics (e.g., lab result trend line) ☐ Other illustrations: Do these become a permanent part of the chart?
Is there anything else? Add additional questions here:
6. Prescribing
Does the dermatologist use a formulary? If so, why? ☐ To determine if a medication is on the patient's health plan formulary ☐ To determine patient's co-pay requirement
Why does the dermatologist check a drug reference resource, such as a paper copy of a physician desk reference, PDA or online? ☐ For indications ☐ For contraindications ☐ For generic equivalents
Does the dermatologist always record prescription on medication list?
Is the medication list complete with respect to form, dose, route, sig, etc.?
Are samples provided to patient? How are they documented? Is there a sample inventory?

WORKFLOW QUESTIONNAIRE
Does the dermatologist always check the medication list to determine when refills are due? If so, how is this achieved?
Is there anything else? Add additional questions here:
7. Staff tasking
Is there any communication between the clinical support staff and the dermatologist other than when the patient is ready to be seen? ☐ Face-to-face ☐ Walkie-talkie ☐ Sticky note on chart ☐ Whiteboard ☐ Other:
What information is communicated? What tasks are requested to be performed?
Does the clinical support staff participate in any of the following during the visit? ☐ Lab ☐ Equipment ☐ Assistance with exam ☐ Assistance with surgical procedure ☐ Other:
Are there "workstyle" variations between/among clinical support staff and between/among clinical support staff and dermatologist/physician assistants/nurse practitioners?
Is there anything else? Add additional questions here:
8. Surgical procedure
How is the informed consent for surgery obtained?
How are surgical procedure documented?
Is there anything else? How is postoperative care and follow-up that is shared to the patient documented? Add additional questions here:
9. Lab ordering
Do you have an in-house lab (describe the process for documenting lab request and completion):
Do you have a laboratory information system? From what vendor?
Do you use an outside reference lab (if so, describe the process): Hospital Commercial (LabCorp, Quest, et al.) Independent Other:

WORKFLOW QUESTIONNAIRE
How do you track and manage lab orders? Biopsy log?
Is there anything else? Add additional questions here:
10. E&M coding
How is E&M coding performed: ☐ Via check-off on super bill ☐ Via narrative note on super bill ☐ Via coder
Does a coder review all codes or only some: ☐ ICD-9-CM ☐ CPT procedure codes ☐ CPT G codes or Category II codes ☐ E&M codes ☐ Do coders have the information they need? ☐ How do they get their questions answered?
When was your last external coding audit performed and what were the results?
11. Charge capture
Who documents on the super-bill?
Where does it go at the end of the visit? How does it get there?
Do the coders/billers have the information they need?
How do the coders/billers get their questions answered?
Do you classify super-bills/charts based on types of visit? If so, how (e.g., hold-and-wait status category)? For instance, for "biopsy patients" with outbound lab orders/pending lab results, do you separate charts and hold on to super-bill until lab results are received and then complete charts and process super-bill?
What steps lead to dropping or processing a bill?
When was the last charge audit performed and what were the results (what is the estimated value of lost charges)?
Is there anything else? How often does you practice perform an internal charge audit? Add additional questions here:
12. Referral/consultation management
What are your most common referral types and/or consultation requests? Outside your practice: Internally within your practice:
Are inbound/outbound patient referrals and consultation requests distinguished, differentiated, and tracked?
If so, do you generate periodic reports on referral/consultation sources, reasons, trends, and patterns?

WORKFLOW QUESTIONNAIRE
Describe the ways patients obtain referrals (e.g., clinical support staff makes call, dermatologist fills out form, copy of chart supplied):
Do you verify that the referring physician is covered by the patient's health plan? (How does this apply, do we care if the referring physician is not covered? Or are we talking about the physician we refer to?)
How do you know the patient actually completes the referral/consultation request? Does the patient have to complete this info or it the provider?)
How do you receive results of the referral/consultation, and what do you do with them?
How is the patient notified?
How do results from referral/consultations become documented into the chart?
Is there anything else? Add additional questions here:
13. Providing patients clinical summaries and instructions
How do you provide patients with information about their visit?
How do you provide and deliver patient instructions and other educational information?
Do you have instruction forms? Are they translated into languages suitable for your patients?
Does anyone tailor the instructions for the patient?
Who discusses the instructions with the patient? When?
Is there anything else? Do you follow up to ensure patient is following the instructions? Add additional questions here:
14. Check-out
Do you have a patient check out procedure? Where does it occur? Who carries it out?
When are follow-up appointments scheduled?
If any outstanding balances, how is collection of payment handled? ☐ Co-pay (now or at check in) ☐ Billing for self-payers ☐ Patient statement provided at check out

WORKFLOW QUESTIONNAIRE
When was the last financial audit performed and what is the estimated value of potentially recoverable bad debt? What is the highest outstanding days in the A/R?
What is your collection policy? What is the estimated value of unrecoverable bad debt?
When was the last time you conducted a patient satisfaction survey? What were the results?
Is there anything else? How often do you bill patients for outstanding statements? After how many statements do you send patient to collection agency? Add additional questions here:
15. Clinical documentation
When is the visit documentation completed? ☐ During the visit ☐ As the visit concludes ☐ Immediately after the visit at the nursing station ☐ Between visits, when the dermatologist has time ☐ At the end of the day ☐ Days/weeks later ☐ Usually within _____hours/days
Is there variability between providers in the time it takes to complete the chart?
How much of the chart content is dictated and transcribed vs. handwritten? What is the process for review and authentication of the transcription? Are transcribed notes shingled into the chart or on separate sheets of paper?
What happens to the chart? Goes with patient to check out Goes to the dermatologist's office Sits in the work area for dermatologist to work on as time permits Other:
Is there anything else? Add additional questions here:
NON-VISIT RELATED PROCESSES
16. Lab/other results review
How are lab/other results returned to the clinic, reviewed and communicated to patient?

WORKFLOW QUESTIONNAIRE
How do you know that labs/other tests were ordered, completed, results returned, seen by dermatologist and reported to the patient? The following questions are provided to prompt you as you map the steps involved and complete the process: How are lab results returned to the clinic? Who gets them? What do they do with them? When are they matched with the chart? Who matches them? Are results prioritized by type of test, or for abnormal results? Do all results go to the dermatologist? How? When? All results or only abnormal? What does the dermatologist do with them? What is documented? How does the dermatologist notify the clinical support staff what needs to be done about the results and how does the clinical support staff get the information? How long does it take? Do results get to the patient? How — letter, phone call? What is the turnaround time from when the specimen is sent to the lab and the time the report is received in the office?
What happens if patient can't be reached?
Is there anything else? Add additional questions here:
17. Prescription refills
Describe the process when patient calls in for a refill:
Describe the process when patient asks for a refill during an office visit:
What happens when the pharmacy calls about a refill? Calls for illegibility Calls for off-formulary Calls for prior-authorization requirement Calls for contraindications
Who performs refill processing? Is there a written protocol for what refills may be approved by clinical staff?
Is there anything else? Add additional questions here:
18. Other phone calls/email
Other than for results or refills, what types of phone calls do you get most often:
Describe process for taking messages:
Describe process for returning patient phone calls:

WORKFLOW QUESTIONNAIRE
Do you enable any of your patients to email you?
Are these “e-visits” reimbursed by patient or health plan?
How many patients have asked to email you?
Is there anything else? How are these messages forwarded to the dermatologist or clinical staff for a response? Add additional questions here:
19. Patient follow-up
Do you make next-visit reminders? ☐ Calls ☐ Letters/cards ☐ System-generated reminders
Do you ask patients to complete a follow-up form online?
Do you perform any other follow up with patients: ☐ After a surgical procedure ☐ After a hospitalization ☐ Based on other criteria:
Is there anything else? Add additional questions here:
20. Release of information
How many requests for release of information from the chart are received: ☐ From other providers (clinicians, hospitals) ☐ For patients themselves ☐ For health plans to substantiate a claim ☐ From attorneys ☐ Other:
How is patient authorization for release of information obtained?
How do you manage restrictions the patient may request on disclosures: ☐ To insurers ☐ To caregivers ☐ Other:
Do you copy records yourself or do you use an external service?
How do you ensure that the problem list, medication list, medication allergies, and diagnostic test results are supplied to the provider to whom you are referring a patient? Do you receive the problem list, medication list, medication allergies, and diagnostic test results when a provider refers a patient to you?
Is there anything else? Add additional questions here:

WORKFLOW QUESTIONNAIRE
21. Chronic disease management
How are patients recalled for chronic disease management?
Do patients maintain a manual or Web-based chronic disease diary?
Do you supply patients with a chronic disease report card?
Do you follow up with patients when health plans contact you about patients with chronic disease?
Is there anything else? Add additional questions here:
22. Quality improvement
Does the practice use a formal methodology for continuous quality improvement? Describe:
Does the practice participate in the Federal Physician Quality Reporting Initiative (PQRI) program or other quality improvement program? How are data on quality measures reported?
If the practice encounters a quality or patient safety issue, what steps does it take to reduce the likelihood of a similar issue occurring?
How are staff provided continuing education?
Are specific metrics used to track quality issues, such as chronic disease care management measures? What measures are used, how are data compiled to determine results, what are the results?
Is there anything else? Add additional questions here:
23. Reporting
What required reporting must the practice comply with? Communicable disease to public health Other:
How is required reporting complied with?
What is the compliance rate for required reporting?
How are patient lists generated for quality improvement purposes, research, medication recall, or follow up purposes?
Is there anything else? Add additional questions here:
24. Pay for performance
Are there incentives for using generic versus brand-name drugs; and if so, how is this demonstrated?

WORKFLOW QUESTIONNAIRE
Are there malpractice premium discounts for using EHR; and if so, how is this demonstrated?
Are there favorable contracting provisions for using EHR; and if so, how is this demonstrated?
Is there anything else? Add additional questions here:

HIPAA AND OTHER LEGAL/REGULATORY REQUIREMENTS

Legal and regulatory issues may seem like barriers to adopting an EHR. However, within the past several years many state governments and federal agencies have been working to align policies with promotion of practice automation. The American Recovery and Reinvestment Act (ARRA)/Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 that brought the meaningful use of EHR incentives also included a requirement for breach notification, which was implemented on Sept. 23, 2009. For further information about your obligations under the breach notification regulations see www.hhs.gov/ocr/privacy/hipaa/administrative/breachnotificationrule/index.html. Several modifications to the HIPAA Privacy Rule were also mandated under ARRA/HITECH intended to reduce privacy concerns in use of EHR. Final regulations are expected in 2010 and will be incorporated into the AAD HIPAA manuals. In addition, the health reform legislation of 2010 (the Patient Protection and Affordable Care Act) is also mandating improvements in the HIPAA transactions (e.g., claims, eligibility verification, claims status, electronic remittance advice) and code sets through standard operating rules to which health plans must conform and creation of a healthcare electronic funds transfer (EFT) standard.

The purpose of the HIPAA Administrative Simplification provisions that required adoption of standard transactions and code sets was to "improve ... the efficiency and effectiveness of the health care system, by encouraging the development of a health information system through establishment of standards and requirements for the electronic transmission of certain health information." (Public Law 104-191, Subtitle F — Administrative Simplification, Sec. 261. Purpose) Subsequently, Transactions and Code Sets Rules, a Privacy Rule, and a Security Rule were written in support of the exchange of the electronic transactions, to ensure that all protected health information (PHI) was held in confidence, made secure, and that patients could exercise their rights to access, restrict disclosure, request amendment, and receive an accounting of disclosure to their PHI. When adopting an EHR system it is important to ensure that you have business associate agreements in place with vendors who may have access to PHI at your practice. Although ARRA/HITECH is requiring that business associates must comply directly with the Privacy and Security Rules, such business associate agreements are still vital to ensure protections are in place to guard against undue disclosure or access to PHI and that the business associate notifies the practice of any breaches in sufficient time for the practice to notify those patients who may be impacted by the breach It is your responsibility to ensure that a business associate agreement exists. To view a model business associate agreement, visit www.hhs.gov/ocr/hipaa/contractprov.html for a copy.

In general, most state statutes have not been very specific when it comes to EHRs, often citing in general the need to address record authenticity, security, and confidentiality. HIPAA Privacy and Security Rules go a long way to fill in gaps where state statutes are silent, although there are also some state statutes which are more stringent than HIPAA and therein pre-empt HIPAA.

It is a good practice to work through your state medical society and/or legal counsel to be sure your practice policies and procedures comply with your state's laws. Incorporate all requirements into written policies for the practice and adhere to these policies consistently.

When reviewing your state statutes and for general compliance with the HIPAA Privacy and Security Rules look out for the following:

- ☐ Record retention (generally described in state statutes).
- ☐ Durability of storage media (generally described in state statutes).
- ☐ Encryption for devices and media rendering the PHI secure and not subject to breach notification in the event of loss or theft.
- ☐ Protocols for assuring accuracy of entries (generally described in state statutes).
- ☐ Business associate contract between provider and all vendors who have access to PHI, including primarily the EHR vendor (HIPAA Privacy and Security Rules).
- ☐ Storage, back up, business continuity and disaster recovery (HIPAA Security Rule).
- ☐ Uses and disclosures of PHI for treatment, payment and health care operations (HIPAA Privacy Rule: Often interpreted too conservatively, in some cases impeding patient care and resulting in unintended consequences).
- ☐ Patient privacy rights to notice of privacy practices, access to their records, request restriction on disclosures, request amendment, and accounting of disclosures (HIPAA Privacy Rule: One of the most frequently cited Privacy Rule complaints made against small providers).
- ☐ Authorization and consent for disclosure (HIPAA Privacy Rule and many new changes to state statutes (see also below).
- ☐ Authentication requirements (HIPAA Security Rule).
- ☐ Access controls (HIPAA Security Rule).
- ☐ Audit controls (HIPAA Security Rule).
- ☐ Sanction policies (HIPAA Privacy and Security Rules).
- ☐ Information privacy official/information security official/corporate compliance official (HIPAA and OIG).
- ☐ Data transmission security and integrity requirements, especially for encrypting data sent through the Internet (HIPAA Security Rule and Security Guidance).
- ☐ E-discovery provisions (Federal Rules of Procedure and many new state statutes permitting the court discovery of underlying audit trails, data dictionaries, and other information associated with how information systems support documentation and clinical decision-making).
- ☐ Data breach notification requirements (in addition to the Federal breach notification regulation referenced above, almost all states have breach notification laws that may have slight differences from the Federal requirements).

As states are becoming active relative to formation of health information exchange (HIE) organizations, requirements associated with obtaining business associate contracts with the HIE vendor, identifying patients, locating members of the exchange who have records for those patients, obtaining patient consent for access to the records, authorization and authentication of requestors, auditing and logging of accesses, and secure data transmission must be addressed.

The Academy has available practice management manuals to educate dermatology practices and assist them with becoming compliant with the requirements established under the HIPAA Privacy and Security Standards. To purchase your copies, please visit www.aad.org.

DEVELOP A COST/BENEFIT ANALYSIS AND VALUE PROPOSITION

An EHR is an investment. Like any other investment, the more you put in, the more you get out. However, the EHR investment is also different than other investments. It requires considerable effort on your part. It is not easy to abandon an EHR product that is not performing well to adopt another product. The performance of the EHR is related to how you use it, not the product itself. In light of these caveats, you want to not only set goals and expectations, manage change, and, of course, select wisely, but you want to fully understand what the EHR will cost and what you can achieve with it.

The following are important concepts in understanding the EHR investment:

- **Total cost of ownership (TCO)**. Hardware and software will be the primary cash outlay you make to acquire an EHR. However, there are potentially a number of other costs that are either complementary to or as a result of the initial investment. For example, you may find that even though the EHR runs on your current network, it is slower than you anticipated and as a result is frustrating to you. You may have to expend more money to increase your telecommunications capacity. Other examples of costs in addition to hardware and software are travel associated with training, or providing special skills training to a staff member. TCO are all the costs you may incur in acquiring an EHR.

- **Benefit.** Generally considered the monetary return you get from using an EHR, benefits include cost savings in transcription expense, increased revenue from capturing lost charges, increased patient throughput, etc.

- **Value.** The non-monetary benefit you get from an EHR is your value. However, value can be elusive if you don't set appropriate expectations and attempt to measure the value in ways other than dollars. Many quality of care and patient safety aspects of EHR are related to value. Certainly if you are respected in the community as having better outcomes, there may be a monetary reward in seeing more patients. But in general, you will need to set up metrics to determine whether you are rendering quality care and use those for continual improvement.

Ideally, an EHR should result in a benefits as well as value. The Business Case for EHR Worksheet provides some examples of costs and benefits you may want to evaluate in your EHR analysis. Note that these are all potential costs and benefits. Each practice varies, especially by size, number of locations, existing infrastructure, etc.

