

Electronic Medical Record (EMR)
Lessons in Setting up an EMR Clinic

By

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Who said this and When?

“I am fain to sum up with an urgent appeal for adopting ... some uniform system of publishing the statistical records of hospitals. There is a growing conviction that in all hospitals, even in those which are best conducted, there is a great and unnecessary waste of life ... In attempting to arrive at the truth, I have applied everywhere for information, but in scarcely an instance have I been able to obtain hospital records fit for any purposes of comparison ... If wisely used, these improved statistics would tell us more of the relative value of particular operations and modes of treatment than we have means of ascertaining at present?”

Who and When

Florence Nightingale,

Notes on Hospitals,

London: Longman, Green, Roberts,
Longman, and Green, 1863

Please Advance to Slide 19



Quality and Safety Issues

- Unacceptable rates of practice variations lead to \$450 billion in unnecessary spending
- Between 44,000 and 98,000 Americans die in hospitals each year as a result of medical errors...the cost is approximately \$37.6 billion annually
- Estimated 770,000 people are injured each year due to adverse drug events and up to 70% may be avoidable. Inadequate availability of patient information is directly associated with 18%
- Adverse drug events in 5% to 18% of ambulatory patients
- In a 2001 Robert Wood Johnson survey, 95% of doctors, 89% of nurses and 82% of health care executives say they have witnessed serious medical errors

Information Technology Saves Money

- \$44 billion in savings per year could be realized from adoption of EMR in the ambulatory care environment.
- Standardized healthcare information exchange among healthcare IT systems would deliver national savings of \$86.8 billion annually after full implementation and would result in significant direct financial benefits for providers and other stakeholders
- Primary care providers could realize savings of \$86,000 over five years. Benefits include reduced drug spending, reductions in radiology, and decreased billing errors.
- When physicians used a computerized system, the average time spent in the unit dropped by 4.9 days to 2.7, slashing costs by 25%
- One hospital's use of a community-based clinical data sharing network resulted in reduction in emergency room charges of \$26 per encounter

Information Technology

Computerized Physician Order Entry (CPOE)

- It Improves Quality and Saves Lives
 - Prevention of more than 2 million adverse drug events and 190,000 hospitalizations per year by adoption of CPOE in the ambulatory care environment.
 - CPOE has been shown to reduced error rates by 55%--from 10.7 to 4.9 per 1,000 patient days and reduced serious medication errors by 88%.
 - Incidents of allergic drug reactions and excessive drug dosages have been shown to drop by 75%.
 - Scheduling appointments, handling quick questions and refilling prescriptions online saves time and headaches
 - Having access to your comprehensive health information (lab results, EHR information) helps you and your clinician keep track of your care
 - Accessing educational information about your condition prior to coming in for your visit enables more quality time

National Leaders for Information Technology

“By computerizing health records, we can avoid dangerous medical mistakes, reduce costs and improve care”

President George W. Bush - State of the Union Address, January 20, 2004

- Included in campaigns of every Democratic Presidential Candidate
- A Bi-Partisan Issue.....

- 33 cents out of every health dollar is non-clinic. If we put in place information technology and reduce from 33 cents to 27, it's \$150 billion a year.

Senator Ted Kennedy "NBC NEWS' MEET THE PRESS." Feb. 6th 2005

Health Information for Quality Improvement Act

- Secretary shall adopt a set of national data and communication standards to promote interoperability
- Secretary shall submit to Congress NHII strategic plan
- Shall develop, implement and evaluate procedures to enable patients to access and append personal health data through personal health records
- Shall award grants for conduct of research on innovative approaches to improve patients' understanding and comprehension of electronic health record

Health Human Services Goals/Strategies

- **Goal:** Transform clinical practice by providing the information clinicians need when and where they need it.
 - **Strategy:** Offer incentives to encourage physician adoption of information technology
- **Goal:** Interconnect clinicians via interoperable technologies and networks so that patients' information is portable and will follow them from one point of care to another.
 - **Strategy:** Foster regional collaboration among those seeking to create community health information networks
 - **Strategy:** Develop a national health information network

Health Human Services Goals/Strategies

- **Goal:** Personalize care using technology to give patients more access and involvement in health care decisions.
 - **Strategy:** Encourage the use of personal health records, provide quality and other information to help patients choose doctors and health organizations
 - **Strategy:** Promote telemedicine in rural and underserved areas
- **Goal:** Improve population health.
 - **Strategy:** Unify public health surveillance platforms into one interoperable platform
 - **Strategy:** Streamline quality and health status monitoring
 - **Strategy:** Accelerate research and dissemination of scientific data and discoveries.

