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As a result of industry pressure, pay-for-performance initiatives, AHRQ quality reporting measures and ARRA stimulus funding, many physician practices will be compelled to adopt an EHR system within the next two years. When purchasing an EHR and/or a practice management (PM) software package, it is critically important to accurately forecast the total cost of ownership for each EHR software package being considered. These costs can include software licensing fees, implementation support, infrastructure upgrades and ongoing maintenance fees. This project seeks to illuminate and educate healthcare professionals on the logic behind EHR pricing models while simultaneously providing individualized software recommendations for practicing clinicians based on objective vendor rankings.

## Headings:

Clinical Informatics

Electronic Health Records

Electronic Medical Records

Practice Management Software

# DESIGNING AN INTELLIGENT EHR SELECTION TOOL

by  
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Approved by

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## Introduction

When it comes to Electronic health records (EHRs), cost estimates can be notoriously hard to project and are a consistent source of anxiety for physicians and practice administrators alike. These issues are created by the need to price not only a software license, but to also integrate the costs of computing hardware, network upgrades, chart conversion, staff training, implementation, workflow redesign, and on-going maintenance. The cost implications behind different financing options such as upfront purchase, monthly payment plans can also complicate the decision for practitioners. As of 2011, healthcare practices should expect an average initial investment of \$15,000 to \$30,000 per physician for a full-fledged EHR/PM solution.

Electronic health record systems can improve the quality of patient care and decrease medical errors, but few studies have documented their long-term financial effects. The purpose of this study was to produce a web interface that aids clinicians in selecting a software package from among the thirteen highest-rated ambulatory EHR software vendors (using combined KLAS and AAFP ratings) and then provide cost estimates and individual feature ratings. These thirteen systems were also screened to ensure 2011 CCHIT-certification for meaningful use (stage 1), a user install-base of at least 400 physician practices, and accessible cost data. The final product of this research is a user-searchable web-database documenting various EHR cost metrics projected out over a five year total cost of ownership model and a weighted

algorithmic selection tool that ranks specific EHR software packages based on user-defined criteria. The underlying research hypothesis is that a flexible and realistic EHR selection tool can be implemented using primary data from published research studies, member surveys from professional medical organizations and vendor-supplied cost metrics.

## **Literature Review:**

Electronic health records (EHRs) for the office setting have been available now for over 10 years, yet adoption by most private practices has been slow. It is estimated that, as recently as 2009, only about 10% of physician offices utilized some form of computerized records. Practice management systems for appointment scheduling and billing have been in place for over 20 years and their adoption is much more widespread. The integration of a physician's practice management systems with an EHR can potentially create a complex and prohibitively expensive software package. With recent government incentives made available for obtaining and making meaningful use of an EHR, there is substantial pressure on smaller physician practices to adopt a health records software package.

### ***Financial Incentives/Government Regulation***

The American Recovery and Reinvestment Act of 2009 created an incentive system to reward eligible Medicare providers for purchasing an approved EHR. The

software must be certified by CCHIT (Certification Commission for Healthcare Information Technology), and the physician must make “meaningful use” of the product. Meaningful use defines what functionality must be present and stipulates that 22 objectives be met. These objectives include access to patient-specific educational resources, clinical summaries for patients by individual encounter, providing patients with an electronic copy of their records, maintaining an up-to-date problem list, electronic prescribing, and exchanging key clinical information among providers. Early adoption of EHR technology will be rewarded as early as Fall 2011, with payments of up to \$20,000 per physician. Moreover, a physician fully utilizing an EHR in 2011 can receive a total of \$44,000 over the next 4 years. Despite these incentives, numerous financial outlays concerning hardware purchases and software maintenance will not be reimbursed.

## **Methodology:**

There are over 400 EHR vendors, and each employs a slightly different strategy to create the correct electronic workflow and the method for encounter documentation. Some vendors have strong applications for office flow, and others have strong processes for medication management. Clinical documentation options for each vendor will also be somewhat varied. However, despite the system, documentation must be flexible enough to allow for rapid data entry and customizable enough to meet the potentially unique workflows of each specific medical practice. To aid in differentiating between various EHR systems, the selection tool will

evaluate each software offering in terms of features and cost data.