WORKSHEET #10: BUSINESS CASE FOR EHR WORKSHEET

Total cost of ownership and return on investment (TCO-ROI)

Benefits	Cost calculation	Goal percent	Year 1	Year 2	Year 3	Year 4	Year 5
Paper chart supplies							
Paper chart storage costs							
Clerical chart costs							
Transcription cost							
Copy service cost							
Paper statement costs							
Overtime reduction due to efficiencies							
Malpractice premium impact							
Coding improvement as estimated for practice based on knowledgeable consultant findings							
Lost charges reduced							
Penalties/denials avoided through eligibility/ prior authorization checking							
Discounts/incentives from adoption of guidelines to support health maintenance and/or patient compliance improvements due to better follow up/education, etc.							
New service revenue							
Clinical trials revenue							
Avoidance of non-reimbursed duplicate or contraindicated tests							
Medication costs not reimbursed							
Referrals increased							
Meaningful use incentives							
Other, specify:							
Other, specify:							
Total benefits							

Costs	Qty	Initial cost	Year 1	Year 2	Year 3	Year 4	Year 5
HARDWARE (H/W)							
Database server(s) and devices							
Network server and devices							
Other server(s) and associated devices (e.g., back up, fax, email)							
Input devices							
Other devices (e.g., printers, scanners, docking stations, cables, battery chargers)							
Communications (e.g., router, hub)							
Data center furnishings							
Subtotal estimate							
SOFTWARE (S/W)							
Operating system							
EHR package							
Upgrades/replacements for PMS, lab, other							
Interfaces							
Other software (e.g., code sets, drug databases, MS Office, patient education, other third party)							
Subtotal estimate							
SUPPORT							
Selection consultant							
EHR education							
Publications							
Accreditation							
H/W and S/W support							
Contingency support							
Subtotal estimate							
IMPLEMENTATION AND TRAINING							
Vendor fees							
Training (incl. travel)							
Project manager							
Clinician loss of revenue							
Overtime to cover loss of productivity							
Attorney							
Electrician							
Contractor							
Implementation consultant							
Temporary space and furnishings for training, chart conversion							

Costs	Qty	Initial cost	Year 1	Year 2	Year 3	Year 4	Year 5
New furniture							
Chart conversion: temporary staff							
Chart conversion: loaner scanner							
Webmaster							
Subtotal estimate							
MAINTENANCE							
H/W service maintenance agreements							
S/W license maintenance agreements							
Subscriptions							
Telecom fees							
IP fees							
Subtotal estimate							
STAFFING							
Medical Director I.S. IT staff							
Clinical analyst							
Physician extenders used to support more patients							
Value of drop in productivity							
Subtotal estimate							
CONTINGENCY							
Potential additional costs (percent)							
Total Costs							
Impact (benefits – costs)							
Payback period (Year in which benefits exceed costs)							

It is estimated that there may be as many as 500 potential vendors selling ambulatory EHR systems. About 100 or so have been or will be certified for meeting meaningful use criteria and fewer are likely to meet the enhanced CCHIT certification process, and many fewer specialize in dermatology, it is clear that identifying the right vendors to consider can be a daunting task. The *dEHRm* offers a number of tools to guide your selection of an EHR product and become familiar with contract negotiation:

- *Understand the marketplace* This set of tools may help you reduce bias in your selection process (vendor code of conduct, p. 61) and navigate the many potential vendors you will want to consider (making the first cut). Understanding the marketplace helps educate the practice about what is possible with an EHR and narrows the field such that you can realistically differentiate between products.
- *Prepare and distribute a request for proposal (RFP)* In order to conduct a valid comparison and further narrow the field of vendors you will consider, this tool will aid you in this process. In addition, this tool distinguishes between a request for information (RFI) and RFP and describes various approaches to using an RFP.

Table N: Pricing structure

Dermatology practices should determine the total cost of ownership when evaluating the numerous potential EHR solutions. The total price of the solution includes not just the price of the software, but

- implementation,
- training,
- upgrades,
- technical support
- ongoing maintenance paid to the EHR vendor and/or other vendors
- the cost of any modifications to physical plant, new furnishings, consultants, and ongoing technical support services.

In addition, payment terms are an important element in ensuring successful adoption of the EHR. A minimum down payment (15 to 20 percent) followed by milestone payments after training, implementation, testing and use for one to three months should be sought in your negotiations.

- *Evaluate responses to an RFP and conduct additional due diligence to select a product of choice* It is very important to select a vendor that can provide the functionality you desire. However, there is more to a vendor and its product than functionality that will make a significant difference in how well your EHR performs over time. This tool helps you evaluate demonstrations, site visits, reference checks and corporate investigations as applicable.
- *Negotiate an effective contract* This tool covers contract negotiation. Retaining an attorney to review your contract is of the utmost importance. This tool is not meant to substitute for professional attorney review, but rather provides an overview of some of the issues that may arise in your product and service contracts.
- *Identify financing sources* This tool provides and compares information on how to finance your EHR product.

Vendor code of conduct

As suggested by the number of vendors selling ambulatory EHR products, the marketplace can be not only difficult to navigate, but ruthless in its effort to make a sale. Vendors are very anxious to cultivate internal salespeople and to seek any competitive advantage they can. As relief has been regulated for certain donations of e-prescribing and EHR systems under Stark Law and anti-kickback statutes, and more incentives are in place to accommodate EHR acquisitions, many practices have found it useful to have a code of conduct that helps them follow solid principles with respect to EHR vendor selection.

Additionally, the HHS Office of the Inspector General has been increasingly active with respect to monitoring a wide array of fraud and abuse practices, prompting a number of pharmaceutical manufacturers, pharmacy benefits managers, information technology vendor associations, and others to reexamine their compliance strategies or business conduct guidelines. Some practices have their board of directors and EHR steering committee sign off on the code; others post this in the meeting room where product demos might take place. When vendors start asking questions or offering gifts, it is easy to then point to the code for a fair and unbiased selection process. Some tenets to incorporate in your own code of conduct may include:

- ☐ **Vendor selection process:** Vendor selection is a serious process, representing a large and oftentimes risky investment. The process commences at the point when a field of vendors are formally narrowed down to those with whom a request for proposal (RFP) is sent. No person, including selection team members, may reveal the names or other information about vendors under consideration at any time (including candidates not selected following contract approval) to anyone outside of the organization and those contracted with the organization for the purpose of providing vendor selection assistance.

- ☐ **Communications:** There will be a single point-of-contact/spokesperson to communicate with vendors at all times during and after the formal vendor selection process. This ensures consistency of communication as well as a fair and equal process of review.

- ☐ **Selection criteria:** The selection team will establish specific criteria, exclusive of cost, to be used in prioritizing vendors for further due diligence. A cost/benefit analysis, ROI estimate, and/or pro forma financial statements will be prepared by a designated individual upon conclusion of the due diligence and used in the process of selecting the vendor of choice with which to negotiate a contract.

- ☐ **Acceptance of vendor gifts:** No member of the organization will accept any gift, including but not limited to meals, transportation, etc., from a vendor during the selection process, unless the gift is valued at less than $25 and is provided in a public setting to others (such as a "giveaway" or reception at a trade show).

- ☐ **Equal treatment:** All vendors under consideration at each point in the process will be afforded equal treatment. Information supplied to any single vendor will be supplied to all vendors under consideration. Any extension of time allotted one vendor to respond to the RFP will be granted to all others. As the field continues to be narrowed, due diligence will be afforded equally.

- ☐ **Confidentiality:** In addition to maintaining the confidentiality of vendors under consideration, information concerning site visits and reference checks will also be kept confidential. Any information supplied by the vendor marked confidential will be handled as such by the selection team.

- ☐ **Sanctions:** Organizational sanctions will be applied for ethical misconduct under the terms of the code of conduct.

MAKING THE FIRST CUT

The first challenge is to narrow the universe of EHRs to a manageable number of vendor candidates to explore further. In the past, requests for information (RFI) were sent to many vendors and staff went through the marketing materials that were returned to identify half a dozen or so that looked like they were suitable and could be studied further. However, with the availability of this same information and potentially even more on the Internet, few practices are issuing RFIs any more. Instead, the following sources of information can be used to narrow the field:

- **Web search**
  - Likely to reveal most aggressive vendors with no side-by-side screening capability; often provides demos that not only help determine if the product meets your minimum requirements, but provides opportunity for education about EHR. Be aware that you will need to sign up for the free demo, so you may want someone who has a generic email address (e.g., AOL, MSN) to register to avoid revealing the name of your practice.
- **Professional organization trade shows**
  - A good way to get educated and identify vendors who are most likely to serve your specialty; but large trade shows may include an eclectic mix of established vendors and those only exploring the marketplace. Trade shows are a good source of finding users who already have the product. Getting their business cards can help you find a broad community of users to tap into later for references or implementation ideas. The Academy offers its Dermatology EHR Vendor Demonstration Challenge at each Annual and Summer Meeting. For more information, visit www.aad.org.
- **Recommendation lists**
  - May be compiled by professional specialty societies for specific purposes. Most rely upon vendor self-reporting or user feedback that may or may not reflect all products or all users. Many specialists think they need a product tailored only to their specialty. It is certainly necessary to be able to have templates specific to your specialty and other functionality that is unique to your needs, but many niche vendors do not have the robust functionality of a more broadly based vendor. Niche vendors are less likely to succeed in the marketplace.
- **Trade publication product lists**
  - Self-reported, but permits side-by-side review. These lists are rapidly going away now that Web searches are easy and the list of CCHIT certified vendors exists at www.cchit.org.
- **User groups**
  - Attendance at user group meetings can help you understand the product more in depth and may introduce you to future users for reference checking. Vendors may not invite you to a user group meeting until you demonstrate serious interest in the product.
- **Peer experience**
  - It is always worth listening to your peers' experience, but be aware that their selection criteria may not match yours and they may not have gone through the preparation you will to anticipate and overcome the hurdles they faced.
- **Recognition or award programs**
  - Award programs can be subjective, but consistency of a vendor's appearance year after year warrants review. Determine the scope of candidates for the award prior to putting stock in the results.
- **Product certification**
  - Visit http://onc-chpl.force.com/ehrcert to view the federal government's list of certified EHR products. Even if you do not believe you will quality for federal meaningful use incentives, it is strongly advisable to stick to the list of certified vendors in the event there are future incentives for which you may qualify.

PREPARE AND DISTRIBUTE A REQUEST FOR PROPOSAL (RFP)

The **RFP template** that follows is a generic tool that you can modify to suit your needs. For example, if you decide you do not want to consider replacing your practice management system (PMS), delete the functionality for PMS. You may also want to:

- ☐ Shorten the number of functions considered. A shorter list is easier to evaluate, but may not provide the due diligence to ensure that the product provides the functionality desired. It is strongly recommended that the response from the vendor on the RFP be incorporated as part of the contract so that the vendor is held to what it stated it provides. A short, generic list of functions may not serve this purpose well.
- ☐ Add more detail to the function. This may be an educational process for the practice but may not add much more in the way of due diligence. A longer list of functions makes it difficult to evaluate.
- ☐ Fine-tune the list of functions to meet your specific needs. Some dermatology practices may focus on certain types of conditions and have greater need for patient privacy protections, surgical/cosmetic procedure documentation, automated consent forms, anatomic drawings and mapping, digital picture archiving, unidirectional lab interface, (e.g., receipt of lab test results) or bidirectional lab interface (e.g., transmittal of lab test order/request to lab and receipt of lab test results), etc. Many practices may not participate in clinical trials, so that can be deleted. Some practices may already have e-prescribing and want to interface to that to add that to the section on interfaces. Alternatively, you may want to drop your stand-alone e-prescribing if more robust functionality is included in the EHR, so you may want to keep the functional requirements and decide what you want to do later. Add or delete functions that reflect the needs and desires of your practice.
- ☐ Replace the functional requirements table with a detailed patient scenario and ask the vendor to describe how the product would help you manage care of the patient. Such a scenario is very helpful for use in product demos, but it can be difficult to write a scenario that is comprehensive enough to cover all functions. Some practices, however, have added a scenario to the RFP to kick start the demo capability. Omit the functional requirements and depend on Office of National Coordinator-Authorized Testing and Certifying Body (ONC-ATCB) certification. This is not advised because the criteria for meaningful use incentives as certified by an ONC-ATCB are the minimum, baseline standards for products and do not necessarily cover everything you may want.

Table O: Request for proposal tickler

Before establishing your vendor selection process, consider preparing the RFP:

- Overview of document
- Vendor guidelines
- Practice objectives
- General questions
- Technical section
- Applications section
- Specifications and warranties
- Scope of license
- Deliverables and site requirements
- Implementation
- Training
- Support
- Personnel
- Preliminary cost estimate
- Payment
- Contractual issues

Tip: Ask the vendor to supply the price quote in a separate, sealed envelope or separate electronic file. Have your accountant or one other individual in the practice develop a spreadsheet to compare prices. However, avoid looking at the prices to make your first cut. Price always is negotiable and often does not necessarily reflect the return on investment.

WORKSHEET #11: REQUEST FOR PROPOSAL TEMPLATE

Date:
Re: Request for proposal for electronic health record system
Due date for response:
To:
From:
Additional instructions for responding to this RFP: Send electronic copy to: _____ AND send ____ paper copies to above address. Supply price quote as a separate electronic document.

Note: Responses to this request for proposal will be appended to any contract we may enter into with you.

Practice background and information

1. Practice Primary Contact
    - Name:
    - Title:
    - Office/location address:
    - Phone number:
    - Email address:
    - Practice's Internet home page (if available):
2. Overview of practice
    - Number of clinicians (by specialty):
    - Number of clinical support staff:
    - Number of administrative staff (front desk and back office):
    - Number of locations:
    - Patient visits per year:
    - New patient visits per year:
    - Current number of existing patients:
3. Overview of **CURRENT** practice IT environment
    - Number of IT staff:
    - Extent networked: Locally/to other sites:
    - Wireless capability:
    - Internet service provider:
    - Website URL:

Vendor information

5. Vendor primary contact
    - Name:
    - Title:
    - Office/location address:
    - Phone number:
    - Email address:
    - Organization's Internet home page:
6. Identify location of the following:
    - Corporate headquarters:
    - Field support offices:
    - Programming/technical support personnel:
7. List number of employees (full-time equivalents) in your organization by category:

Category	# Employees
Total employees	
Executives and managers	
Marketing/sales	
Installation	
Research and development	
Application support	
Technical support	
Customer service	
Other	
Those with clinical backgrounds:	
– Physicians	
– Other clinicians (physician assistants and/or nurse practitioners)	

8. Has your company acquired or merged with any other organizations in the past three years? If so, list each organization and the purpose behind such activity.
9. Provide your most recently completed fiscal year's financial statements and annual report.
10. How long has your company been in the business of developing and marketing your EHR product?
11. What percentage of revenue did your company expend for research and development on your proposed products during the last three fiscal years? What is budgeted for the current and next fiscal year?
12. List the names of any technology companies that your organization is partnered with, the nature of your relationship and the value that it brings to your proposed solution and ultimately to our organization.

EHR product history

13. Describe the EHR product's major version history, including whether the product was internally developed or acquired from another source, the release proposed for this facility, and any other planned new releases:

Version #	Key distinguishing features/functionality	Month/year introduced or planned	Currently supported?

14. How are enhancement and new release priorities determined? How are clients supported/notified during these releases? How much system downtime is required during these upgrades?

15. What is the total number of dermatology client installations using your proposed system? How many dermatologists does this represent? What is the number of installations in dermatology practices similar to our practice using your proposed system?

16. Do you also offer a practice management system (PMS)? If so, describe whether the PMS was acquired through acquisition, developed prior to EHR with a separate database, or developed concurrently with EHR with a single integrated database.

Interface requirements

Listed below are the interfaces we may require. Specify whether you have developed an interface for these products, and at how many customer sites the interface is in production. If you have no interface, explain your proposed solution.

16. Practice management system vendor:
    Practice management system version:

17. Other interface requirements:

    - Dictation/transcription system(s) Vendor: _____ Version:_____
    - Internal/external laboratory information system(s)
      Vendor: _____ Version: _____
    - Internal/external photo imaging or picture archiving and communication systems (PACS) system
      Vendor: _____ Version: _____
    - Hospital provider portal(s) Vendor: _____ Version: _____
    - Other:_____

18. Describe your overall approach to developing, testing, implementing, and upgrading system interfaces to other third-party systems. Describe the process you use to settle disputes over interfaces between your solution and others.

19. With what versions of HL7 is your product compliant?

20. Is the version of your EHR you are proposing certified by an ONC-ATCB? Is the EHR "complete" or "modules"?

References

21. Provide references for at least **three** dermatology clients, similar in size to our practice (with preference afforded to those practices using the same practice management system as ours). Provide names and contact information for individuals who will have sufficient experience to speak knowledgeably concerning such issues as the implementation process, functionality, vendor support, documentation and training.