Momentum Building in Private Sector

- “Connecting for Health” is a public-private collaborative designed to address the barriers to development of an interconnected health information infrastructure. Organization seeks to drive consensus and promotes the adoption of clinical data standards.
- HL7 developing functional model for electronic health record
- IOM issues report on patient safety data standards
- Payment pilots and other incentive programs emerging from employer and plan communities, including Bridges to Excellence
- Leapfrog announces Fourth Leap to accelerate adoption of eRx, electronic transmission of lab results in addition to first Leap of Computer Physician Order Entry (CPOE)

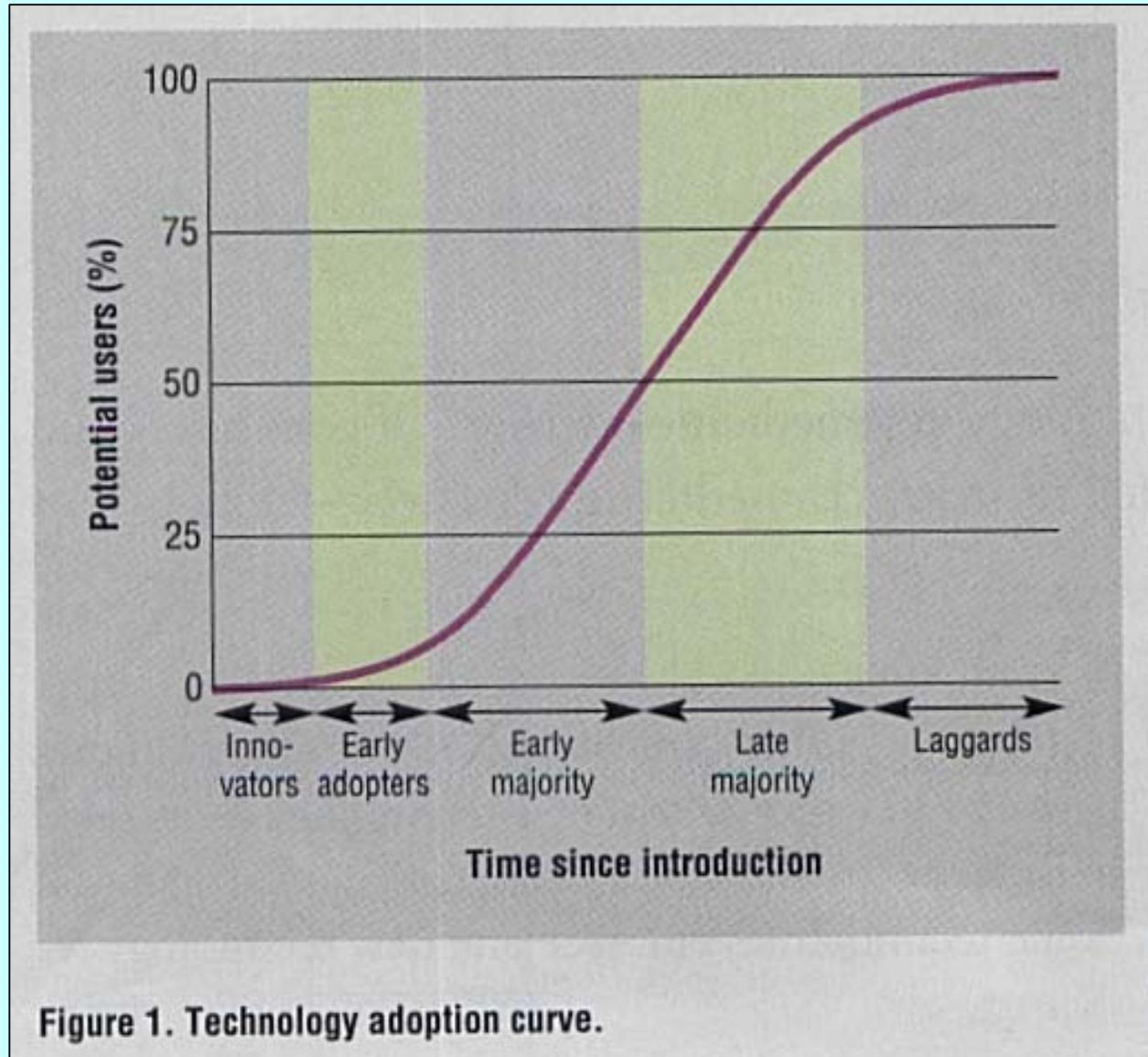
Momentum Building in Private Sector

- eHealth Initiative Foundation - formed to eliminate barriers to adoption of information technology and a health information infrastructure to drive improvements in quality, safety and efficiency for patients by:
 - providing seed funding and a “community learning network”
 - “Accelerating the Adoption of ePrescribing in the Ambulatory Environment”
 - convenes national leaders to develop principles, design, implementation and incentives for e-prescribing