### ***Incorporating Existing Paper records***

In conjunction with vendor selection and implementation planning, the process of digitizing existing paper records must be considered. Most practices have a large number of existing patient charts that are vital to patient care and this patient data must be available to the clinician in the new EHR system. The practice will also want to review their paper chart organization to decide how to scan the charts into electronic templates. Attempting to scan each page individually is too expensive, too time consuming, and not clinically necessary. Therefore, with the right implementation strategy in place to manage existing records, the conversion to an EHR will be much smoother and cost effective.

### ***EHR Costs***

Costs for purchasing and implementing an EHR system can vary widely. This could be as low as a \$5,000 one-time fee for modular software, to well over \$200,000 for more integrated EHR/PM systems for larger practices. These costs can also vary from upfront software purchase with additional maintenance fees to a monthly per-doctor fee with all upgrades included. Research has shown that the greatest financial return is only realized when a practice leverages a software packages that integrates billing, scheduling, and patient health data. Furthermore, this EHR should be able to

interface with the local RHIO and exchange data bi-directionally. However, the costs involved with implementing such a system can be significant. In general, the proprietary systems from software vendors contain fixed feature sets creating limited room for price negotiation. Similarly, the software maintenance agreement costs are fixed. Other costs such as computer hardware, third-party software and implementation costs allow for more liberal contract negotiations. When done correctly, however, the costs to acquire and maintain an EHR in today's market are a necessary stepping-stone to creating a more profitable, efficient practice.

### ***Client-Server vs. ASP***

When implementing an EHR that is capable of satisfying ARRA stimulus requirements and adding value to a medical practice, cost and usability are important concerns. There are currently multiple hosting options available to clinicians. A practice can host the servers on-site and run a vendor-supported EHR (Client-Server) or use a web-based EHR that is hosted and supported entirely off-site (SaaS). If the EHR software is hosted on-site, additional back-up procedures and IT support must be in place. The practice must also have the technical expertise to perform regular upgrades and maintenance on “shadow” servers before releasing them to “live”, mission-critical servers. Numerous studies have shown that based on the complexity of today's software it is usually not cost-effective for practices with fewer than 5 providers to host their own EHR.

Furthermore, the decision about whether to choose a client-server model or a



web-accessible software package can be made more intelligently after using one of the EHR-readiness tools that are available from ACP, HIMSS and other organizations. Conducting a readiness assessment of a physician practice whether online or on paper is a critical first step in the software selection process. To further complicate the situation, many medical offices are already using practice management software that includes accounts payable, payroll and intelligent medical coding applications. Final cost projections must include the cost of developing interfaces between integrating existing software with new servers and managing existing maintenance contracts. EHR/PM hosting as well as hosting of the other necessary applications is usually done on a per-user per-month basis. These costs can be compared with the costs of keeping the system in-house. ASP Vendors can limit some of the upfront costs, and some will even defer the implementation fee, but over time the costs can exceed the traditional client-server model.

The proposal seeks to perform a cost-benefit analysis of EHR usage by primary care physicians in an ambulatory-care setting and develop a pricing/features model. The primary outcome measure was net financial costs or benefits per provider in observed implementations over a 5-year period the cost of installing a client server software package will be greater than a hosted ASP platform. The cost/benefit model was developed from the perspective of the health care practice using traditional paper-based medical records vs. and EHR as a baseline indicator. The resulting costs and benefits will then be tabulated and projected for the three different EHR platforms. The chief variables driving system costs will be hardware, software and

support. Research has shown that the primary financial incentives will be driven by lower drug expenditures, improved utilization of radiology tests, improvements in charge capture, and decreased billing errors. These factors can be applied to the supplied information about the medical practice that will be input into the pricing model. These variables include the number of physicians, patient visits, self-pay/private insurance/CMS patient mix, support staff, percentage of imaging and lab orders and training budget. Furthermore, the EHR model will reflect the fact that the cost benefits increase as more features are used and as the staff overcomes the learning curve for the software with time.