22. Describe any regularly held seminars or user group meetings available to users of your product. Please supply an invitation for the next such meeting.

Financing

23. What financing assistance do you offer?

24. Do you offer your product as an application service provider (ASP) or software as a service (SaaS) model? If so, what is the difference in functionality?

Functionality requirements

25. Indicate how your proposed system makes available the following features and functions. Information supplied here will be expected to serve as a contractual obligation in any contract we enter into for this product. Describe **availability (A*)** as:

    6 = Installed in one or more sites

    5 = Installed in one or more sites, but not included in this proposal

    4 = Installed in one or more sites, but not available for general release until (specify date)

    3 = Planned for future release (specify date)

    2 = Not available, but will develop for additional fee (please specify this cost in the Description area)

    1 = Not available, no current plans to develop

EHR function	A*	Description
1. Patient data capture functions		
a. Support automated patient self-medical history		
b. Support automated collection of patient medication history (e.g., via patient entry at website or RxHub feed)		
c. Receive lab test results in structured format		
d. Record structured data about patient with conversion to narrative annotation		
e. Enter data about multiple patient problems simultaneously		
f. Record temporary notes to self or others		
g. Capture key health data for minimum datasets		
h. Capture external clinical documents		
i. Capture images from PACS and other devices		
j. Capture patient-originated data		
k. Capture and display advance directives		
2. Patient data management functions		
a. Record, modify, and retrieve an up-to-date problem list for longitudinal care, mapping to or encoded with ICD-9-CM or SNOMED		
b. Manage single medication list		

EHR function	A*	Description
c. Manage allergy and adverse reaction list		
d. Manage immunization list		
e. Collect patient height, weight and blood pressure. Calculate body mass index (BMI)		
f. Record, modify and retrieve smoking status of patient		
g. Plot and display growth charts for patients 2-20 years old, as applicable		
e. Manage patient-specific care plans, guidelines and protocols		
f. Capture variances from standard care plans, guidelines and protocols		
g. Trend data from multiple sources (e.g., labs, meds impact on labs)		
3. Prescription/ordering functions		
a. Write and transmit prescriptions electronically to retail pharmacies and mail order drug companies		
b. Approve refills/renewals		
c. Receive fill status notifications		
d. Perform drug, food, allergy checking		
e. Perform formulary checking (frequency of update?)		
f. Perform drug-lab checking		
g. Drug-condition/indications checking (what drug knowledge base and frequency of update?)		
h. Patient-specific dosing warnings		
i. Enable user to electronically compare two or more medication lists for medication reconciliation		
i. Order diagnostic tests		
j. Order referrals (with health plan checking)		
4. Clinical decision support functions		
a. Receive results notification		
b. Receive support from standard assessments		
c. Receive support from patient context-enabled assessments		
d. Receive information on most cost-effective services, referrals, devices, etc.		
e. Support clinical trial recruitment		
f. Support for health maintenance, preventive care and wellness reminders		
g. Support standing order reminders at appointment scheduling so these are performed in advance of visit		
h. Support automated surveillance for ADE, disease outbreaks, bioterrorism		
i. Support chronic disease management		
j. Support drug/device recall		
k. Manage rules presentation: passive, context-sensitive, mandatory, reference		

EHR function	A*	Description
5. Patient support functions		
a. Provide patient-specific instructions		
b. Generate patient reminders		
c. Provide patient-friendly summary		
d. Provide access to patient education materials		
e. Support home monitoring/ tracking capability		
f. Support automated consent for procedures		
6. Clinical workflow functions		
a. Schedule and manage clinical tasks (work queues, personnel, rooms, equipment)		
b. Provide personalized in-basket/dashboard support		
c. Automatically generate administrative data from clinical record		
d. Enable print-out of documents when necessary		
e. Enable de-identification of protected health information when necessary		
f. Enable specialized views of data		
g. Support multimedia: images, waveforms, scanned documents, pictures, sounds		
7. Administrative and reimbursement functions		
a. Automatically generate administrative and financial data from clinical record		
b. Provide rules-driven financial and administrative coding (e.g., E&M, G codes) assistance		
c. Support pay-for-performance requirements (e.g., PQRI)		
d. Manage external accountability reporting/outcomes measures		
e. Support data needs for managed care contracting		
8. Electronic communication and connectivity functions		
a. Enable transfer of data to notifiable registries (including state data reportable diseases, patient registries, clinical quality measures to CMS or state Medicaid)		
b. Provide a current directory of clinician information		
c. Provide patients on request an electronic copy of diagnostic test results, problem list, medication list, medication allergy list, discharge summary, and procedures in CCD or CCR format		
d. Provide patients electronic copy of clinical summary for each office visit in CCD or CCR format		
e. Use EHR to identify patient-specific education resources and provide if appropriate		
f. Generate lists of patients by specific conditions for quality improvement, reduction of disparities, research or outreach		

EHR function	A*	Description
g. Provide summary of care record in CCD or CCR format to providers to whom patient is referred; received summary of care record in CCD or CCR format from providers referring patients to practice		
h. Send reminders to patients per patient preference for preventive/follow-up care		
i. Manage clinician identifiers		
j. Manage (external) trading partners: retail pharmacy, insurer, lab, radiology		
k. Provide patients timely electronic access to lab results, problem list, medication list, allergies within four business days of information being available		
l. Support remote access		
m. Provide secure authentication		
n. Provide access management and audit trail services (metadata)		
o. Enforce patient privacy and confidentiality		
p. Ensure integrity, data retention and availability		
q. Manage system versioning (change control)		
r. Support interoperability through compliance with data interchange standards and agreements		
s. Support data comparability through use of controlled vocabularies		
9. Other functions (specify your dermatology practice needs)		

PMS function	A*	Description
1. General financial functions		
a. Includes general ledger, accounts payable and payroll (If system does not contain one or more of these functions, list products with which you have interface experience)		
b. Manages purchase orders		
c. Produces management reports (e.g., trends, referral totals)		
2. Patient scheduling		
a. Integrates patient demographic, insurance and medical history information to support rules-based scheduling		
b. Maintains daily, weekly and monthly clinician appointment schedules		
c. Permits authorized users to alter clinician schedules		
d. Maintains appointment slots of varying lengths and types		
e. Includes tracking and managing schedule changes including bumps, cancellations and no-shows		
f. Integrates clinician scheduling with resource scheduling		
g. Automates eligibility checking before appointments.		
h. Displays schedules for multiple days or clinicians on single screen		
i. Searches for next available appointments of proper duration		
j. Includes automated phone reminder system/recall capability		
3. Patient registration		
a. Shares demographic and registration information directly without any data reentry into EHR		
b. Enters and updates demographic and insurance information by family group		
b. Enters and updates demographic and insurance information by family group		
d. Warns the user of potential duplicate registration records for patients with matching identifiers		
e. Ability to search by birth date or other identifying information		
f. Permits entry of home and work contact information for each individual in family		
g. Accommodates multiple sources of payment for a given patient without assigning to multiple accounts		
h. Allows patients to be assigned a primary clinician		
i. Allows different primary clinicians for patients within a family group		
j. Alerts reception staff to account status and payments due when patients check-in.		
4. Third-party billing functions		
a. Shares the same coding master files between PMS and EHR		
b. Stores co-pay/deductible/coinsurance information by individual in designated data fields		
c. Operates on an open-item billing system		

PMS function	A*	Description
d. Opens item reports for insurance bills out over 30 days		
e. Permits batch posting of electronic remittances for payments covering multiple patients		
f. Calculates and automatically updates fee schedules for insurers based on current RVU and contract data		
g. Stores current Medicare fee schedule for location of practice		
h. Automates ICD and CPT updates		
i. Manages coordination of benefits		
j. Manages workers' compensation		
k. Reconciles explanation of benefits (EOB) with claims to ensure clean claims		
l. Creates multiple billing partitions to enable claims for multiple facilities; includes setup/maintenance costs per partition in proposal		
m. Electronic claims submission; identify and describe all business partners		
n. Ability to support changes to the format of billing forms or reports without vendor intervention or special programming		
o. Produce financial, receivables and RVU reports		
5. Patient billing functions		
a. Prints on-demand statements and patient bills		
b. Option to generate patient statements only for those with patient balance due		
c. Manages collection of overdue patient balances		
d. Stores patient budget payment and alerts billing staff to overdue payments		
e. Supports generation of billing mailers		
f. Supports the avoidance of sending bills for patients requiring confidential account processing		
6. Managed care support		
a. Checks enrollment and patient eligibility and benefits		
b. Manages referrals within network		
c. Manages inbound and outbound capitation		
d. Supports risk pool management		
e. Supports contract management		
7. Other Functions		
a. Data conversion from existing practice management system		

Technical requirements

26. Outline **optimal** technical requirements:

Technology	Specification
Database server	
CPU type, speed, memory size	
Disk configuration	
Operating system	
Back up solution	
Peripherals (e.g., modem, router)	
Other servers	
Network server	
Fax server	
Email server	
Backup server	
Other:	
Desktops/notebooks/tablets/PDAs	
CPU type, speed, memory size	
Disk configuration	
Operating system	
Monitor	
Navigational device	
Peripherals (e.g., speech recognition microphone, wireless)	
Other peripherals	
Printers	
Document scanners	
Card scanners	
Wireless access points	
Communications	
Private network type, bandwidth, peripherals	
Private network security (e.g., firewall, VPN, SSL)	

27. Provide a copy of your quality assurance guidelines for testing new software releases.

28. Describe the system backup process. Can backup be completed in a dynamic mode so that the system can be operational 24 hours per day? What backup schedule do you recommend? Describe the automated backup features that allow rapid and unattended system and data backup operations on a user-scheduled basis.
    a. Can the system be configured to support improved fault tolerance and system recovery (e.g., mirrored disk drives/servers)?
    b. Discuss data archiving and restoring from archive within all applications of the software. What are the capabilities in restoring from archive? What tools/media are used for archiving data?

29. Discuss the user remote access (dial-in versus Internet) capabilities of your system's solution, including view-only versus full function.

30. Does your system have an ad-hoc report writer utility with access to all databases and data elements (including user defined fields)?
    a. If so, is this a third-party package?
    b. Is the same report writer used for all applications? If not, indicate the differences.
    c. Are all data elements available for report writing?
    d. Describe your reporting capabilities. How much technical knowledge is required for a general user responsible for analytical reporting?
    e. Can clients conduct ad hoc reporting without vendor assistance? Can non-IT users utilize the ad hoc reporting tool?
    f. What type of special training is needed for your report writer tool?

31. Discuss your approach to data/information security, especially with regards to Internet technologies. Is it consistent with the latest industry approaches for encryption and authentication and supports HIPAA compliance?
    a. Does the system support log-on capabilities by:
        - User ID/password
        - Smart card, proximity card or token device
        - Other security controls/devices including biometrics (describe)
        - Secure remote access (describe methods — Citrix, dial-up, Internet — and extent of functionality, complete, view only?)
    b. Does the system have functionality to accommodate multiple users on a common workstation with easy log-off/log-on capabilities?
    c. Does the system require the user to change his/her password at set intervals? Can IT staff set intervals for password changes to an organization's specifications?
    d. Describe how system access can be configured to limit user access to patient records and functionality based on their role in the organization (i.e., role-based access). For example, can access to patient financial, billing and medical records information be restricted to only those clinical or administrative staff that have a need to know the information? Also describe what emergency access procedures (e.g., "break-the-glass) procedures exist for access in extenuating circumstances.
    e. Does the system log all activity to provide a complete audit trail of the specific user, patient, function accessed, date/time and data changes? Are record accesses and edits easily reportable by patient and employees?
    f. Does the system have functions that will automatically "log off" users? How are these functions controlled?
    g. Does the application date/time mark encounters closed/completed and prevent further changes?

Implementation plan

32. Provide an overview of your implementation methodology and a sample project plan consistent with the size of your organization and modules in which you are interested.

33. With your proposed solution are you able to implement components or modules of the application over time? Conversely can you implement the entire solution at once? What would your organization typically recommend?

34. In what timeframe after contract signing can your resources begin the project and the implementation start?

35. What is the typical implementation timeframe for the proposed products?

36. Do you offer a paper-chart conversion strategy? If so, describe this.

Training and documentation

37. Describe the documentation (both system and training) provided as part of the standard installation approach including:
    a. Manager and user reference manuals (applications)
    b. User operator/system administrator manuals
    c. Hardware/OS manuals
    d. Training manuals (initial and ongoing user self-training)
38. What documentation is provided with the system? Is the documentation available in hardcopy and on CD-ROM? (Please be prepared to provide a copy of the documentation prior to contract signing if referenced in your contract.)
    a. How often is your documentation updated? How often are updates made available to the user?
    b. How is documentation updated (memo, revised manuals, online, CD, etc.)?
39. Describe the types of training offered, i.e., end-user, systems administrator, installer, etc. How often is training offered (as needed, or on a set calendar schedule)? Please give the duration of each class, the location of training, associated costs and the recommended number of people who should attend training.
    a. Describe your ongoing training programs.
    b. Who provides the proposed product training?
    c. Do you provide clinician-specific training?
    d. Describe the training approach for user personnel. Please describe if training is classroom-style with an instructor, one-on-one, computer-based training, self-study, etc.
40. Describe the testing database available in your systems. Can new software be loaded and tested in the testing database before it is loaded into the live production system?

Contractual considerations

Provide a pricing proposal for software, implementation, interfaces and hardware as described in our profile in a separate sealed envelope. In the pricing proposal, specify how your products are priced (e.g., number of concurrent users, patient visits, clinicians, per PC).

41. Provide a copy of your standard contract.
42. Explain at what point the maintenance contract begins and at what point any hardware/software warranty or installation/acceptance period ends.
43. Do proposed acquisition and/or ongoing maintenance/support costs include:
    a. Future enhancements to acquired/licensed application modules?
    b. Operating system and related environmental software?
    c. Interface maintenance?
    d. Architectural changes such as migration to emerging technologies and new methods of systems deployment?
        - If not, describe the conditions and terms under which enhancements/new releases are made available to existing customers.
44. What are your normal support hours (specify time zone)? Where is support staff located? Which of the following support features are available?
    a. Toll-free hotline
    b. Remote monitoring

c. Remote diagnostics
d. Training tutorials
e. Web-based support tracking

45. Do you offer 24-hour/7-day/week software and hardware support?

46. What is the response time for problems reported: 1) during regular business hours and 2) off-hours?

47. What priority and resolution structure is in place to handle critical and noncritical problems?

48. Describe your problem reporting software and tools. Are they available via the Internet? Can a list of outstanding problems and enhancements by clients be viewed online and downloaded?

49. Please list the top five support questions you receive from your clients.

50. Describe your support process for evaluating and fixing "bugs" or problems in your software. How would you coordinate problem analysis and resolution with the practice management system vendor and other third-party products?

51. Provide a guideline for the type of internal support that will be required, for both the number of information systems personnel, by classification and also non-information systems personnel (i.e., department-based). Please describe their roles and responsibilities.

52. What is the range and average for system downtime (scheduled and unscheduled) for your clients' systems?

WORKSHEET #12: VENDOR ANALYSIS TOOL

Scoring scale [For each vendor, after having a product demonstration (demo), Conducting a site visit (site visit), and performing reference checks (ref ✓)]:

1 = product does not address and there is no indication that it will.

2 = product does not incorporate today but appears very likely to be available in near future.

3 = product is marginal and lacking in some but not all aspects of the differentiator.

4 = product is satisfactory.

5 = product fully meets or even exceeds the differentiator.