Adoption of Technology has been Slow

- More than 90 percent of the estimated 30 billion health transactions each year are conducted by phone, fax or mail
- Healthcare lags all industries on spending on IT. While 11.10%, 8.10% and 6.5% of revenues were invested in IT in the financial services, insurance and consumer services industries, in 2002, only 2.2% of healthcare industry revenues were spent on IT
- Only a third of hospitals nationwide have computerized physician order entry (CPOE) systems completely or partially available. Of those, only 4.9% require their use
- Fewer than 5% of U.S. physicians prescribe medications electronically

Technology Adoption Curve:



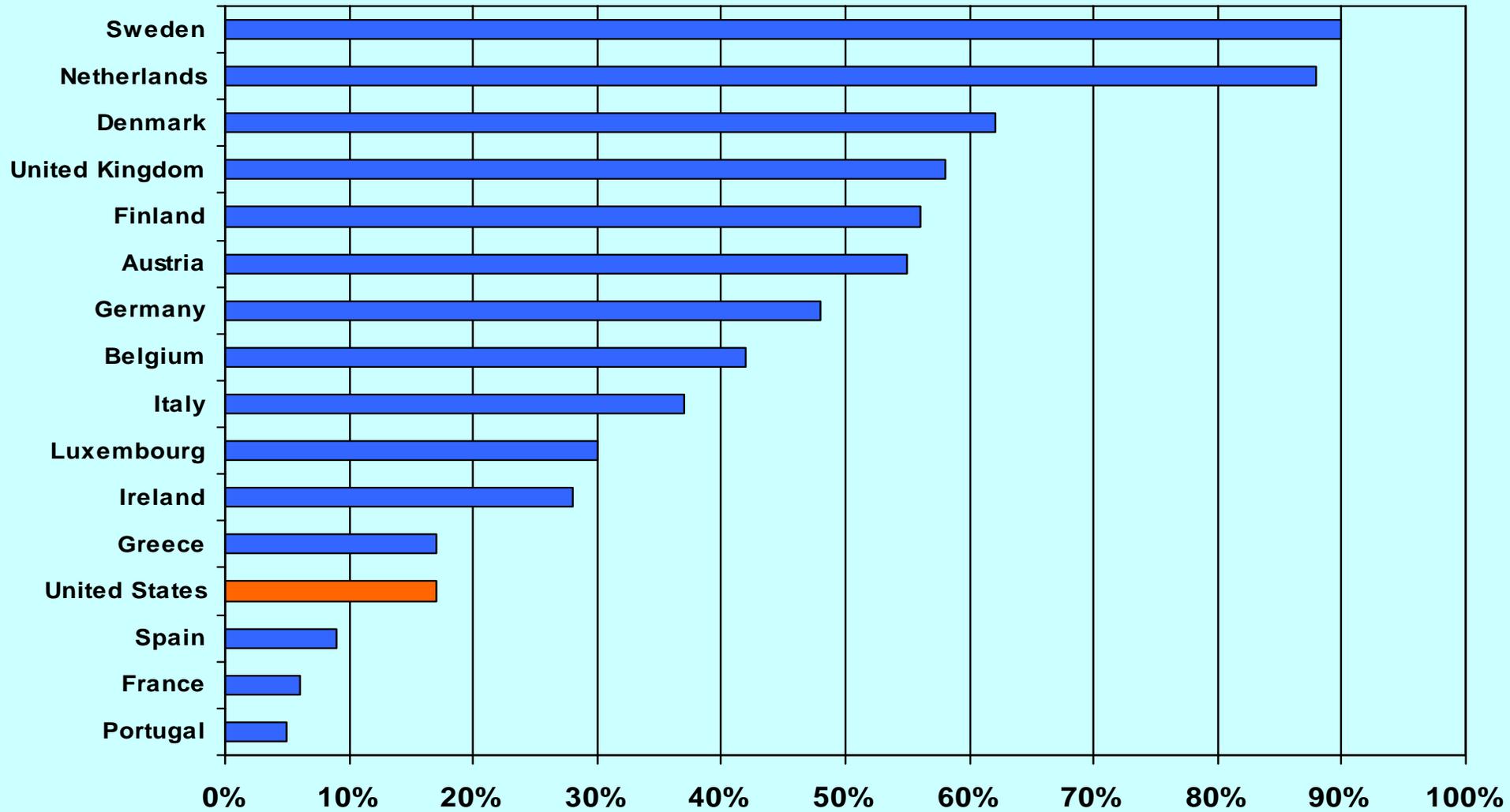
Bergeron, Bryan "Telemedicine in the practice setting" Postgraduate Medicine July 2003