Selection of the three separate EHR platforms will be based on current feature set, future interoperability, customer base and financial factors. On a more granular level, the current feature set will be judged from the standpoint of functionality and usability. Furthermore, the functionality will be judged by the CCHIT guidelines for clinical information retrieval, patient documentation, prescriptions ordering, secure messaging capability and medical coding expertise. Usability will then be ranked subjectively based on ease of customization, accessibility and integration. Finally, the financial analysis component of the project will not only look at software licensing and implementation costs but also at support contracts, modular pricing and flexibility. For the purposes of this study I will limit my EHR selection to three offerings, but the methodology could easily be used as a model for ranking numerous potential EHR vendors based on the criteria above.

In order to obtain hard data about the realities behind EHR installation costs

and implementation and support concerns, I will be synthesizing the literature on case studies from numerous solo and small-group primary care practice implementations. These case studies will be selected from existing literature and focus on research with concrete financial outcomes over a one to three year period. The chief selection criteria will limit useable studies to those focused on primary care practices had transitioned from paper records to electronic. These cost numbers will be validated against vendor pricing strategies and projected cost figures published by well-known HIT organizations. Data will be stored on practice operations, EHR-related hardware and software packages, selection and implementation processes, costs, financial benefits and survey ratings by feature for each EHR. These findings will be used to develop metrics that can be used to project financial and implementation outcomes for each specific EHR software suite. The final list of vendors meeting all selection criteria include: *Allscripts MyWay & Enterprise EHR, Amazing Charts, Aprima iMedica, AthenaClinicals, Cerner, eClinicalWorks, eMDs, GE Centricity, Greenway, McKesson, NextGen, Sage and SOAPware.*

After developing the cost-benefit EHR selection algorithm, local physicians will be invited to test the system and offer feedback. Therefore, the system can be refined over time by inputting actual financial information and reconciling that with predicted values. This should produce a model that becomes stronger with widespread use and yields timely, consistent projections.

## **Project Limitations:**

The EHR selection tool is predominantly based on qualitative data and therefore could have multiple weaknesses. While the data was obtained from an expansive number of implementations from numerous medical organizations, the limited availability of pertinent information restricted the sample to a small subset of vendors. Furthermore, this data set and pricing/selection models will be specifically tailored towards small, primary-care practices (<10 physicians) and will have limited generalizability to larger healthcare institutions. Therefore, the financial metrics and EHR ratings could be heavily biased in favor of certain implementations. However, this is acceptable since the model is meant to provide a baseline of information for physicians and practice administrators, which at the present time is virtually non-existent in an actionable, codified format. Moreover, practices that received publication and published the results from their studies could have been biased towards reporting positive findings and therefore could limit the reporting of negative implementations. The project is also tailored toward providing recommendations to practices that are seeking to transition from paper to an integrated EHR/PM solution. The results are less applicable to practices that are seeking to adopt only a new EHR system while maintaining an interface between a legacy PMS. Furthermore, medical practices that are seeking to de-install their current EHR or transition to another EHR vendor will find the tool highly useful since they will be aware of what functionality their current system lacks and can compare ratings from their colleagues on other systems.

Studies like those researched here also have a tendency to be biased towards over-exuberance about the latest and greatest software. Therefore, the physicians surveyed could be motivated to look for positive outcomes due to their sizeable capital investments. This would result in the financial costs being under-estimated or the financial benefits being inflated.