Key differentiators (List in order of importance and assign rank (5 = most important, 1 = least important)	**Priority Rank**	**Vendor A**			**Vendor B**			**Vendor C**		
		Demo	Site Visit	Ref ✓	Demo	Site Visit	Ref ✓	Demo	Site Visit	Ref ✓
I. Comprehensive functionality										
1. [MD Goals] Organize information for efficient retrieval, improve daily workflow, complete charts at point of care. Enable reduction in A/R, cost of abstracting and pulling charts. Reduce transcription expense by 75 percent. *(Note: Look for full set of letters/forms to reduce transcription fully.)*										
2. [MD Goals] Easy-to-learn system to reduce loss of productivity during learning curve. *(Note: Balance need to learn quickly with full functionality and ongoing needs.)*										
3. [MD Goals] Quality measurement for public reporting, pay-for-performance and quality improvement. Knowledge support through templating *(Note: Look for structured data, data dictionary/standard vocabulary and ability to generate data dumps, HL7 messages, etc.)*										
4. Online teaching materials for patients and CME, tailored instructions, informed consent. *(Note: Look for order sets, surgery scheduling, meds reconciliation, surgical report in form of "smart text" and auto-consent.)*										
5. Vendor is moving forward in incorporating applicable clinical guidelines in templates. (e.g., AQA.)										
6.										
7.										
8.										
9.										
10.										
II. Technology										
a. Interface capability: lab, scheduling, demographic										
b. Customization, # starter templates										
c. Report-writing software; ability to develop reports										
d. Ability to use with existing copiers/scanners										
III. Implementation/ongoing support										
a. Rollout strategy										
b. Training (super/end users)										

Key differentiators (List in order of importance and assign rank (5=most important, 1=least important)	Priority Rank	Vendor A			Vendor B			Vendor C		
		Demo	Site Visit	Ref ✓	Demo	Site Visit	Ref ✓	Demo	Site Visit	Ref ✓
c. Upgrades (requirements, pacing, implementation)										
d. Overall support (responsive, resolution timing)										
IV. Vendor characteristics										
a. Vendor clinical staffing										
b. Financial stability										
c. Succession plan										
d. Contract provisions for changes in ownership										
e. Pricing strategy										
f. Vision of future needs										
Totals:										

DEMONSTRATION PLAN CHECKLIST

Vendor demonstrations are an important element in your product evaluation. It is important to prepare carefully for the demo to maximize your opportunity to learn. Unfortunately, demos also depend on good demonstrators, which some vendors do not have. It is important for the practice to take control of the demos, plan for them carefully, require a specific agenda to be followed, and manage "crowd control" for those participating in the demo so as not to throw the demonstrator or the schedule off track. Demos should be conducted after the initial screening of responses to the RFP, and ideally with not more than two or three vendors. The following is a checklist for planning demos:

- ☐ Identify dates that all potential attendees can commit to attending the demo.
- ☐ Develop an agenda so that all aspects of demos can be conducted within a day, including both generic and scripted demos to steering committee and other key persons, and one-on-one meetings with vendor counterparts (i.e., IT with technicians, finance with finance, project manager with implementation team).
- ☐ Develop dermatology scripts simulating typical patient encounter scenarios. These scripts should reflect all aspects of functionality for your Key Differentiators. Without a script, vendors will only demonstrate the most favorable aspects of their products. Scripts should be sent in sufficient time for the vendor to develop its demo response. (Note: you cannot expect a vendor to respond to a script provided on the day of the demo, as the vendor cannot incorporate into the demo sufficient data to actually show how the functionality works. This is unfair to the vendor and to you.)
- ☐ Invite vendors to demo; then confirm dates, space and technical requirements, and other parameters established by the practice.
- ☐ Develop a vendor demo feedback sheet for steering committee members and others who will be viewing entire demo.
- ☐ Use technical requirements specifications in RFP for IT staff to review product from IT perspective.
- ☐ Use business case for EHR worksheet for finance staff to review cost/benefit analysis and return on investment potential.
- ☐ Use high-level implementation plan for project manager to discuss implementation issues with vendor implementation team representative.
- ☐ Conduct a debriefing session immediately after the demo. Identify any follow up items and how you will perform the follow up (e.g., contact vendor, check on a site visit, etc.).

Tip: If you have more than two demos, do not hesitate to reduce your list of vendors being further considered to two. Site visits are expensive and should only be performed to reach one vendor of choice.

VENDOR DEMO AGENDA

Tip: Should you not be able to spend a full day with a vendor, here are some things to include in your demonstration meeting.

Time	Who	What/notes to practice
7:00 – 8:00	*Practice project manager*	*Arrives to open practice to vendors to set up demo equipment, provides coffee/continental breakfast, reviews agenda with vendor*
8:00 – 8:10	EHR steering committee chair	**Introduction** to EHR steering committee members present **Review of agenda** **Review practice's code of conduct** *Note: This process establishes that you are in charge of the day and that you use an unbiased process*
8:10 – 8:20	Vendor	**Introduction of vendor staff and brief description of company**
8:20 – 9:00	Vendor	**Demonstration of standard features and functions**
9:00 – 9:30	Vendor	**Demonstration of any optional modules as requested by practice**
9:30 – 9:45	Break	*Practice representatives escort vendor during break.*
9:45 – 11:00	Vendor	**Demonstrates product using scenario(s) practice has supplied in advance** **Question and answer session**
11:00 -11:15	Break	*Practice representatives escort vendor during break. EHR steering committee meets quickly to evaluate demo**
11:15 – 2:00 Including lunch	Vendor fair for physicians	**One-on-one opportunity for hands-on demos with clinicians**
2:00 – 3:00	Vendor and IT	**Practice IT staff reviews product from IT perspective with vendor's IT support**
2:00 – 3:00	Vendor and PM	**Practice project manager reviews implementation plan with vendor's implementation representative**
2:00 – 3:00	Vendor and CFO	**Practice administrator/CFO reviews financial proposal with vendor to assure understanding of line items** *This is an opportunity for practice to assess vendor's flexibility and opportunities for negotiation*
3:00 – 4:00	Vendor fair for staff	**Short (5-10 minutes) demonstrations for other practice staff** to visit in 15 minute blocks of time
4:00 – 5:00	Break	*Practice thanks and dismisses vendor. This includes time for vendor to pack, but should not include sidebar conversations other than exchanging business cards or discussing the time frame for getting back to vendor with next steps. Practice representative should be present until vendor actually leaves.*
5:00 – 7:00 Including dinner	EHR steering committee	*Practice EHR steering committee should debrief about that particular vendor. Avoid starting a comparison process. Identify any outstanding issues that were not addressed and need follow up — either with vendor or in site visits/reference checks.*

* Unfortunately, some vendors' sales staff are not as skilled as others. If there is a significant problem with the demo so far, this is the time to correct course. Discuss your expectations with the vendor representatives. Decide whether and how to alter the agenda to ensure an unbiased evaluation, or even whether to proceed with the remainder of the demonstration.

WORKSHEET #13: VENDOR DEMO FEEDBACK SHEET

Practice representative: _____ **Date:**_____ **Vendor:**_____

Every representative should have a copy of the dermatology encounter script(s) and follow its line of questions. In addition,

1. Did the vendor follow the practice's script(s)? Yes/No

2. If the vendor followed the script(s), was the vendor able to perform all functions using the actual application software, or was a PowerPoint file created for the purpose? If a PowerPoint file was necessary, what was the vendor's explanation concerning not using the actual application?

3. Were all aspects of the script(s) covered fully, with your expected answers? If not, what was missing? What was the vendor's response as to why any aspects were not covered?

4. Do you believe you will meet your benefits expectations based upon the functionality demonstrated through the scripted demos?

Every representative should have a copy of the short list of key functions for evaluation:

5. What additional product features were demonstrated?

6. What product features were not demonstrated by this vendor? What reason did the vendor supply for not including these?

The following are often personal preferences of users. Describe how the vendor's product appears to meet your personal preferences:

7. Screen layout easy to view and navigate.

8. Data entry easy to use/ability to modify/update templates.

9. Decision support includes active and passive components, with flexibility for change.

10. Workflow follows intended process improvement plan.

Record any additional questions you have that you may not have had the opportunity to ask.

WORKSHEET #14: SITE VISIT PLAN

Sites visits should be identified by the vendor to be as close to practice's environment, current systems and version of product being considered as possible. However, this may not always be possible. Site visitors should be selected from the practice's EHR project management team, and potentially others, to ensure a well-rounded group of individuals. Sufficient representatives should attend to enable all aspects of EHR operations in the practice to be observed and discussed.

Plan one day per site visit. Have an agenda and share with the site prior to arriving. Generally, you might spend 15 minutes of introductions by the vendor. Then you will want to dismiss the vendor and hold a 45-minute "get acquainted" meeting with the practice representatives. Then you will want to split up and meet with your dermatology practice counterparts (clinicians with clinicians, administrators with administrators, etc.), spending one to two hours in discussion and observation. Following lunch, you may want further time with your counterparts. You should conclude by mid-afternoon with another 30-minute "thank you" meeting with the practice representatives. In this meeting you may want to include some questions similar to those you asked in the first meeting to validate what you heard. Conclude the day with private time away from the site to debrief.

Site visit plan

Practice representative:_____ **Date:**_____ **Vendor:**_____

Initial meeting:

Verify which of the following reference criteria are met by this visit:

☐ Similar size ☐ Similar specialty or specialty mix ☐ Similar number of sites

☐ Same PMS ☐ Other similar source systems ☐ Same version of product

1. Is the application deployed throughout your whole enterprise, or only in some settings? If not in all settings, why not?

2. How long did it take the vendor to begin EHR implementation after the contract was signed? How long did it take the vendor to fully implement the EHR once implementation began?

3. Describe the implementation team you put together from your practice: How many people? What skills? What were their primary roles? How much did you customize the EHR?

4. How long did it take physicians to learn how to use the system with full competency? Did you reduce your practice load during early use? If so, by how much? If not, how did you approach rollout?

5. What training methods did you use for physicians and other clinicians to successfully get them into a productive mode quickly?

6. If you had to do the implementation over again, what would you do differently?

7. Did you have to upgrade any other aspects of your information technology to use the EHR, such as your network, input devices, other?

8. What do you like most about the EHR you acquired from this vendor?

Break up into domains and, from each perspective, view and discuss:

Physician	Clinical support staff personnel [PAs/NPs]	Practice admin	IT staff
Screen layout easy to view integrated data/customizable			
Data entry easy to use/ability to modify/update templates			
Decision support/ability to turn on and off			
Intuitive help/tools			
Access controls/security			
Patient flow/queuing			

Concluding meeting:

1. What kind of staff do you have on an ongoing basis to maintain and enhance the use of the EHR application?

2. Does the vendor supply regular upgrades? Is the vendor responsive to proposed changes?

3. When you have had to contact the vendor for support, how long did it take for a response that resolved the issue?

4. What savings have you achieved with the implementation of the EHR, and how did you go about achieving them?

5. Is there an enhancement to the EHR that the vendor has been promising but has not delivered that we could include as a contractual condition for us that would also benefit you?

6. Is there anything else that you would like to tell us about your experience with the EHR product? Any lessons learned or good advice?

WORKSHEET #15: REFERENCE CHECK PLAN

References should be identified by the vendor to be as close to the practice's environment, current systems and version of product being considered as possible. However, this may not always be possible. Reference calls may have to be made to a mix of dermatologists to address all questions. It is a good idea to attempt to make reference calls with practices that have not been identified by the vendor, but encountered through other processes, such as at professional meetings or trade shows.

Reference calls may be made as a conference call between representative stakeholders from both organizations, or on a peer-to-peer basis. The peer-to-peer basis generally does a better job of ensuring that all stakeholder questions get asked. It should go without saying that specific time parameters be held to (conference calls may be two hours, peer-to-peer calls may take an hour). Calls may be facilitated by sending questions in advance, although answers may not be as candid.

Review the suggested questions below. Delete those you feel you have well-answered. Add any specific follow up questions from your demos and site visits.

Caller(s) from practice: _____ **Date:** _____

Person(s) at reference contacted:_____ **Vendor:** _____

Reference criteria met:

☐ Similar size ☐ Similar specialty or specialty mix ☐ Similar number of sites

☐ Same PMS ☐ Other similar source systems ☐ Same version of product

Establish basic understanding of level of implementation and adoption:

1. Is the application deployed throughout your whole enterprise, or only in some settings? If not in all settings, why not?

2. What interfaces do you have to and from this vendor's EHR product to other applications from different vendors?

3. What other information system products from this vendor and others do you have installed in your practice?

4. Did you have to upgrade any other aspects of your information technology to use the EHR, such as your network, input devices, other?

5. What do you like most about the EHR you acquired from this vendor?

Determine how successful implementation was:

6. How long did it take the vendor to begin EHR implementation after the contract was signed?

7. How long did it take the vendor to fully implement the EHR once implementation began?

8. Describe the implementation team you put together from your practice: How many people? What skills? What were their primary roles? How much did you customize the EHR?

9. How long does it take physicians to learn how to use the system with full competency?

10. What training methods did you use for physicians and other clinicians to successfully get them into a productive mode quickly?

11. If you had to do the implementation over again, what would you do differently?

12. What does your organization like best about the EHR?

13. What does your organization like least or have the most problems with the EHR?

Learn about ongoing maintenance and use:

14. What kind of staff do you have on an ongoing basis to maintain and enhance the use of the EHR application?

15. Does the vendor supply regular upgrades? Is the vendor responsive to proposed changes?

16. When you have had to contact the vendor for support, how long did it take for a response that resolved the issue?

17. What savings have you achieved with the implementation of the EHR, and how did you go about achieving them?

18. Is there an enhancement to the EHR that the vendor has been promising but has not delivered that we could include as a contractual condition for us that would also benefit you?

19. Is there anything else that you would like to tell us about your experience with the EHR product? Any lessons learned or good advice?

Tip: Conclude your due diligence by returning to your Vendor Analysis Tool and post all scores. Follow this by reaching consensus on which vendor appears to most meet the practice's needs. Then follow the practice's internal policies on gaining approval to proceed with contract negotiation.

NEGOTIATE AN EFFECTIVE CONTRACT

Buyer beware: The devil is in the contracting details

Before purchasing goods and services, it's always appropriate to conduct vendor due diligence through either site visits at other customers (dermatology practices using the system) or even requesting financial data or simple Internet searches of trade publications for mentions and profiles of the vendor. Equally important is the careful evaluation of the terms, conditions, restrictions and limitations of all contracts. The same rule applies when purchasing an EHR software system.

Tips on software licensing

Per-customer licenses tend to benefit practices with many users but few computers.

Per-user licenses tend to benefit practices with fewer users but multiple computers.

Each dermatology practice, having identified prospective EHR vendor finalist(s), will now have to decide whether to retain the service and advice of a legal professional or consultant to help them nail down acceptable terms for their EHR software agreement. The acquisition and use of EHR is governed by a license agreement that includes both negotiable and nonnegotiable terms. The scope of the license controls how many hardware systems and/or office sites can use the software or how many people may use the software. In addition, the license includes multiple software modules (e-prescription, medical records, et al.). Therefore, it is important to understand beforehand the scope of the agreement and each of the contracting party's obligations to determine whether a given EHR is right for your practice.

The practice may have reached the contract evaluation stage with or without the assistance of an attorney or consultant, but it is now crucial to reexamine your practice's needs and available resources before reviewing draft contractual details. Doing so will improve your understanding of proposed contractual terms and help you make a healthier purchasing decision.

Tips on benchmarking technical deliverables

Create a list of functionality features to help you define what the software applications are supposed to do and make sure your attorney recites it in the final software license agreement. This will ensure that what you are purchasing is what is being delivered.

Quite often, software vendors will insist on utilizing their software licensing agreement in contract negotiations, and for good reason. Their standard licensing agreements have been designed by their legal teams to place the majority of the licensing and acquisition risk on the customer. If, as a purchasing EHR customer, your practice is not in a position to offer a standard contract alternative of your own, you may wish to consider some of the items addressed in the contract checklist tips to guide you through the negotiations to tailor and modify the vendor's standard agreement to balance the distribution of risk. **Remember, standard agreements are not set in stone!**

For example, and to the extent that delivery and/or installation clauses control the location and timing of EHR implementation, this means that timing may well affect price and even tempt vendors to disclaim their liability for late delivery or require your practice to have all necessary hardware in place before the vendor installs the software.

If you have questions or concerns about potential problems with your pending EHR software licensing agreement, make sure they are addressed and rectified to your satisfaction before signing any final agreement. Make sure all issues are addressed including contingency issues such as what happens in the event your vendor is purchased by another in the future? What are options and recourse should you find their support unsatisfactory? How easy would it be for the practice to dissolve the licensing contract and walk away? What about the integrity and access to your data when it is stored off-site and can only be read by your vendor's software? Data ownership is a critical matter and needs to be fully addressed to the practice's satisfaction in the licensing agreement. Does your contract entitle you to reclaim your data? What about notice of termination to vendor — how much notice is the practice expected to serve before terminating agreement? And, what does your contract say about suing for damages? These are but a few of the questions the practice will need to have answered by their attorney when negotiating an EHR software licensing agreement.

Contract checklist tips

Before contract negotiation

- ☐ Decide whether you will negotiate with one vendor or two. Negotiating with two vendors simultaneously can be difficult and potentially costly if negotiation assistance and legal counsel are engaged. If a second vendor is held at bay, that vendor generally determines they are not the vendor of choice simply from lack of activity. Some practices believe that if vendor negotiations fail with the vendor of choice, the second vendor will not automatically be negotiated with, but that the practice will return to market.
- ☐ Will price or terms be the kick off strategy? Starting with price can put the practice at a disadvantage when negotiating terms; although a vendor out of range that is strongly desired can be given an opportunity to meet ballpark budget.
- ☐ Who will be included in the negotiation process? Legal counsel should always review the final contract, but may not be the ideal resource for identifying EHR issues. An experienced coach or negotiator can be very helpful for larger projects.
- ☐ Are all aspects of the contract elements, as specified in your RFP, included in the offered contract, including the "best offer" from the vendor that is tailored to your situation (i.e., includes the specifics of what you are buying, revised pricing, etc.)? Ensure that the vendor understands that the response to the RFP and implementation plan will become part of the contract, and allow them to make any changes necessary to conform to this requirement.
- ☐ Keep track of any issues that arise during the selection process that you may want to either negotiate or attach to the contract. For example if the vendor said they would do something unique for you, add a feature/function for you, or affirm the system can handle a key requirement for you these should be appended in writing to the contract.
- ☐ Request a complete set of product documentation — and arrange for users to read it. This will help clarify what you are buying in terms of feature and functions, additionally legally speaking most vendors usually specify that what you are buying is the product as defined in the documentation.
- ☐ Consider a final "due diligence" product demo to respond to any final questions or concerns you may have about product capabilities.