EMR Adoption – Practice Size

Practice Size # of Physicians	% Practicing Physicians	Total # of Practices	% of Total Practices	% with EMR
1 - 5	22.2%	14,230	71.5%	5.2%
6 - 9	14.6%	9,200	18.5%	6.2%
10 - 49	15.9%	3,756	6.5%	7.4%
50 - 99	13.6%	1,945	2.0%	11.1%
100 - 249	12.2%	452	0.8%	14.2%
250+	21.5%	300	0.5%	28.1%

2005 ACG White Paper - The Digital Medical Office of the Future

International Comparison of Use of Electronic Medical Records



Harris Interactive, 2002

EMR Demand in Small Practice

- EMR sales to physician practices should go up from \$816 million in 2003 to about \$1.4 billion in 2008 with small practice spending expected to more than double, from \$366 million to \$829 million.
- Sales to small practices (projected to be \$622 million in 2005) for the first time will be larger than sales to larger practices (\$585 million in 2005).

– Forrester Research Inc

EMR Demand in Small Practice

	Market Segment	Estimated EMR Software Revenues 2005 - 09	Estimated EMR Hardware/Network Revenues 2005 - 09	Estimated EMR Implementation and Training Revenues 2005 - 09
A	1 to 5 Physicians	\$ 866,636,339	\$ 577,757,559	\$ 346,654,535
B	6 - 9 Physicians	\$ 564,125,957	\$ 376,083,972	\$ 225,650,383
C	10 to 49 Physicians	\$ 589,128,488	\$ 392,752,325	\$ 235,651,395
D	50 to 99 Physicians	\$ 480,019,800	\$ 320,013,200	\$ 192,007,920
E	100 to 249 Physicians	\$ 402,910,200	\$ 268,606,800	\$ 161,164,080
F	250+ Physicians	\$ 625,751,100	\$ 417,167,400	\$ 250,300,440
	Total	\$ 3,528,571,883	\$ 2,352,381,256	\$ 1,411,428,753

2005 ACG White Paper - The Digital Medical Office of the Future

What Does All of this Mean?

- Information Technology has Proven Outcomes
- Nationally momentum is building for Information Technology – A real Bi-Partisan Issue!!!!
- Momentum has resulted from leadership and collaboration of the private sector and government
- Push for Standardization of Technology Interfaces
- Small Groups will be next major expansion for EMR
- Focus has shifted from When to How will we do this?

Why an Electronic Medical Record?

- Majority of errors do not result from individual recklessness, but from flaws in health system organization (or lack of organization)
- Paper records have at least 4 weaknesses:
 - Lack of standardization in content
 - Lack of standardization in format
 - Incompleteness
 - Inaccuracies
 - A patient's age is not included in the medical record 10% of the time
 - A diagnosis is not recorded in the patient's record 40% of the time.
 - Physicians, while taking a medical history, fail to note the chief complaint in the patient's record 27% of the time.

Source: Committee on Improving the Patient Record, Institute of Medicine

Paper Record Versus EMR

- Physicians spend up to 38% of their time writing up patient charts.
- Nurses spend up to 50% of their time writing up charts.
- Medical records are misplaced or missing in 30% of patient visits.
- The average patient visit generates 13 pieces of paper.
- The average office spends \$10 per visit to track and file paper records
- The average patient record weighs 1.5 lbs.