However, significant research points to the expanded proliferation of EHRs into increasingly smaller practices as a sign that even the smallest clinics can benefit from an effective EHR. This market reality and increased usage of pay-for-performance could lead to greater economies of scale in implementations and support. To reiterate, the data used for the project is mostly self-reported and therefore might be overly positive or not capture some negative EHR-related effects on productivity. The EHR selector is meant to act as a tool to educate and empower clinicians about the nuts and bolts of software purchasing. This will hopefully enable clinicians who are wary of adopting a new and expensive software package to have realistic cost expectations and the information necessary to choose an EHR that accurately meets the needs of their specific practice. The project also highlights the need for further research into workflow redesign issues, usability concerns and implementation strategies.

## **Conclusions:**

After performing the literature review and speaking to physicians and experts in the field, various platforms have emerged as front-runners in the EHR segment. Since the practices will be getting anywhere from \$20,000-40,000 per physician, HITECH has made it possible for smaller practices to make the leap to an EHR system with much

less investment. Furthermore, there is a preponderance of research on implementation strategies and expenditures for the better-known vendors than the smaller, upstart companies. The key determiner about what EHR is optimal for a specific clinic will hinge on what current software systems are in place, installation costs, features, user interface/usability and customizability. One of the main goals of the project is to develop a working model that allows physicians to determine which features they are willing to forgo in order to realize significant cost savings. Additionally, the model offers insight into vendor pricing models in terms of software leasing, implementation, training, consulting, support and maintenance. The EHR selection tool is not capable of displaying up-to-the-minute pricing projections or automatically selecting a specific EHR software package, but it instead works to inform physicians about the process of implementation and empower them with specific ratings and cost information that can be used as valuable bargaining tools when creating Requests for Information (RFI).

Ultimately, not all the benefits of an electronic medical record can be measured in financial terms. Some other benefits include improved quality of care, reduced medical errors, and better access to patient information. A cost-benefit analysis is only one key part of a complete study of the effects of implementing an EHR. Also, for the EHR selection and installation to be successful, the medical record must be part of the goal of clinical system integration. Furthermore, the EHR/PM should enable small medical practices to complete financial, scheduling, ordering, charting activities equally well. The inherent difficulty with the project arises that in reality,

few software systems are equally adept at completing practice management and patient-related tasks. I undertook this multi-faceted project to provide an actionable model for practicing physicians such that they could better understand what characteristics constitute a superior EHR and to document realistic cost models over the short (1 year) and long term (5 years). I have attached an appendix documenting the factors behind the cost projections and the numerous features on which the EHR packages have been ranked by practicing physicians. Research points to the reality that small practices (1-3 physicians) are usually better served selecting an ASP hosted model to avoid high startup costs for hardware and software. Physicians have been reluctant to switch from paper records while the rest of the world has digitized nearly everything imaginable, the new federal legislation has acted as the motivation necessary to force many laggards to modernize.

### **Qualifications:**

I do not wish to report any conflicts of interest concerning this study and I am not receiving any vendor compensation. I feel uniquely qualified to conduct this research and report on pricing models due to my own professional experience as an EHR implementer in ambulatory and hospital settings. I have also completed graduate-level research in both HIT policy and worked on various projects related to electronic health records. The research itself would not have been possible without the numerous professional connections I maintain with practicing physicians and organizations such as MGMA, HIMSS and ACHE.

## Bibliography:

Adler, Kenneth G. Electronic Medical Records. *Humana Press*. 2011

Shekelle PG, Morton SC, Keeler EB. Costs and benefits of health information technology. *Evid Rep Technol Assess (Full Rep)* 2006;132:1–71.

Biswas, R., Maniam, J., Lee, E. W. H., Gopal, P., Umakanth, S., Dahiya, S., & Ahmed, S. (2008). User-driven health care: answering multidimensional information needs in individual patients utilizing post-EBM approaches: an operational model. *Journal of Evaluation in Clinical Practice*, 14(5), 750-760.

Chaudhry, B., Wang, J., Wu, S., Maglione, M., Mojica, W., Roth, E., Morton, S. C., et al. (2006). Systematic Review: Impact of Health Information Technology on Quality, Efficiency, and Costs of Medical Care. *Annals of Internal Medicine*, 144(10), 742 -752.