During negotiation

- ☐ Develop a list of issues. Present the entire list to the vendor. Introducing one issue at a time can jeopardize any terms already agreed upon. Ask for a revised contract by a specified date.
- ☐ Conduct formal negotiation sessions after reviewing the revised contract.
    - o This is an iterative process that typically takes *several* drafts
    - o Ask for "redlined" drafts showing changes from prior draft
    - o Take good notes during the meetings, covering both intent and specific wording offered to resolve issues
    - o Assure vendor's written response is consistent with their verbal one
- ☐ Clarify *exactly what you are buying* and what the vendor is selling, including:
    - o Hardware
    - o Software (license to use the EHR and related programs)
    - o Implementation support
    - o Interfaces

- o Conversions
- o Customizations
- o Networks/infrastructure
- o Ongoing maintenance support and upgrades

☐ Conduct implementation planning concurrent with contract negotiations, and have it attached to the contract. At a minimum the implementation plan should include:

- o Project phasing
- o Project start and go-live dates
- o Key milestones
- o Level of effort for buyer
- o Level of effort for seller
- o Recommended project organization chart

☐ Beware of concentrating on price issues too early. Once a vendor agrees to a price, it makes it easier to either refuse other issues or re-open price if an issue has a cost impact.

☐ Once the price issue is opened, remember that the economic deal goes far beyond the price. Payment terms are extremely important. Many vendors want a down payment of 50 percent, then another 25 percent on "installation," and the rest at go-live. Because "installation" only refers to installing the software on the server you are buying, this is not the same as "implementation" which entails configuring the system to meet your specific practice needs (sometimes called "system build"), installing the interfaces, helping you redesign workflows and processes, training your staff and testing that everything works properly. The practice of front loading payments effectively means they will get 75 percent before they ever deliver the system to you. Not having any amount due after go-live means you have no opportunity to assure it works in actual practice. A better payment schedule is:

- o 10 percent down
- o 10 percent on software installation
- o 20 percent on completion of training
- o 20 percent on completion of testing
- o 20 percent on go-live
- o 20 percent 90 days after go-live.

Note: The term "acceptance testing" is not the same as "system testing." System testing reviews every screen, checks that data flows from entry through the various functions, displays intended results, provides correct decision support, and generates expected reports. A test environment is critical for this testing, and the practice should develop dermatology encounter test scripts and test data to make sure everything works as intended. Sometimes the term acceptance testing then means that some time after go-live the vendor and the practice review key user milestones: everyone has been trained, everyone has been able to log on and use the system for x-number of days, at least one reporting cycle has been accomplished correctly, etc. If a formal checklist is not used, a period of 90 days after go-live and all active issues on the issues log have been resolved to the satisfaction of the practice.

☐ Beware of vendors evoking Sarbanes-Oxley as a payment scheduling tactic. Sarbanes-Oxley only relates to when vendors that are public companies can post payments, not when you owe payments. However, some vendors attempt to get practices to pay as much up front as possible so they can post earnings sooner.

- ☐ Other pricing issues include:
    - o Maintenance/support fees and inflation clauses
    - o Price protections. Do not accept "Evergreen Clauses" that stipulate automatic renewal without negotiation
    - o Fixed fee for implementation? Expense controls/cap?
    - o Application service provider (ASP), term, or perpetual license
- ☐ Define performance criteria, remedies .and dispute resolution processes in terms you can understand and measure.
- ☐ Plan for contingencies
    - o Is your organization going to change (grow, shrink, refocus, etc.)
    - o Must keep current with federal, state and regulatory requirements
    - o What if the vendor leaves the business? (Alternatives might include support for software replacement, and/or putting source code for most current software version in an escrow account that can be accessed by the practice or the practice's representative in the event of vendor-bankruptcy.)
- ☐ Beware of last minute product substitutions where vendor pushes you to buy a "newer and better" product than the one you have evaluated. There is always a next version around the corner.

Post negotiation

- ☐ On the final version of the contract highlight any changes you have succeeded in getting, any major tasks or responsibilities you have agreed to, and any key terms/conditions that you feel need to be closely monitored.
- ☐ Review key terms and conditions of the contract with the vendor's implementation manager. *Do not assume they will have read it.* Typically they are familiar with the standard contract and may not have read your final contract.
- ☐ Periodically review the contract to refresh your memory on terms, conditions, and special items you have won. It's not a hammer, but it can help clarify things during disputes.

Examples of contractual issues

- Product capabilities
    - o Incorporate documents "defining what you are buying"
        - Many standard contracts have language stating that the product you buy is what is described in vendor's user and technical documentation.
            - Verify it exists for the *product and version/release* you are buying
            - Review it!
            - Identify functions and features that might be missing
        - Attach a copy of their RFP responses and agreed upon implementation plan to the contract
    - o If there are any features or functions of special importance or concern to you, describe your needs in writing and have their response incorporated to the contract
    - o Assure product will meet current and future requirements mandated by federal and state rules and regulations

- Implementation
    - During implementation, ensure you are maintaining an issues log and make sure you sign off on every issue as completed to your satisfaction.
    - Ensure you have a clear escalation clause, that specifies who (by name) you should contact if you are having difficulty with the implementation staff assigned to your practice. You should also have the right to request an alternative staff person if you have many problems.
    - Do not be shy about asking for a specific implementation plan tailored to your practice. Review and understand it thoroughly, making any changes as necessary; but also allowing for contingency changes by either party that are reasonable.
- Licensure
    - Be sure you understand and agree with how the vendor is basing its license:
        - Are they named users; concurrent users; providers?
            - How are part time staff/clinicians counted?
            - Is there any assumed relationship between number of clinicians and number of users (i.e., the support staff, such as three, four, or five per clinician)?
            - What is their definition of a "provider"?
        - Site licenses may be available for larger practices that cover an entire building or facility
        - Avoid accepting a license based on the number of "seats" (i.e., the number of computers from which an EHR can be accessed). This will restrict your ability to use multiple computers per provider and could hinder remote access.
    - Get "price protection" for products and services you may want to license in the future, but are not ready to commit to purchasing yet.
- Maintenance, support, or service level, agreement (these agreements go by different names, depending on the vendor)
    - Such an agreement is crucial — to ensure that you have support in the event something goes wrong with your system and to get regular system patches and upgrades. Typical maintenance fees range from 15 to 20 percent of the initial cost of the licensure, and may kick in on go-live or at the time the final payment comes due.
    - Limit amount the vendor is permitted to increase maintenance costs each year.
    - Many support clauses are vague. Be sure it specifies:
        - Kind of training you will receive during implementation and throughout the term of the license
        - Whether technical support will be provided in person or via telephone, and what amount of time it will take for support to be provided. Some vendors charge different fees based on the level of support you want.
        - Whether you will receive help (and what kind) installing software updates and/or patches.
        - Whether you will have to pay an additional fee for support that is covered in the documentation manual, which some vendors expect you to read and use prior to calling for support.
        - A support clause may also impose performance requirements in terms of installing and maintaining upgrades. While this may seem burdensome to you, it actually will work in your favor, as the vendor is likely to charge you for installing upgrades not installed on a timely basis and which may be required in order to fix your problem.

- In cases where vendors sublicense software from a separate developer to sell to others, the practice may have to deal with the original developer for support. Therefore, scrutinize the obligations of the vendor to determine whether the developer is even bound to provide you with support.
- Over time, you may want to add new document templates or modify the software's functionality. These may constitute modifications that are either expressly permitted or prohibited by the license agreement or not addressed at all. Before purchasing, it is critical to learn how the software functions, to consider whether you want to make changes, and to find out whether modifications are permitted.

- Technical
  - Get assurances that equipment and technical configurations recommended by vendor are sufficient to meet your needs for a specified period of time (two to five years)
    - System response time
    - Downtime/uptime
    - Storage capacity
  - Assure interfaces and data conversions are clearly defined and agreed upon
  - Explore options to purchase equipment from either software vendor or third party
- Installation and implementation
  - Agree on implementation phasing, level of effort, timeframe, and have it attached to contract
  - Vendor should provide assurance that quoted level of effort is sufficient to achieve a successful implementation and absorb any overruns except when buyer changes scope or fails to perform their duties
  - Assure vendor will use only qualified implementation and support personnel
- Legal
  - Contract should be governed by the laws of the state you reside in (unless your legal counsel advises otherwise)
  - Assure you and your attorneys understand and can accept the vendors statements on limitation of liability
  - Assure vendor indemnifies you against lawsuits brought by any third party suppliers claiming copyright and/or patents infringements
- Other business and contractual
  - Protect yourself against the vendor going out of business, sunsetting product, etc.
    - Get assurance product will be supported for at least 7 years
    - Have software kept in escrow where you have rights to use source code in the event of specified events (bankruptcy, sunset, etc.)
  - Special considerations for hosting site visits — if any
  - Agreeing or not agreeing for vendor to use de-identified aggregate data for their own business purposes
  - Agree on a dispute resolution

Identify financing sources

There are several sources of funding your EHR adoption project should consider:

- ☐ Most practices attempt to finance the EHR through operational cash flow.
- ☐ Few practices consider philanthropy, although given that philanthropy is an important source of funds for healthcare in general, it should not be discounted. Practices have come up with creative ways to express appreciation for such philanthropy, such as building a "save a tree" in a lobby.
- ☐ Donations by hospitals and others are now permitted within certain prescribed boundaries under regulatory relief to Stark and Anti-kickback laws. The burden is on the donor to assure compliance, so talk to potential donors. Health plans have been exercising this safe harbor liberally by donating e-prescribing systems (including hardware, software, and connectivity to an e-prescribing gateway) to clinicians. Donations for (only ONC-ATCB certified) EHRs may be made for up to 85 percent of the cost of the software, training, connectivity, and maintenance — but not for hardware. This provision expires on Dec. 31, 2013. EHR donors may not take into account the volume or value of referrals or other business generated between the parties in connection with a donation. Selection criteria that may be used by donors without triggering the volume or value or other business generated standards include total number of prescriptions written, practice size, number of hours worked by physicians, whether recipient is member of donor's medical staff, level of uncompensated care provided by recipient and physician's overall use of automated technology.
- ☐ Local businesses have a vested interest in the cost of health care, and may also be a source of funds, directly or indirectly through contracting incentives. Some businesses may have foundations from which grants may be available; other businesses may be willing to provide influence for pay-for-performance from local insurers, legislative initiatives, or other forms of financial relief — they may just need to become aware of the need and given ideas.
- ☐ An accountant can help identify tax advantages, especially with for-profit practices.
- ☐ Group purchasing may be feasible, but even if there is no discount for a group of unrelated physicians, there may be opportunity for serendipity effects. Several physicians purchasing the same product in a given locale may benefit by sharing lessons learned, using local consultants, etc.
- ☐ Leasing is an alternative for acquiring hardware, although, again, consider the period of time required in the lease against what it would cost to buy outright.

Financing through a bank or other financial institution is a critical aspect of financing the EHR. Most practices do not retain earnings or set aside reserves. However, as a major expenditure, this may be considered for EHR acquisition. Consult a tax attorney for additional information. Bank loans and lines of credit are the most common sources of cash. It is important to compare their characteristics when selecting from between them:

- Bank loan
  - Lower interest rate than lease or ASP model equivalents (investigate if your state has instituted a low or no-cost loan program, where the meaningful use incentives are used as collateral)
  - Easy payment option
  - Possible down payment required
  - Longer approval process
  - Less flexibility
  - Strong option if product has value when paid off

- Line of credit (LOC)
  - Flexibility
  - No down payment
  - Lower interest rate than lease or ASP model equivalents
  - Single large expenditure consumes LOC
  - Good option when expenditure is not great

The application service provider (ASP) or software as a service (SaaS) is another method of acquiring and financing an EHR. The ASP or SaaS is characterized by deductible payments instead of a large up front capital outlay, although it is likely that the regularly monthly payments over time will amount to more than the typical license. Benefits of ASPs or SaaS include the fact that the technology stays current, you don't pay for hardware costs other than the end user devices and network connections in your office, there is less administrative cost, and less need for in-house IT staff. However, the ASP or SaaS generally means less flexibility because everyone using the ASP or SaaS uses the same version. This also means you will have forced upgrades — which can be advantageous because you are always getting the most up-to-date version, but can be problematic if they require significant down time or prove to be too soon (i.e., the upgrade was not well-tested and results in a system crash). The difference between ASP and SaaS is largely in their respective architecture. ASP is essentially a client/server platform with a Web front end. SaaS is based on a pure Web Services Architecture (WSA). Although the SaaS model is newer technology than the ASP platform, SaaS may be less customizable than the ASP.

From an ASP or SaaS model standpoint, two factors have been of special concern to dermatologists:

1. First is the fact that your data resides at the vendor location, therefore you are dependent upon the vendor not only for routine access but to retrieve all of your data in the event the company goes out of business. You must have tight contract clauses specifying you own the data, the data will be returned to you in a standard industry format, and that your software will not be turned off by virtue of the company going out of business. (It is a good idea to require the vendor to put the software into an escrow account so that it is always available in the event the company goes out of business.) Of course, investigating the vendor's longevity in the marketplace is also essential.
2. The second concern is the security of the data and whether anyone else can gain access to it. Security controls from the perspective of back up, disaster planning, hacker attacks, etc., are typically more likely to be stronger in an ASP/SaaS situation than what a practice can do on its own. The ASP/SaaS vendor knows it will be out of business if it doesn't have these controls. However, identifying whether the ASP/SaaS vendor will permit someone else to have access or will de-identify the data and sell it is incredibly important to understand. Again, this must be addressed in the contract very clearly. Access control technology can be very specific, and needs to be assured.

IMPLEMENTATION AND TRAINING

The RAND Corporation has made an important observation concerning implementation vs. adoption. Implementation means that a system has been installed, built out to the user's specifications, tested, and users trained. Adoption, however, means that users actually use the system as intended. The rate of adoption is strongly influenced by the planning and implementation that has taken place. Establishing goals and expectations, working through workflow process changes, negotiating a fair contract, and thorough testing and training of how the system is customized for your practice are essential for adoption. But the ultimate test of adoption is simply: *do the users use it and are you reaping the benefits you intended?* Sadly, many implementations fail for lack of proper planning, and many systems lack 100 percent adoption because expectations for use were not agreed upon in advance.

This section of the *dEHRm* helps you:

- *Plan and manage your implementation* This tool will help you to align your expectations with the vendor as to what will be accomplished and when. This includes resolving issues as they arise, employing a formal change control process, conducting system build, and revising workflows and processes as enabled by the EHR.
- *Training plan tool* This tool can be helpful to assure that all users get trained on all aspects of the EHR at the time they need the training.
- *Testing plan tool* This tool helps you put into place the steps needed to test your EHR prior to go-live. While it seems testing should be a given, many vendors shortchange this step because they may believe they have successfully implemented a system at another practice and do not need further testing. Yet, every practice is different and the system needs to be tested as you have built it out and with the hardware and telecommunications capabilities you have in place.
- *Rollout strategy* Even if there is only one dermatologist in a practice, how you roll out the use of the EHR needs to be planned. Will you start using all aspects of the system all at once, only part of the system until you get ready to go on to another part, or for a part of a day each day until you become accustomed to it? If there is more than one dermatologist, roll-out strategies may include other aspects of staging.
- *Go-live checklist* This list will help the first day of use go as smoothly as it can.

Plan and manage your implementation

Implementation of an EHR system includes all of the steps necessary to prepare for, install, build, test, train, convert, go live, and adopt the EHR. It is important to recognize that implementation is much more than installation. Installation refers primarily to the tasks the vendor performs to set up whatever hardware is needed and load the application software. Some vendors will do much more than this based on the services for which you contract. However, many implementation steps remain the sole responsibility of the practice, and, of course, checking that the vendor has properly performed the services for which you contracted is also your responsibility. For more information on planning for a successful implementation see Common Implementation Problems and Solutions. You will find that the *dEHRm* helps you plan for many of these problems with solution-focused *dEHRm* tools.

Table P: Common implementation problems and solutions

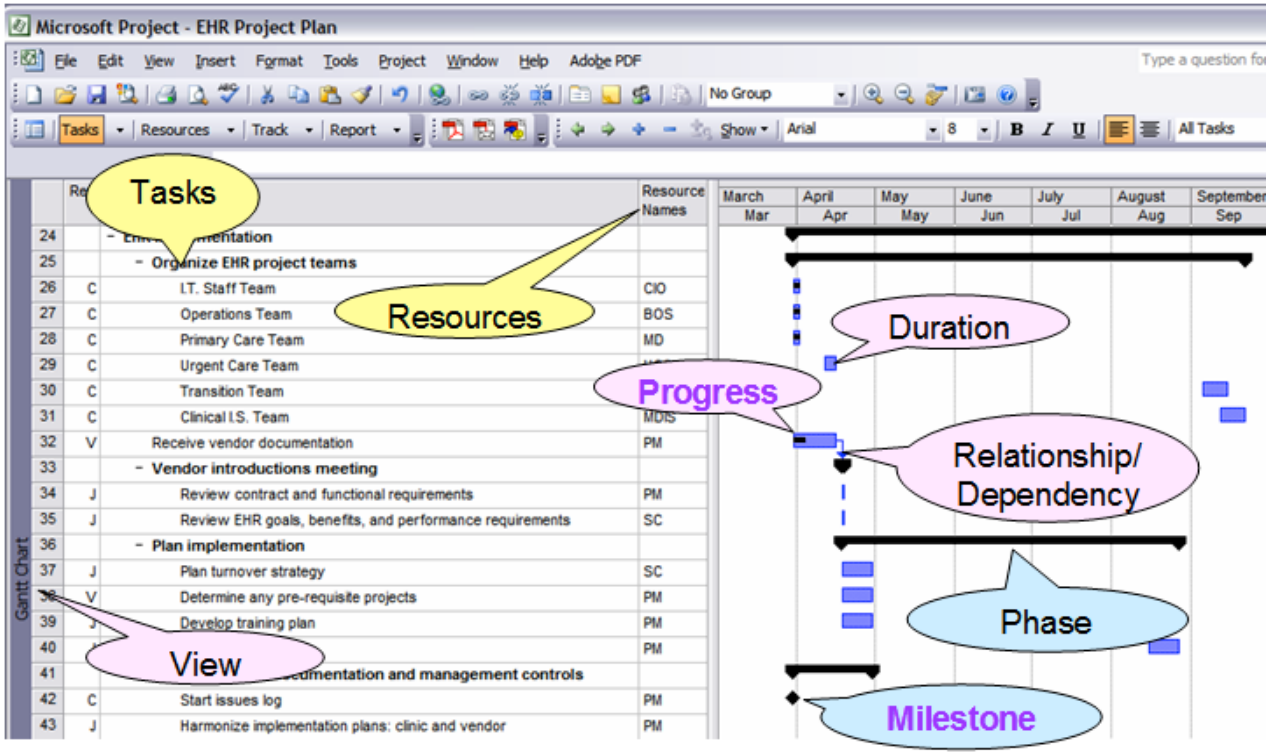
Problem	Solutions
Staff resistance	• Establish project team that consists of physician champions and other motivated practice staff • Communicate the value the system will bring to staff on an individual level • Identify staff's concerns and develop plans for addressing them • Involve staff throughout the implementation process • Manage expectations by establishing realistic goals, providing quick wins, and demonstrating progress
Training	• Tailor sessions to the roles and responsibilities of staff • Ensure sessions are task oriented and hands-on • Provide staff with time to "play" with system outside of formal sessions • Create "super users" and ensure they receive additional training • Develop aids such as cheat sheets, quick reference guides, etc., to support staff learning
Project management	• Define scope before completion of contract • Develop detailed project plan • Establish roles and responsibilities • Ensure sufficient resources allocated on both practice and vendor side • Identify project risks and develop plans to mitigate them
Interfaces	• Ensure project plan allows sufficient time for installation and testing • Make sure test plans cover different scenarios and situations • Evaluate effect of typical message loads or cycles on system
Workflow automation	• Map out workflows and identify problem areas or bottlenecks • Determine how system can be utilized within processes and address identified problems • Re-map processes
Information	• Information input volume
System performance	• Ensure hardware meets minimum requirements • Load test system to evaluate effect of typical number of users • Evaluate ability of network to handle increased traffic and utilization • Ensure system maintenance procedures are in place and working
Contingency planning	• Ensure that disaster recovery plan is in place • Test ability to restore system from backups prior to go-live
Approach	• Ensure amount of training provided matches implementation approach

Source: Adapted from MedQIC's Common Implementation Problems Matrix for the Doctor's Office Quality — Information Technology (DOQ-IT).

IMPLEMENTATION PLAN

The first step in implementation should be to review the contract with the vendor's implementation specialist, including the implementation plan that was negotiated. If you did not negotiate an implementation plan, review the contract provisions and immediately review the vendor's plan.

A Gantt chart is the most common format to use for the implementation plan. The Gantt chart enables all tasks to be listed, what resources will be used for each task, and then a time line that shows the expected duration of the tasks, actual progress, where there may be relationships or dependencies among tasks, how long certain phases are, and on what dates you should reach certain milestones. Microsoft Project is a common tool vendors use because it also enables project budgeting and resource leveling, however, the same Gantt chart view can be accomplished for your office with a spreadsheet or even a table in a word processing program.



ISSUES MANAGEMENT

It may be a sad commentary, but the very next step you should take in getting ready for your implementation should be to set up an issues log. Identifying, documenting, managing and signing off on resolution of issues is critical to managing the overall implementation. Every vendor will have its own issues log, but you should also have your own. Some items on your log may be internal items with which the vendor is not involved. You may also find that your definition of resolution is not always the same as the vendor's, so you will need to regularly review outstanding issues with the vendor until you feel comfortable that the issue is resolved to your satisfaction. The issues log will also alert you to how long an issue has been outstanding, and how frequently the issue has had to be brought to the attention of the vendor's staff. It may be necessary that these issues be escalated within the vendor's organization. Finally, the issues log allows you to document issues that may impact whether or not you make a specific payment.

WORKSHEET #16: ISSUES LOG

Sign off											
Date resolved											
Resolution											
Escalation											
Date of follow up											
Date assigned											
Assigned to											
Date reported											
Reported by											
Risk: H-M-L											
Description											
Ref #											

CHANGE CONTROL

In addition to the implementation plan and issues log, you want to start a formal change control process. This is a means to track whatever customization is performed on your system. If you use an ASP model, the vendor may have control of this. However, any changes you request that impact clinical use of the system should be tracked. For example, if you decide to turn off some of the built in alerts or reminders because they don't pertain to your specialty, or you prefer not to collect certain data elements because it is a burdensome process, document that you have done so. This will enable you to track any possible resultant issues. For example, if a pay-for-performance program depends on a data element you deleted or made optional, you may later wonder why you are not qualifying for the incentive.

In some environments there is a formal change control process, where any change to the system is made via formal request which must often be approved, prioritized, and placed into the development queue. Such formality may not be necessary in a small practice, but some record of the change request, how it was approved, and the nature of the changes should be retained. Remember that the EHR must be capable of producing your legal health record for purposes of responding to a subpoena or court order. This means that what you normally now would provide in response to such a request should be able to be printed out or represented to the court electronically if the court permits. However, the EHR also includes and generates more information than what has typically been included in a paper-based record. For example, decision support rules and date/time you accessed information are now included and captured by an EHR. This information, while not included in the typical contents of the "legal health record" remains discoverable. In other words, if a court decides it wants such additional information, it has the right to request it through court order and you must be able to produce that as well. So, for example, if you overrode an alert that the patient was allergic to a medication, you might need to produce the fact that the alert existed and the rationale for why you overrode the alert. Or, you may be asked to produce evidence that the system had the capability of providing the alert but you chose to turn the alerting feature off. It is essential that you keep good documentation of all actions associated with maintaining your EHR and associated metadata.

Hardware and software installation

Once the early planning and setting up of your issues log and change control process has occurred, the vendor should install the hardware and software.

Be aware that many software vendors have preferences concerning the hardware or hardware configurations on which their EHR software work best. If you buy your own hardware, your vendor may require their certification of the manner in which it has been installed. It is important that you comply with this or any warranties could be void as a result.

Space and office layout considerations

New and additional hardware may present space and layout considerations. While most offices already have some telecommunications and computer equipment, they may be housed in a spare closet. While small practices will not be building a "data center," it may be necessary to consider building out a "data closet" that provides somewhat more space and improved air circulation and cooling. Of course eventually the space used for paper charts will decrease in size, but generally not for some period of time. Depending on the size of the practice, acquisition of an EHR may require conversion of a small office into an IT office where servers are located and where an IT contractor can work periodically.

Other space considerations may surround places to put devices in the examining rooms/surgical suites and office, where to locate printers, use of kiosks for patient data entry and/or retrieval, etc. Office layout considerations may also include a revised traffic flow. For example, work flow changes may include the addition of a central check-out, among other changes. Graph paper and templates for furnishings may be used to draw your space. You can illustrate current and changed traffic patterns by different colored and/or numbered lines.

Human-computer interfaces

The decision about which human-computer interfaces (input devices) to acquire is often made during the early stages of implementation. You may have assessed the ability of a particular EHR to work with tablets as well as desktops. But buying the devices you will ultimately use too early can mean disappointment if newer devices become available in the interim. Not that there will never be newer devices in the future, but you hope to not start out your new EHR project behind the technology curve. You should also be aware that many clinicians are attracted to the "latest" devices, only to find that some of the older, "tried-and-true" devices are easier to work with. The message is that one size does not fit all people or even for all functions a given person performs, and you need to be flexible in your ability to make changes when something isn't working as desired. Be aware, however, that standardizing on a small number of devices is essential. There are definitely economies of scale, not only in the purchase of the devices but in the ability of staff to maintain the devices and work with users in acclimating them to the EHR.

Engage your practice users in making decisions about what devices to acquire. If your practice is not too small, you might consider buying a few different types of devices to be used for email and Internet access before you start implementing the EHR. This gives you a good idea of how well each type of device suits your practice style. as well as to build computer navigation skills. Alternatively, the hospital where you may admit patients may also have different types of input devices. Think about these as you start investigating for your own practice.

Tip: If you are considering using tablet computers, you will need a wireless network. Be sure that your wireless network and devices conform to the latest standards for wireless. The most recent version is IEEE 802.11n. Earlier versions may result in slower speed than a wired network or interference with medical devices.

Interfaces

Interfaces represent special challenges. An interface is software that enables the exchange of data from one system to another. For example, if you send lab work to a reference lab to receive the lab results as structured data into your EHR so that you can graph them, you need an interface between your EHR and the reference lab. (Quest Diagnostics and LabCorp are among the largest commercial reference labs and can provide interfaces for many common EHRs to enable this.) Building interfaces often requires careful management and regular testing with documented results. Because two vendors are involved, there can be conflicts between the vendors you may have to manage. (You also should be aware that once an interface is written, as any update to either system occurs, the interface needs to be checked. It may be there is no effect, but very likely some rewriting of the interface may be necessary. This is an ongoing cost as well.

Be aware that "interoperability" is not just an interface. Interoperability includes:

- Integration is development of one application based on the source code structure of another application so there is seamless exchange of structured data. Note that this is not just about buying from one vendor, as a vendor may have acquired an application from another vendor and only developed an interface for it, or may have had totally different development teams develop modules. Although integration is the ideal form of interoperability, total integration is an elusive goal in health care at this time.
- Interface is the development of an "interface program," often called middleware, which allows data from one application to flow to another application that was not developed using the same developmental structure. An interface generally is written to facilitate flow of only certain data between the applications and not necessarily all data in the application. Interfaces may be:
    - Uni-directional, with data flowing only from one application to another.
    - Bi-directional, with data flowing from one application to another, and from that application back.
- Connectivity is the ability to connect to another application to view information, potentially retrieve a file or image, and/or interact with the other application directly. Connectivity uses some form of file transfer protocol or Web services architecture. It aids in communication of information and potentially interaction with the other application, but not in transference of structured data across applications because there is no formal interface program.

System build

System build, at a minimum, is the process by which tables containing information about your practice are pre-loaded into the relational databases. Many tables are unique to your organization; some may be generic. They list, for example, all of the employees and physicians who may have access to the system, the names and locations of the practice's sites, all of the revenue codes you use, all the fax numbers for local pharmacies, ICD and CPT codes, types of patient instructions that are available, scheduling rules to manage appointments, and much more. Essentially, any reference material you use in the practice will become a table in and used by the EHR.

The extent to which the EHR is customizable determines further system build activities. If the system is highly customizable there is much work here. For example, all data elements required for core data sets should be identified and incorporated into screen layouts; all clinical practice guidelines that direct care planning and documentation need to be formed into templates with associated branching for context-sensitive documentation; all reports that are generated, whether in the form of paper printouts, transactions sent to a health plan, or data "dumps" to a data warehouse for quality measurement need to be identified and their output assured; any order sets that are commonly generated need to be incorporated; and even common dermatologic terminology and phrases used in notes, referral/consultation letters, or other documentation identified. All decision support logic and the data that drives the decision support rules need to be reviewed by the practice and approved or modified for use.

Generally, a vendor supplies a starter set of screen layouts, templates, rules and so forth; but at a minimum they should be reviewed by applicable members of the practice. The vendor may not have access to your practice's specific practice guidelines or those used in your medical community. The vendor may have templates for most specialties, but not for certain subspecialties that are represented in your practice. Often the initial system build covers much of what can be anticipated for use; however, you should understand and be prepared to continue to build new templates, modify decision support rules, change data elements for external reporting, etc., for the life of the product. Just as medicine is not static, an EHR that supports medical practice is not static.

Workflow process mapping

As you begin to build out how documentation will occur, what templates will be used, what clinical decision support will generate what reminders and alerts, etc. the impact on your current workflows and processes will become apparent. At this time, you will want to use the process maps of your current workflow to map out the new workflow.

In some cases the vendor may ask that you use their forms or tools to describe your processes, or they will take your maps and incorporate them into their own tools. So long as you maintain the responsibility and authority for approving the changes to be brought about by the EHR, any re-formatting is not an issue.

Some vendors have only just begun to help their clients identify and plan for the changes in workflow and processes that the EHR brings about. In the past, and it is still very true for many vendors today, changes in workflow and processes were viewed as something the practice was on its own to manage. If the vendor dismisses your process mapping, you need to at least verify that the system is being built out in a manner that is consistent with your expectations. If not, this becomes an issue that must be reconciled. As noted above, the vendor may offer a recommendation for improvement that is based on their knowledge of their product and is very appropriate for you to adopt. However, if the vendor forces a change on you that is not acceptable, this will be an issue to be addressed. It may be that the system is not designed in a manner to accommodate the change you want. If this is the case, and hopefully you were aware of this in the process of selecting the vendor, you may need to pay particular attention to how to train users on dealing with this issue. It may be that the vendor will incorporate accommodation of this difference in a subsequent version of the product; but this is not something that should be counted on unless it has been negotiated in the contract.

TRAINING PLAN

EHR vendors usually train a core group of your staff and/or super users on the specifics of the product early in the implementation. However, a training plan for the all of the rest of the staff and users is necessary.

Your training plan must consider how much training the vendor is offering with the standard product and how much more training you may have purchased. Some vendors expect to train a core group and then provide train-the-trainer materials for you to train the remainder of your staff. These vendors may offer additional training for an additional fee. Other vendors require a practice to have at least one person certified in their product. This person may provide all of the rest of the training or the vendor may provide some, if not all, of the training. EHR systems should be intuitive and many physicians do not like to attend a "class" or have someone watching over them while they are attempting to learn something, but it is a good idea to offer several different formats of training, as well as support, during go-live.

Your training plan will be as much a sequential plan for who gets trained when on what, as it will be a plan for the types of training to be made available. It is recommended that the training plan be included on your overall implementation plan, as well in a separate format, especially if you have many people to train and the EHR will be rolled out in a phased in approach. Training should be as "just-in-time" as possible, or users who are trained early and do not get to actually use their training will quickly forget. You will want to monitor every person's training and make sure that they have completed each phase of training. Use the Training Plan Tool to track, for each person in the practice:

?: What training the person needs (based on the list below).

Date: Training scheduled.

✓: That training was completed.

Training might include the following (also identify *who* will perform the training, such as the physician champion, EHR project manager, EHR vendor, a super user, self-training via an online course, etc.):

1 Introduction to EHR.

2 Keyboard and navigation skills.

3 Special training (you define, such as Internet usage, bibliographic searching).

4 Overview of EHR product.

5 Super user training (this is training the vendor supplies to key people you designate, who then train the rest of the persons who will use the system, referred to as "end users").

6 Hands-on end user training (this is training for each person who will ultimately need to use the EHR in some way).

7 Go-live support (this is special assistance provided on the day of go-live, sometimes by the vendor or a combination of super users from the practice and the vendor).