Fleming, N. S., Culler, S. D., McCorkle, R., Becker, E. R., & Ballard, D. J. (2011). The Financial And Nonfinancial Costs Of Implementing Electronic Health Records In Primary Care Practices. *Health Affairs*, 30(3), 481 -489. doi:10.1377/hlthaff.2010.0768

Gallego, A. I., Gagnon, M.-P., & Desmartis, M. (2011). Assessing the Cost of Electronic Health Records: A Review of Cost Indicators. *Telemedicine and e-Health*, 16(9), 963-972. doi:doi:10.1089/tmj.2010.0014



Goldzweig, C. L., Towfigh, A., Maglione, M., & Shekelle, P. G. (2009). Costs And Benefits Of Health Information Technology: New Trends From The Literature. *Health Affairs*, 28(2), w282 -w293. doi:10.1377/hlthaff.28.2.w282

Goroll, A. H., Simon, S. R., Tripathi, M., Ascenzo, C., & Bates, D. W. (2009). Community-wide Implementation of Health Information Technology: The Massachusetts eHealth Collaborative Experience. *Journal of the American Medical Informatics Association*, 16(1), 132 -139. doi:10.1197/jamia.M2899

Hunter, R. L. (n.d.). Health information technology costs and patient safety concerns. *Osteopathic Family Physician, In Press, Corrected Proof*. doi:doi: DOI: 10.1016/j.osfp.2011.02.001

Lorenzi, N. (n.d.). How to successfully select and implement electronic health records (EHR) in small ambulatory practice settings. *BMC Medical Informatics & Decision Making*, 9(15). Retrieved from <http://www.ncbi.nlm.nih.gov.libproxy.lib.unc.edu/pmc/articles/PMC2662829/>

Lowes, R. (2007, October 20). Avoiding EHR sticker shock: here's how to dissect EHR bids to make sure you're getting the best deal.(electronic health record)(Editorial). *Medical Economics*, 84(20), 41(4).

Miller, R. H., West, C., Brown, T. M., Sim, I., & Ganchoff, C. (2005). The Value Of Electronic Health Records In Solo Or Small Group Practices. *Health Affairs*, 24(5), 1127 -1137.

Trivedi, M. (2009). Barriers to implementation of a computerized decision support system for depression: an observational report on lessons learned in "real world" clinical settings. *BMC Medical Informatics & Decision Making*, 9, 6-14.

What Do We Know About Financial Returns on Investments in Patient Safety? A Literature Review.  
(2005,  
December).<http://www.ingentaconnect.com/content/jcaho/jcjq/2005/00000031/00000012/art00006>

List of CCHIT Vendors: <http://www.cchit.org/products/Ambulatory>

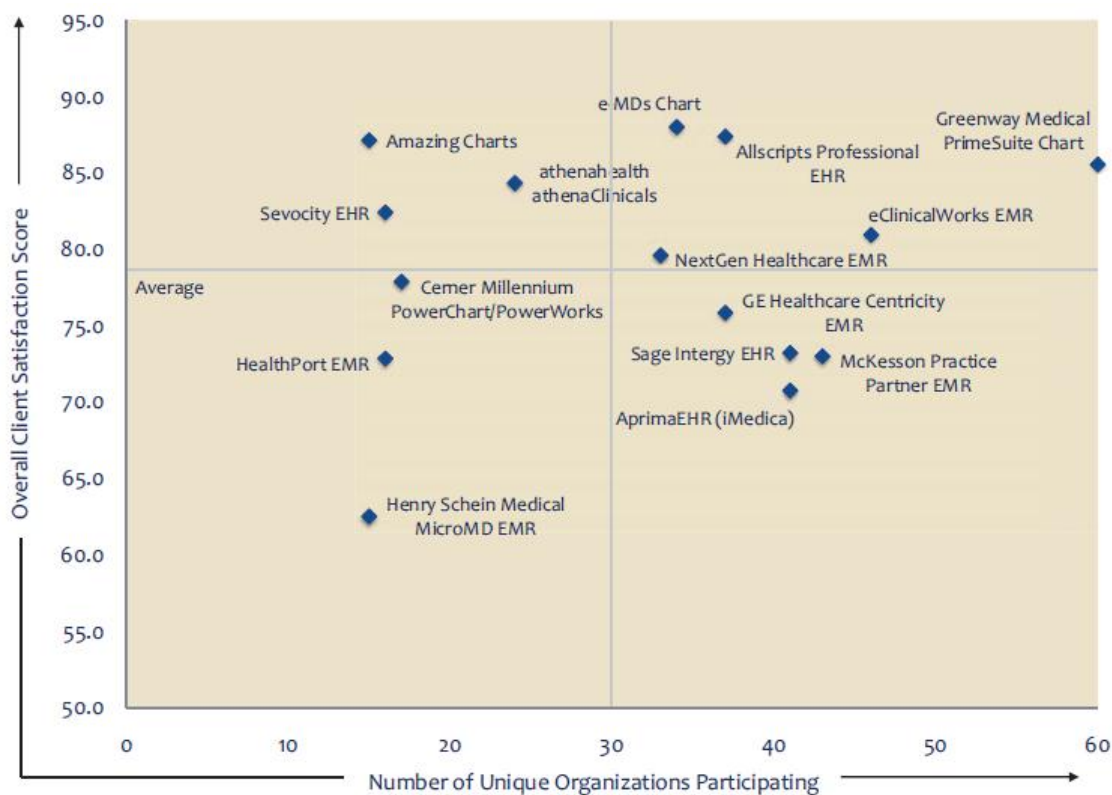
## Appendix:

Sections from *Best in KLAS* Report. December 2010

### Ambulatory EMR (2-5 Physicians)

Software solutions for clinic and practice management, providing charting, orders, prescriptions, and/or other EMR functionality.

Rank	Previous Rank	Vendor/Product	Overall Score	Rating % Change	Confidence Level	Disclosure Level	Buy Again	Product Quality Rating
Current Products <sup>§</sup>								
1	4	e-MDs Chart	88.0	+4%	✓✓✓	Majority	97%	8.1
2	3	Allscripts Professional EHR	87.4	+3%	✓✓✓	Limited	97%	8.1
3	2	Amazing Charts	87.1	-1%	✓	Full	93%	8.2
4	1	Greenway Medical PrimeSuite Chart	85.5	-4%	✓✓✓	Majority ‡	88%	8.0
5	NA	athenahealth athenaClinicals	84.3	+1%	✓✓	Full	88%	7.8
6	NA	Sevocity EHR	82.4	NA	✓	Full	85%	7.2
7	5	eClinicalWorks EMR	80.9	-4%	✓✓✓	Majority ‡	87%	7.5
8	8	NextGen Healthcare EMR	79.6	0%	✓✓✓	Full	91%	7.2
9	NA	Cerner Millennium PowerChart/PowerWorks	77.9	+8%	✓	Full	94%	6.9
10	9	GE Healthcare Centricity EMR	75.9	0%	✓✓✓	Full	83%	7.1
11	10	Sage Intergy EHR	73.2	0%	✓✓✓	Full	77%	7.4
12	6	McKesson Practice Partner EMR	73.0	-13%	✓✓✓	Majority	80%	7.0
13	NA	HealthPort EMR	72.9	-2%	✓	Full	63%	6.3
14	7	AprimaEHR (iMedica)	70.8	-14%	✓✓✓	Full	68%	6.7
15	NA	Henry Schein Medical MicroMD EMR	62.5	NA	✓	Full	54%	5.9
NA	NA	AdvancedMD EHR (PracticeOne)*	78.6	NA	–	None	100%	7.6
NA	NA	Ingenix CareTracker EMR*	77.3	+1%	–	Full	78%	6.9
NA	NA	Praxis EMR*	90.6	-4%	–	Limited	100%	8.5