8 Review/refresher training (may be needed if you find end users not comfortable with the system, or later find persons in the practice not using the system completely or correctly).

You might even want to consider some form of your own "certification," such as watching someone perform a function on their own, or monitoring the number of charts successfully completed against the number of patients seen. Consider offering an actual "certificate" of training or other form of celebration. A bit of competition can be healthy for a group to nudge them along in their adoption. A record of when training was provided and the results achieved may also be necessary for subsequent coaching and employment counseling.

WORKSHEET #17: TRAINING CHECKLIST

Name of Person *(Separate by site/team as applicable)*	Intro to EHR *Who:*____			Keyboard & Navigation Skills *Who:*____			Special Training: Ex: Internet/ Bibliographic Search *Who:*____			Overview of Product Vendor			System Build Task:____ Vendor *(Repeat as necessary)*			Super User Training Vendor			Hands-on End User Application:____ *Who:*____ *(Repeat as necessary)*			Go-Live Support *Who:*____			Review/Refresher *Who:*____		
	?	Date	√	?	Date	√	?	Date	√	?	Date	√	?	Date	√	?	Date	√	?	Date	√	?	Date	√	?	Date	√

Key:

?: What training the person needs (based on the list below)

Date: Training scheduled

✓: That training was completed

WORKSHEET #18: TESTING PLAN TOOL

A testing plan is generally incorporated into the master implementation plan, but if you think you may become uncertain as to whether all elements of the system have been appropriately tested, you might want to consider maintaining a separate checklist of every component that needs to be tested, when it was tested and the results. If the results are not satisfactory, this information is recorded on your issues log. Do not indicate completion of the test on your master implementation plan until the issue is resolved.

There are several stages of testing, and your contract should specify the extent to which the vendor is responsible for each type of testing. Engaging users early in building test scenarios or use cases can keep people engaged and motivated to use the EHR. It also reassures users that the system is being designed to work as intended. There can be things that go wrong during go-live, and that should be understood by all; but developing thorough testing procedures develops trust in the system.

Test	Components	Projected date of completion	Assigned to	Is it working?
Unit and functional testing	Each major function performs as specified in user manual.			
	Design changes/customizations are present and work as requested. (Also document all changes to change control log for future reference.)			
	Screens appear as expected, including content and placement of all fields, codes, drop down menus and messages.			
	There are no spelling errors, color changes, icons are readable.			
	Appropriate representation of EHR content can be printed if necessary for legal purposes.			
	Entries that have been corrected and their corrections are both displayed accurately.			
	Fields edits (e.g., valid values, optionality, defaults) function as expected.			
	Clinical decision support provides appropriate reminders and alerts. (Use scripts to test various scenarios.)			
System testing	Workflows send and/or receive data properly between systems (e.g., between EHR and pharmacy; PMS messages and EHR; EHR charge capture and billing system). Use scripts to test various scenarios.			
	Interfaces between applications move data correctly and completely. Test both sending and receiving when interfaces are bi-directional.			
	Connectivity with external organizations are accurate and complete as authorized (e.g., continuity of care record to referrals, personal health records for patients, portal access to/from hospital/practice, disease management to/from health plan).			

Test	Components	Projected date of completion	Assigned to	Is it working?
System testing	System access is appropriate per assigned privileges. Test attempts to gain access when not authorized.			
	Data are processed accurately, such as in graphs, tables, claims, patient summaries, reports, etc.			
	Data correctly populate registries, reporting warehouses, etc.			
Integrated testing (simulates live environment)	Ensure all system components that share data or depend on other components work together properly.			
	Ensure that EHR workflows reflect actual staff/patient flows (e.g., what happens to the data when the patient is sent to radiology?)			
	Ensure that usage is defined in and follows policies and procedures. Reinforce training as applicable.			
	Ensure that help desk, support personnel, and other aids function properly.			
	Ensure that EHR works with all forms of human-computer interface devices and modalities (e.g., tablets and PDAs as well as workstations; voice recognition and speech commands).			
	Attempt to "break" the system by testing mission critical and high risk functions, such as situations requiring complex logic (e.g., drug-lab checking), complex calculations (e.g., pediatric drug dosage); exception logic (e.g., overrides to clinical decision support); many handoffs from one department to another are involved; and where there may be a series of events over a period of time (e.g., prescription fill status notification; prior authorization for referral).			
Performance and stress testing	Measure response times for key transactions or interactions with the system, and assure they are within acceptable limits, which may be defined in the contract.			
	Simulate an extremely high volume of activity on the system such as would exceed anticipated "peak loads" of system usage.			
	Measure the time it takes to generate reports and data dumps, and the impact on system performance.			

ROLLOUT STRATEGY

A key step in working with your vendor early in the implementation planning stage is to identify the how the EHR will be rolled out. While you should have the final say on the roll out, your vendor will offer suggestions based on their experience, and you can use lessons learned from the site visits and reference checks you conducted during the selection process. There are essentially two dimensions to this:

- Straight or parallel processing: This dimension considers whether you will stop processing paper manually and start using the EHR only, or if you will do both paper and electronic processes simultaneously for a period of time. Most practices prefer to do straight processing, although sometimes a hybrid environment has to exist for a period of time in which some processes will continue to be performed via paper and others performed exclusively on the computer. This is not parallel processing because you are not doing the exact same thing in both paper and computer.
- Big Bang or phases: This dimension considers whether you will implement the EHR for a certain group of users, certain departments, certain specialties, certain sites, or even certain hours of the day. Obviously, if you have a very small practice with only one to three dermatologists, you will most likely turn the system on for one, two or everyone simultaneously. However, if you have more than one site, more than one department or specialty, or even a larger group of dermatologists, you may decide to adopt a phased turnover strategy.

In considering phases in a practice with more than two dermatologists, more than one site, or more than one specialty/subspecialty, you probably want to go live first with the dermatologist, site, or specialty/subspecialty that is most interested in the EHR, least computer-phobic, and most willing to put up with minor bugs. However, contrary to popular belief, once bugs are worked out, you should consider rolling out to those least interested or who may have the most resistance. If you leave this group to the end, you will very likely "run out of steam," and they will not get the full support they need to fully adopt.

Data conversion

In addition to the chart conversion that you planned during the planning stages of your EHR, data conversion may also need to take place. Data conversion refers to the translation of electronic data that are stored in one application that are going to be migrated to another application. For example, you may have a significant number of patients scheduled for appointments in your practice management system. If you are now going to perform scheduling via your EHR or a new PMS, you may want to have this data converted from the original system to the new system. Data conversion, however, is not easy. Depending on the volume of data, it may actually be easier and more accurate to reenter data. This could be done all at once, or as old patients are scheduled for visits. Your revisit rate may help you determine what is best for you. It is also common to continue using the old PMS to work down accounts receivable rather than convert them. Some practices may find that outsourcing or even selling accounts receivable is more cost effective than attempting data conversion. Depending on what systems you already have and how your EHR will be configured, you may or may not have very much — if any — electronic data to convert.

Go-live

Go-live is the process in which the EHR becomes ready for real time use. Whatever roll out strategy you deploy, go live is the start of adopting the EHR as the means to document, communicate, and utilize information about your patients' health care.

Rehearsal

Many organizations hold a rehearsal prior to the day the EHR will go live. This is a final check that every piece of hardware is plugged in, has a fully charged battery, has fresh stack of paper, etc. The rehearsal checks to make sure that the applications work as they should, either with test data or with one or two live patients' data the day before go live. It is also the final check that you have support staff readily available to assist new users, that users have their correct identification credentials and passwords and are ready to use the system.

Support

For a large implementation vendors may supply additional staff, sometimes identified by a special color jacket or other characteristic clothing that distinguishes them as support to your new EHR. A small practice will not need such an elaborate set up, but at a minimum you will need a super user or someone from the vendor available to help during the first few days of go live. Organizations that have undergone an EHR implementation suggest it is necessary to "swarm" users with help. It is important to not underestimate the importance of this support. Given Murphy's Law that if anything can go wrong, it will, you need to be prepared. This is a stressful time for all. If clinicians find they can't use the system, it will be very difficult to regain their confidence and trust to try again. In fact, many go lives are planned so that at least on the first day or for the first few hours a vendor support person or super user is partnered with each new user.

Patient scheduling during go live/productivity

Because of the level of stress and time for new users to adjust, many practices schedule a lighter load — at least for the first several days of go live for each physician or site. Many practices express concern about losing revenue during this time, but the gains that can be quickly achieved from getting it right the first time are well worth the adjustment. It may be that the go live is scheduled for a day of the week or period of the year in which you know it is a bit slower. It is also possible to arrange the schedule so that each physician covers for another during the learning period. For example, if Dr. A goes live this week, Dr. B takes over a quarter of Dr. A's patients; then when Dr. B goes live, Dr. A takes over a quarter of Dr. B's patients. This individual can take some of the patient load and also be readily accessible for support. Extending the day so that each patient is scheduled for a bit longer time is also a possibility. Once again, because of the level of stress, it may be very tiring to lengthen a day, making it unfair to the patients as well as the physicians going live. A final option is to have new users use the EHR for only part of the day or a certain number of patients, such as using it for two patients the first day, four the next, and so forth. This may not require load reduction yet still gets users accustomed to the system. Still, too long a period of implementation often results in poor adoption than when a shorter period of time is set as the expectation for transition.

WORKSHEET #19: GO-LIVE CHECKLIST

Note: "Support staff" are those staff members who have received intensive training on the system and are the designated "go-to" people within the office. Some may refer to such individuals as "super users," although this may imply only that an individual has superior facility with the system, not necessarily special training or assigned time to support others.

Transition planning

- ☐ Set date for go-live that is during a period of time that is as light as possible.
- ☐ Inform vendor of this go-live date and use to plan all aspects of implementation schedule backwards from that. Allow for contingencies.
- ☐ Determine rollout strategy. Some offices go live with a portion of physicians at a time, or all physicians using limited functionality. For a small office, this has been found not to be as effective as once considered often resulting in duplicate effort and patient safety risks. However, go live day and for a period of time thereafter, schedules should be lightened.
- ☐ Plan to notify third-parties and other vendors (e.g., labs, transcriptionists, billers, pharmacies) of go-live date when it appears certain and request their additional support.
    - o For e-prescribing, check with the most frequently used pharmacies that they are prepared to receive electronic transmission of prescriptions and if not, request that they seek assistance from their corporate headquarters (95 percent of all retail pharmacy chains are certified for e-prescribing, but not all local pharmacies have made the transition).

Several days prior to go-live

- ☐ Review evidence of testing:
    - o Network: devices, connectivity, security.
    - o Hardware: computers, monitors, navigational devices, cables, printers, scanners, servers, universal power supply (UPS), storage, backup server.
    - o Interfaces: lab, radiology, billing/clearinghouse, practice management as applicable, other.
    - o Software:
        - Unit testing to ensure all build is complete for:
            - Screens.
            - Templates.
            - Reports.
        - System testing to ensure data pass from one function to another:
            - Tasking.
            - Ordering.
            - E-prescribing.
            - Backup.
- ☐ Check process redesign:
    - o Ensure changes to workflows and processes are documented and practiced.

- o Ensure that chart conversion process has begun
- o Review physical layout to ensure changes to workflows and processes can be accomplished without bottlenecks or traffic jams
- o Obtain sign off from each user (physicians, physician assistants, nurses, other clinicians, administrative/operational support staff) for each process for which they are responsible

☐ Review policy for use and achievement of goals with key stakeholders and re-affirm; make any necessary changes if software precludes goal accomplishment, however, also set appropriate expectations that not everything will go perfectly on go live day but that the office will be fully staffed with the vendor standing by to do everything possible to provide assistance

☐ Review appointment times/schedules to allow for EHR learning curve. Make any adjustments in patient schedules or staffing as necessary immediately:

- o All staff must be present
- o Support staff should arrive at least one-half hour early. For a large office, support staff may be instructed to wear a distinguishing color shirt, cap, or other to stand out as "go to" people
- o Mid-morning and mid-afternoon buffers for physicians to catch up have been planned
- o Mid-day "huddle" is planned to evaluate progress
- o End-of-day debriefing is planned to identify and address issues and celebrate success

☐ Training:

- o Check that every user has completed basic computer navigation, keyboarding, and other applicable training; provide refresher if necessary
- o Check that every user has completed EHR training; remediate immediately if not
- o Check that every user has a user ID and password, and that they remember them
- o Role play with every user who will be using EHR at point of care to assure process is comfortable and simulate use of EHR for a staff member playing role of patient
- o Plan with support staff what to do if things go "really" wrong
  - Have paper process back up ready in the event of downtime or significant system issues
  - Identify situations or points where go live needs to be stopped

Day prior to go-live

☐ Post signs that office is "under construction" with a new computer system and request patience for any delays

☐ Update telephone message that office is implementing a new computer system and request patience for any delays

☐ Verify schedule for go live day

☐ Verify **readiness**:

- o Computers, including tablets, PDA, etc. are plugged in or charging
- o Computers have connectivity to network:
  - All user IDs and passwords have been tested by each individual assigned a user ID and password (this verifies the user has access to this information and that the connection works)

- Any wireless "dead spots" have been identified with appropriate signage
- Secondary Internet Service Provider has been tested
- All computers, including those on wireless, can connect to applicable printers
    - Including printer designated to print prescriptions for Medicaid and Schedule II drugs on tamper-proof paper

o Printers have appropriate paper

o E-fax capability works

o Charts for next day have been pulled and prepped, including applicable data abstracted to EHR as chart conversion procedure dictates

☐ Review escalation procedures to follow in the event there is problem

o First level support staff

o Second level vendor staff onsite

o Third level vendor help desk

o Fourth level vendor management

☐ Review who within office has authority to make/approve critical system changes on the fly

☐ Plan to bring snacks and (non-alcoholic) beverages

Day of go-live

☐ All staff members arrive early, all with a sense of humor!

☐ Support staff double check all **readiness**

☐ Support staff members prepare to respond to any contingency as planned. This will mean that certain staff will not perform routine, non-patient care duties that day, but dedicate the entire day to being in a state of readiness (including being prepared to "do nothing" if all goes well)

☐ Whether or not there appears to be a need, conduct all planned buffer breaks, huddles, and de-briefing — if only to celebrate success. This reduces stress and relieves pressure to do more than what was planned

☐ Determine staff schedule for Day 2 and adjust as necessary. Go live may require several days of similar scheduling

BENEFITS REALIZATION

Lessons learned/celebration

At the end of the first day or first few days of go-live, it is a good idea to schedule a debriefing session with the new users. This should be both to learn of any issues that weren't picked up during the support for go live, as well as celebratory. Making it through the first few days is definitely a cause for celebration.

Also make sure that your EHR project manager and other key stakeholders are readily accessible and open to learning about any issues. This should not be a negative experience, but one that permits everyone to learn and make things better.

Acceptance testing

Acceptance testing is less a specific "test" than the conclusion of a period of time over which expected adoption has occurred, end-of-month reports are produced correctly, accounts receivable is checked as accurate, etc. As you negotiated the contract, there should have been specific criteria established for what constitutes "acceptance" and hence the final payment. This process should be carefully performed with all stakeholders signing off on the respective parts. While it is not that you cannot get any help from the vendor in the future, the acceptance of the system as "fully installed" or "acceptable" puts the practice in a different position with respect to leveraging help. Acceptance testing ensures that:

- ☐ All modules have been implemented and successfully tested as planned.
- ☐ All outstanding issues have been resolved to the organization's satisfaction.
- ☐ User adoption rates reflect goals.
- ☐ User satisfaction rates reflect goals.
- ☐ Patient satisfaction rates reflect goals.
- ☐ Return on investment is demonstrated.

Benefits analysis

Benefits realization is the formal process of determining if benefits from the EHR meet the expectations. An obvious benefit will be when dermatologists earn the meaningful use incentives. But, there are many other benefits, despite that benefits realization is more difficult to perform than the original cost/benefit analysis or value proposition.

Some of the issues that present themselves in attempting a rigorous benefits realization include the length of time it takes to implement and achieve sufficient adoption to measure the impact. There may be other significant factors that contribute to making the metrics no longer applicable, or if applicable, no longer feasible. However, there may also be factors that have come into being that permit better results.

Most practices, however, find that some form of benefits realization is helpful — not only to celebrate their successful accomplishment, but to identify where benefits may not be achieved as expected so as to plan some course correction. The Key Clinical Processes Tool used to establish goals can also be used to record benefits realization.

WORKSHEET #20: ACCEPTANCE TESTING CHECKLIST

Key processes	Baseline metrics	Goals	Achievement period 1	Achievement period 2
1. Pre-visit				
2. Check-in				
3. Patient intake				
4. Chart review				
5. Clinical documentation				
6. Care planning				

ADDITIONAL RESOURCES

The following external, third-party resources are provided on an informational basis only, and should not be construed as either a recommendation or endorsement by either the Academy or its staff. As each dermatology practice's EHR needs will vary, practices interested in learning more about the following educational resources should assess them and determine their utility.