## Ambulatory EMR Rankings (1 Physician)

Rank	Previous Rank	Vendor/Product	Overall Score	Rating % Change	Konfidence Level	Disclosure Level	Buy Again	Product Quality Rating
Ambulatory EMR (1 Physician) <sup>§</sup>								
Software solutions for clinic and practice management, providing charting, orders, prescriptions, and/or other EMR functionality.								
1	NA	Praxis EMR	90.3	-1%	✓	Limited	95%	8.6
2	NA	athenahealth athenaClinicals	87.0	-2%	✓✓	Full	88%	7.9
3	NA	simplifyMD The Digital Chart Room	85.8	NA	✓	Majority	94%	7.9
4	NA	Amazing Charts	84.0	-4%	✓	Full	89%	7.7
5	2	eClinicalWorks EMR	83.5	+1%	✓✓✓	Majority ‡	90%	7.9
6	NA	Cerner Millennium PowerChart/PowerWorks	82.2	-8%	✓✓	Full	81%	7.7
7	1	e-MDs Chart	80.2	-5%	✓✓✓	Majority	88%	7.6
8	NA	McKesson Practice Partner EMR	78.6	-12%	✓✓	Majority	81%	7.5
9	NA	Sevocity EHR	78.3	-15%	✓✓	Full	83%	6.9
10	NA	GE Healthcare Centricity EMR	77.5	+15%	✓✓	Full	76%	7.3
11	3	AprimaEHR (iMedica)	74.3	-4%	✓✓✓	Full	75%	7.1
12	NA	Henry Schein Medical MicroMD EMR	73.8	NA	✓✓✓	Full	68%	6.9
13	NA	Sage Intergy EHR	65.8	+7%	✓✓	Full	57%	7.0
NA	NA	Allscripts Professional EHR*	77.5	-7%	–	Limited	78%	7.2
NA	NA	ClinixMIS ClinixMD*	74.5	NA	–	Full	88%	6.5
NA	NA	ComChart EMR*	92.8	+1%	–	Limited	100%	8.7
NA	NA	DoctorsPartner EMR*	82.8	-5%	–	Majority	75%	7.3
NA	NA	Greenway Medical PrimeSuite Chart*	91.7	0%	–	Majority ‡	100%	8.5
NA	NA	HealthPort EMR*	78.8	NA	–	Full	83%	7.4
NA	NA	Ingenix CareTracker EMR*	81.8	+19%	–	Full	100%	7.8
NA	NA	NextGen Healthcare EMR*	60.0	NA	–	Full	50%	6.3

## Practice Management (2-5 Physicians)

Practice management software focused on patient registration, scheduling, and billing.

Rank	Previous Rank	Vendor/Product	Overall Score	Rating % Change	Konfidence Level	Disclosure Level	Buy Again	Product Quality Rating
Current Products <sup>§</sup>								
1	4	e-MDs Bill	87.4	+3%	✓✓✓	Majority	97%	8.0
2	1	athenahealth athenaCollector	86.4	-4%	✓✓✓	Full	90%	8.0
3	2	Greenway Medical PrimeSuite Practice	85.3	-5%	✓✓✓	Majority ‡	86%	8.0
4	3	Allscripts PM	84.6	-2%	✓✓✓	Limited	91%	7.9
5	12	AdvancedMD PM	82.5	+10%	✓✓✓	Full	85%	7.6
6	8	NextGen Healthcare EPM	82.2	+2%	✓✓✓	Full	89%	7.5
7	6	eClinicalWorks PM	81.4	-3%	✓✓✓	Majority ‡	83%	7.5
8	10	GE Healthcare Centricity Practice Management	80.7	+3%	✓✓✓	Full	90%	7.4
9	11	McKesson Practice Partner Billing and Scheduling	78.2	+1%	✓✓✓	Majority	90%	7.4
10	13	Sage Intergy PM	78.0	+5%	✓✓✓	Full	86%	7.8
11	5	Ingenix CareTracker PM	77.3	-9%	✓✓	Full	91%	6.9
12	9	Henry Schein Medical MicroMD PM	76.9	-3%	✓✓✓	Full	79%	7.3
13	14	Cerner PowerWorks Specialty PM	74.2	+2%	✓✓	Full	73%	7.2
14	7	AprimaPM (iMedica)	69.8	-14%	✓✓✓	Full	69%	6.5
15	NA	HealthPort PM	65.4	+10%	✓✓	Full	54%	6.2
NA	NA	Cerner PowerWorks PM*	72.5	NA	–	Full	71%	7.3
NA	NA	CollaborateMD*	78.7	NA	–	Limited	75%	7.6