Industry resources

The American Health Information Management Association (AHIMA) has available a number of practice standards for areas that play an integral role in the transition from paper to electronic health records. To learn more about their currently available practice standards, visit www.ahima.org.

The American Medical Association (AMA) offers a number of free health information technology resources and tools at www.ama-assn.org.

The Certification Commission for Health Information Technology (CCHIT) (www.cchit.org/) is an independent, nonprofit organization recognized by the federal government as an Office of the National Coordinator-Authorized Testing and Certifying Body (ONC-ATCB). CCHIT offers two forms of certification: that for meaningful use and one that is more enhanced ("CCHIT Certified®"). The CCHIT Certified® certification includes a rigorous inspection of an EHR's integrated functionality, interoperability and security. Products are tested against criteria developed by the Commission's broadly representative, expert work groups. This program is intended to serve health care providers looking for greater assurance that a product will meet their complex needs. As part of this independent evaluation, successful use is verified at live sites and product usability is rated. This program also continues to evolve to reflect the state of the art and is expected to expand to cover medical specialties, additional care settings and patient populations. The Academy continues to advocate for dermatology-specific elements, features, and functions and continues to engage with CCHIT.

- CCHIT has available a ***Physician's Guide to CCHIT Certification*** (www.cchit.org/choose/index.asp) to help physicians and practice managers understand the benefits they can expect when EHR products have been certified by CCHIT.

Other ONC-ATCB organizations include the Drummond Group (www.drummondgroup.com) and InfoGard (www.infogard.com)

The ONC's Certified HIT Product List (CHPL) (http://onc-chpl.force.com/ehrcert) provides the authoritative, comprehensive listing of complete EHRs and EHR modules that have been tested and certified under the Temporary Certification Program maintained by the Office of the National Coordinator for Health IT (ONC).

eHealth Initiative EHR Master Quotation Guide The purpose of the *eHealth Initiative Master Quotation Guide© ("Guide")* is to assist small- to medium-sized medical practices in comparing the costs of electronic health record (EHR) vendors. It is intended to help physicians, clinicians, practice administrators, and other decision-makers compare quotations and bids from vendors for EHR software, implementation and training services, as well as support and maintenance. To view the guide, visit www.providersedge.com/ehdocs/ehr_articles/eHealth_Initiative-EHR_Master_Quotation_Guide.pdf.

The Healthcare Information and Management Systems Society (HIMSS) is the health care information technology industry's membership organization focused on providing information on the use of HIT and management systems. Visit HIMSS's homepage at www.himss.org to view their **"Topics & Tools"** menu for more information on HIT and EHR.

Health Level Seven (HL7) is an American National Standards Institute (ANSI)-accredited standards-developing organization (SDO) operating in the HIT arena. Most SDOs produce standards (sometimes called specifications or protocols) for a particular health care domain such as pharmacy, medical devices, imaging or insurance (claims processing) transactions. Health Level Seven's domain is clinical and administrative data. To view their **"Resources"** menu, visit www.hl7.org/.

Physicians Practice is a monthly practice management periodical with a number of free online resources. To view their technology resources and tools, visit www.physicianspractice.com/index/fuseaction/resourceGuide.main/categoryID/9.htm.

The "Safe Harbor: A Physician's Guide to EHR Donations" is a white paper is designed to help physicians and administrators better understand the opportunities available to finance the transition from paper-based records to EHR systems. To learn more, visit www.centerforhit.org/PreBuilt/PhysiciansGuidetoStark.pdf.

Third-party professional services

The **AC Group Inc.**, is a health care technology consulting and research firm. To view their free online resources, visit www.acgroup.org/physicianservices.html.

The **Coker Group** is a firm providing HIT consulting services. To view their free list of technology resources, visit www.cokergroup.com.

The **EMR Update** (www.emrupdate.com) contains blogs, forums and a number of resources on EHR.

The **EHR Selector (**www.ehrselector.com/ehrselector/EMRToolkit/ASP/Default.asp) is an online subscription service tool designed to help medical practices assess their needs, identify and narrow their EHR selection.

iNTERFACEWARE products manual provides information about all of iNTERFACEWARE's products and general information about the HL7 protocol. To learn more, visit www.interfaceware.com/manual/index.html. Their manual is intended for software developers, network administrators, and others who are familiar and interested in a complete HL7 software development toolkit or HL7 integration solution.

Margret\A Consulting, LLC is a consulting firm providing assistance on health information management and systems issues. To learn more, visit www.margret-a.com/.

GLOSSARY

Acceptance testing: Final review during EHR implementation to ensure that all tests have been performed and all issues have been resolved, usually triggers the final payment for the system and when a maintenance contract becomes effective.

Aggregate data: Data extracted from individual health records and combined to form de-identified information about groups of patients that can be compared and analyzed.

Ambulatory Care Quality Alliance or AQA Alliance (AQA): Originally known as the Ambulatory Care Quality Alliance, the coalition is now known as the AQA alliance because its mission has broadened to incorporate all areas of physician practice. A collaborative organization created to lead an effort for determining, under the most expedient timeframe, how to most effectively and efficiently improve performance measurement, data aggregation, and reporting in the ambulatory care setting.

Application service provider (ASP): A third-party service company that delivers, manages, and remotely hosts standardized applications software via a network through an outsourcing contract based on fixed, monthly usage or transaction-based pricing.

Authentication: 1.The process of identifying the source of health record entries by attaching a handwritten signature, the author's initials or an electronic signature 2. Proof of authorship that ensures, as much as possible, that log-ins and messages from a user originate from an authorized source.

Benchmarking: An analysis process based on comparison.

Certification Commission for Healthcare Information Technology: A voluntary, private-sector organization created to certify HIT products, CCHIT has first focused on ambulatory electronic health record (EHR) products for the office-based physician and provider. CCHIT continues to certify more ambulatory EHR products based on criteria for: Functionality — features and functions that meet basic requirements; Interoperability — enabling standards-based data exchange with other sources of health care information; and Security — ensuring data privacy and robustness to prevent data loss.

Change control: A formal process of tracking every request for a change in a system, determining its impact on other elements of the project or the system itself, obtaining the necessary approvals or authorization for the change to be made, keeping track of the change in the event a future action is dependent on understanding what has been changed, and then carrying out the change with the necessary resources.

Change management: The formal process of introducing change, getting it adopted, and diffusing it throughout the organization.

Chart conversion: An EHR implementation activity in which data from the paper chart are converted into electronic form.

Clinical decision support: A special subcategory of clinical information systems that is designed to help healthcare providers make knowledge-based clinical decisions.

Clinical messaging: The function of electronically delivering data and automating the work flow around the management of clinical data.

Clinical trials: Controlled research studies involving human subjects that are designed to evaluate prospectively the safety and effectiveness of new drugs, tests, devices, or interventions.

Computerized physician order entry (CPOE): Systems that allow physicians to enter medication or other orders and receive clinical advice about drug dosages, contraindications, or other clinical decision support; also called computerized provider order entry.

Connectivity: The ability to connect to another application to view information, potentially retrieve a file or image, and/or interact with the other application directly.

Continuum of care: The range of healthcare services provided to patients, from routine ambulatory care to intensive acute care.

Controlled vocabularies: Predefined sets of terms and their meanings that may be used in structured data entry or natural language processing to represent expressions, examples include the Systematized Nomenclature of Medicine (SNOMED) or the International Classification of Diseases, version 9 (ICD-9).

Conversion strategy: An organization's plan for changing from a paper-based health record to an electronic health record.

Central Processing Unit (CPU): sometimes just called processor, is a description of a class of logic machines that can execute computer programs.

Dashboard: Reports of process measures to help leaders know what is currently going on so that they can plan strategically where they want to go next; sometimes called scorecards.

Data comparability: The standardization of vocabulary such that the meaning of a single term is the same each time the term is used in order to produce consistency in information derived from the data.

Data dictionary: A descriptive list of the data elements to be collected in an information system or database whose purpose is to ensure consistency of terminology.

Data dumps: A database dump contains a record of the table structure and/or the data from a database. A database dump is most often used for backing up a database so that its contents can be restored in the event of data loss. Corrupted databases can often be recovered by analysis of the dump.

Data set/s: A list of recommended data elements with uniform definitions that are relevant for a particular use.

Decision support: A term that generally refers to information that supports decision-making.

Defaults: The status to which a computer application reverts in the absence of alternative instructions.

Dependencies: The relationships between tasks in a project plan.

Structured data: Data that represent separate and distinct values or observations; that is, data that contain only finite numbers and have only specified values.

Due diligence: The actions associated with making a good decision, including investigation of legal, technical, human, and financial predictions and ramifications of proposed endeavors with another party.

Electronic health record (EHR) or Electronic medical record (EMR): A form of computerizing the paper medical record in which information is stored in documents instead of by individual data elements. EHR is the term now used by the federal government, interoperability standards setting organizations, and product certification bodies to describe a computerized system used to capture data from multiple sources that aids in clinical decision support at the point of care. EHR focuses on more than just replacing the paper chart–by providing enhanced a platform for improved clinical utility. Vendors may also refer to EHRs as EMR systems.

Encryption: The process of transforming text into an unintelligible string of characters that can be transmitted via communications media with a high degree of security and then decrypted when it reaches a secure destination.

End user: Person who uses the computer.

E-prescribing: In the ambulatory environment, an application that provides decision support for and enables the writing of a prescription to be transmitted electronically to a retail, community, or mail-order pharmacy.

Evidence-based medicine: Healthcare services based on clinical methods that have been thoroughly tested through controlled, peer-reviewed biomedical studies.

E-visit/s: An e-mail encounter with a patient which is reimbursable, either directly by the patient or under a benefit plan.

File Transfer Protocol (FTP): A network protocol used to transfer data from one computer to another through a network, such as over the Internet.

Firewall: A computer system or a combination of systems that provides a security barrier or supports an access control policy between two networks or between a network and the Internet.

Gantt chart: A graphic tool used to plot tasks in project management that shows the duration of project tasks and overlapping tasks.

Hacker: An individual who bypasses a computer system's access control by taking advantage of system security weaknesses and/or by appropriating the password of an authorized user.

Health information exchange (HIE): The seamless exchange of health information electronically between providers and others through a data sharing agreement.

Health information technology or healthcare information technology (HIT): Technologies related to health information created or received by a healthcare provider, health plan, public health authority, employer, life insurer, school or university, or healthcare clearinghouse and relates to the physical or mental health of an individual, the provision of healthcare to an individual, or payment for the provision of health care.

Human-computer interface: The device used by humans to access and enter data into a computer system, such as a keyboard on a PC, personal digital assistant, voice recognition system, and so on.

Hybrid record: A health record that is includes both paper and electronic elements.

Icon/s: Type of symbol shown on a computer screen used as an indicator.

Implementation: Post-sales process of guiding a client from purchase to use of the software or hardware that was purchased.

Infrastructure: The underlying framework and features of an information system.

Inputs: Data entered into a hospital system (for example, the patient's knowledge of his or her condition, the admitting clerk's knowledge of the admission process, and the computer with its admitting template are all inputs for the hospital's admitting system).

Integration: Bringing together of component subsystems into one system and ensuring that the subsystems function together as a system.

Integrity: The state of being whole or unimpaired.

Interface: The zone between different computer systems across which users want to pass information (for example, a computer program written to exchange information between systems or the graphic display of an application program designed to make the program easier to use).

Interoperability: The ability, generally by adoption of standards, of systems to work together.

Issues management: The process of resolving unexpected occurrences (for example, the late delivery of needed supplies or an uncorrected system problem).

Managed care: 1. Payment method in which the third-party payer has implemented some provisions to control the costs of health care while maintaining quality care 2. Systematic merger of clinical, financial, and administrative processes to manage access, cost, and quality of health care.

Meaningful Use: Term used to refer to the Federal incentive program for making meaningful use of certified EHR technology.

Metadata: Metadata refers to data about data — what decision support rules apply to this action, what user name and password was associated with this entry, etc.

Metrics: Measurements.

Migration path: A series of steps required to move from one situation to another.

Minimum necessary: Use standards, guidelines, or policies set in place to ensure that a patient's personal health information is only used when absolutely needed.

Modeling: A process assessment technique that describes existing processes so that conceptualization can occur and documents redesigned processes for future use (that is, implementation).

Navigational device: Equipment that may be added to a computer workstation to help the user move around the data entry screen, such as a mouse, joy stick, microphone, etc.

Outputs: The outcomes of inputs into a system (for example, the output of the admitting process is the patient's admission to the hospital).

Outsourcing: The hiring of an individual or a company external to an organization to perform a function either on site or off site.

Payback period: A financial method used to evaluate the value of a capital expenditure by calculating the time frame that must pass before inflow of cash from a project equals or exceeds outflow of cash.

Pay-for-performance (P4P): A program being sponsored by some health plans to provide incentives to healthcare organizations that can demonstrate improvement in the quality of patient care, often through the use of EHR and other health information technology. Also called pay-for-quality (P4Q).

Physician Quality Reporting Initiative (PQRI): The Centers for Medicare and Medicaid Services' physician quality reporting system, which includes an incentive payment for eligible professionals who satisfactorily report data on quality measures.

Personal health record: Electronic or paper health records maintained and updated by individuals for themselves.

Pharmacy benefits managers: Companies that manage the complex rules for payers associated with benefit plans to pay for prescription drugs.

Picture Archiving and Communication Systems (PACS): Computers or networks dedicated to the storage, retrieval, distribution and presentation of images. The medical images are stored in an independent format.

Platform/s: Combination of hardware and operating system on which application programs can run.

Point of care (POC): The place or location where the physician administers services to the patient.

Practice management system (PMS): Software designed to help medical practices run more smoothly and efficiently.

Process redesign: The second step in a quality improvement process in which the findings in the research phase are identified, focused data from the prioritized problem areas are collected, a flowchart of the redesigned process is created, policies and procedures are developed, and staff are educated on the new process.

Project management: A formal set of principles and procedures that help control the activities associated with implementing a usually large undertaking to achieve a specific goal, such as an information system project.

Protected health information (PHI): Under HIPAA, all individually identifiable information, whether oral or recorded in any form or medium, that is created or received by a healthcare provider or any other entity subject to HIPAA requirements.

Registry: A collection of care information related to a specific disease, condition, or procedure that makes health record information available for analysis and comparison.

Report writer: A tool used to access data in a database structure and develop meaningful tables, graphics, and other forms of reports.

Request for information (RFI): A written communication often sent to a comprehensive list of vendors during the design phase of the systems development life cycle to ask for general product information.

Request for proposal (RFP): A type of business correspondence asking for very specific product and contract information that is often sent to a narrow list of vendors that have been preselected after a review of requests for information during the design phase of the systems development life cycle.

Retention: With regard to the legality of electronic health records, the term used to refer to the fact that electronic data follow required retention schedules and can be retrieved from the electronic media on which they are stored.

Return on investment (ROI): The financial analysis of the extent of value a major purchase will provide.

Sarbanes-Oxley: The Sarbanes-Oxley Act of 2002 (also known as the Public Company Accounting Reform and Investor Protection Act of 2002 and commonly called SOx or Sarbox; is a United States federal law enacted on July 30, 2002 in response to a number of major corporate and accounting scandals.

Server/s: Types of computers that make it possible to share information resources across a network of client computers.

Smart text: A means of documenting information in an EHR using a series of macros or codes representing the desired text.

Source code: The collection of files needed to convert from human-readable form to some kind of computer-executable form.

Speech recognition: Situation where speech is converted to text on a screen.

Standards development organization (SDO): A private or government agency involved in the development of healthcare informatics standards at a national or international level.

Super user/s: An individual who is a member of the office who receives special training on use of the EHR and who is then made responsible for training other users.

System build: The creation of data dictionaries, tables, decision support rules, templates for data entry, screen layouts, and reports used in a system.

Templates: Patterns used in computer-based patient records to capture data in a structured manner.

Train-the-trainer: A method of training certain individuals who, in turn, will be responsible for training others on a task or skill.

Turnover strategy: A series of phases that identify the sequence of steps in EHR implementation with regard to various inpatient units, departments, physicians or other categories of users, and sites.

Virtual Private Network (VPN): A computer network in which some of the links between nodes are carried by open connections or virtual circuits in some larger network (e.g., the Internet) instead of by physical wires.

Warehouses: Databases that make it possible to access data from multiple databases and combine the results into a single query and reporting interface.

Web portal: A website entryway through which to access, find and deliver information.

Web services architecture: Use of Web-based tools and design styles for creating information technology applications that enables exchange of data and use of processes across the applications.

Workstation: A computer designed to accept data from multiple sources in order to assist in managing information for daily activities and to provide a convenient means of entering data as desired by the user at the point of care.

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