## Speech Recognition

Front End Speech (FES) – system used for real-time voice to text conversion by clinicians, enabling them to start, edit, complete, and sign off on notes or reports without the use of transcription services. Back End Speech (BES) – system enabling clinician dictations to automatically be converted to text and routed to medical transcription, with audio file, to edit conversion accuracy, make corrections, and return the report to the clinician for final review and sign-off.

Rank	Previous Rank	Vendor/Product	Overall Score	Rating % Change	Konfidence Level	Disclosure Level	Buy Again	Product Quality Rating
Current Products <sup>§</sup>								
1	1	Nuance eScription (BES)	89.8	0%	✓✓✓	Full	98%	8.1
2	4	Dolbey Fusion Speech (BES)	83.4	+7%	✓	Majority	86%	7.9
3	3	Nuance PowerScribe (FES)	81.6	0%	✓✓✓	Full	91%	7.7
4	5	Nuance TurboSpeech (EXSpeech) (BES)	79.9	+6%	✓✓✓	Full	84%	7.5
5	2	Nuance RadWhere (FES)	79.5	-6%	✓✓	Full	90%	7.7
6	6	MedQuist SpeechQ (FES)	78.5	+5%	✓✓✓	Majority	86%	7.5
7	NA	MedQuist DocQment Enterprise Platform (BES)	78.3	0%	✓	Majority	88%	6.9
8	7	Agfa HealthCare TalkStation (FES)	69.6	+2%	✓✓	Majority	64%	6.9
NA	NA	3M ChartScriptMD (FES)*	72.5	NA	–	Majority ‡	89%	6.6
NA	NA	3M SyncStream (BES)*	77.2	NA	–	Majority ‡	80%	7.3
NA	NA	Atirix VoxEnterprise (FES) (Provox)*	64.4	NA	–	Limited	29%	5.8
NA	NA	Nuance Dragon Medical (Ambulatory) (FES)	81.2	-6%	✓✓✓	Full	89%	7.8

## Application Hosting (CIS/ERP/HIS)

Engagements in which a provider's CIS, HIS, or ERP applications are hosted by a hosting service provider (HSP).

Rank	Previous Rank	Vendor/Product	Overall Score	Rating % Change	Konfidence Level	Disclosure Level	Buy Again	Money's Worth
Current Products <sup>§</sup>								
1	1	Cerner [Mostly Clinicals - Cerner]	81.4	-4%	✓✓✓	Full	89%	7.6
2	4	Siemens [Clinicals & Financials - Siemens]	78.6	+4%	✓✓✓	Majority	95%	7.1
3	6	Dell Services [CIS/ERP/HIS - Various]	69.0	0%	✓	Full	57%	5.2
4	5	Allscripts (Eclipsys) [Clinicals & Fin. - Allscripts]	63.3	-13%	✓✓	Full	50%	5.7
5	7	Velocity [ERP Only - Lawson]	43.9	-22%	✓✓✓	Limited	28%	4.2
NA	8	ACS [CIS/ERP/HIS - Various]*	85.7	+69%	–	Full	100%	7.7
NA	3	McKesson [Clinicals & Financials - McKesson]*	76.3	-6%	–	Full	71%	7.8