Source: Committee on Improving the Patient Record, Institute of Medicine

A Reality Check

- Our healthcare system is fragmented....care is delivered by a variety of independent physicians, hospitals and other providers
- We interact with many plans and providers making continuity of our health information a challenge
- Clinicians often take care of us without knowing previous treatments and by whom...which can lead to treatments that are redundant, ineffective or dangerous
- Vital data sit in paper-based records not easily accessed or combined into a integrated form to present a clear and complete picture of our care
- Physicians spend an estimated 20-30% of their time searching for and organizing information

Patient Benefits

- Clinicians receiving computerized patient symptom assessments prior to a patient visit addressed 51% of their patients symptoms, compared with only 19% of those not receiving assessments
- 63% of consumers in a February 2004 survey agreed it would be “very valuable” to have their complete medical history stored in one computer file that can be accessed anywhere in the hospital
- Foundation for Accountability Survey found that Consumers believed that having health information online would:
 - Clarify doctor instructions – 71%
 - Prevent medical mistakes – 65%
 - Change the way they manage their health – 60%
 - Improve quality of care – 54%
- A Harris consumer interactive poll found that:
 - 80% want personalized medical information on-line from their physicians
 - 69% want on-line charts fir tracking chronic conditions
 - 83% want to receive their lab tests on-line

HIPAA Privacy Regulations

- Gives individuals
 - right of access to their own records
 - right to request amendment or correction
 - right to receive an audit trail of disclosures
- EMR's have distinct advantages over paper systems in regard to meeting both security and privacy standards.
- EMR's have advantage of providing improved access to records for physicians and clinical support personnel, reducing clerical support costs, and facilitating extract of “minimal necessary” data sets from records as needed.
- Requires healthcare organizations to
 - establish administrative, technical and physical safeguards, ‘need to know’ access
 - give notification of information practices
 - develop audit trail mechanisms

Health and Human Services

Electronic Records for every American

- Should I buy an EMR now?
 - *HHS plan doesn't mandate that physicians use EMRs.*
 - *"There are lots of details that have to be filled in to assure that the program will actually work and that clinicians will actually adopt technology,"*
 - *Peter Basch, MD, co-chair of the Physicians' Electronic Health Record Coalition (PEHRC)*
 - *PEHRC supports the concept of using information technology as a tool to improve care and patient safety but hasn't yet taken a formal position on the HHS plan*

Health and Human Services

Electronic Records for every American

- If the government wants me to buy an EMR, will the Centers for Medicare & Medicaid Services pay for it?
 - *No. "Let me put it this way," Dr. Jessee said. "Based upon history, the current national deficit and upon the projections for what will happen under the sustainable growth formula for physician fees, I think that anyone who believes that CMS or anyone else is going to pay for the full cost of information technology in general, or EMR in particular, is smoking a funny weed."*

Health and Human Services

Electronic Records for every American

- So how is the government going to make it worth my while to buy an EMR?
 - *Groups such as Physicians' Electronic Health Record Coalition (PEHRC) are asking HHS to find ways to recoup investment in EMR's through some incentive plan.*
 - *Some wonder if an incentive plan would involve reimbursing physicians without an EMR at a lower level*
 - *Experts say that the practice of giving a higher reimbursement to physicians with an EMR could become commonplace sometime in the next several years.*

Health and Human Services

Electronic Records for every American

- I don't want to buy an EMR. Can I count on this issue disappearing if President Bush isn't re-elected?
 - *No. Physician adoption of information technology is a bipartisan issue, and pressure to implement EMR's will continue to mount regardless of which party controls the White House, experts say.*

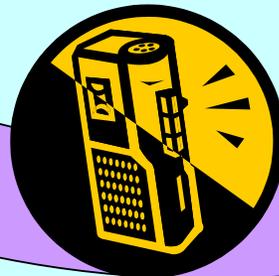
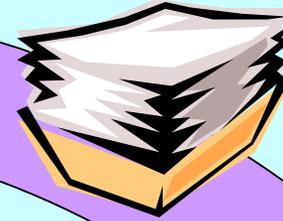
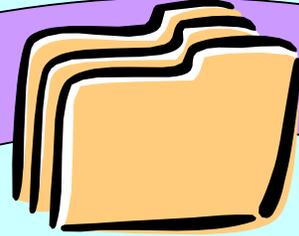
Health and Human Services

Electronic Records for every American

- Would I be violating the Stark rule if I accepted hardware, software, technology support or subsidies from hospitals and insurers?
 - *The Stark II revision issued in March allows an exception for community-wide health information systems, said William H. Maruca, a partner with Fox Rothschild LLP, a law firm in Pittsburgh. Several hospital organizations around the country plan to build local health information networks to electronically exchange patient information with community physicians.*

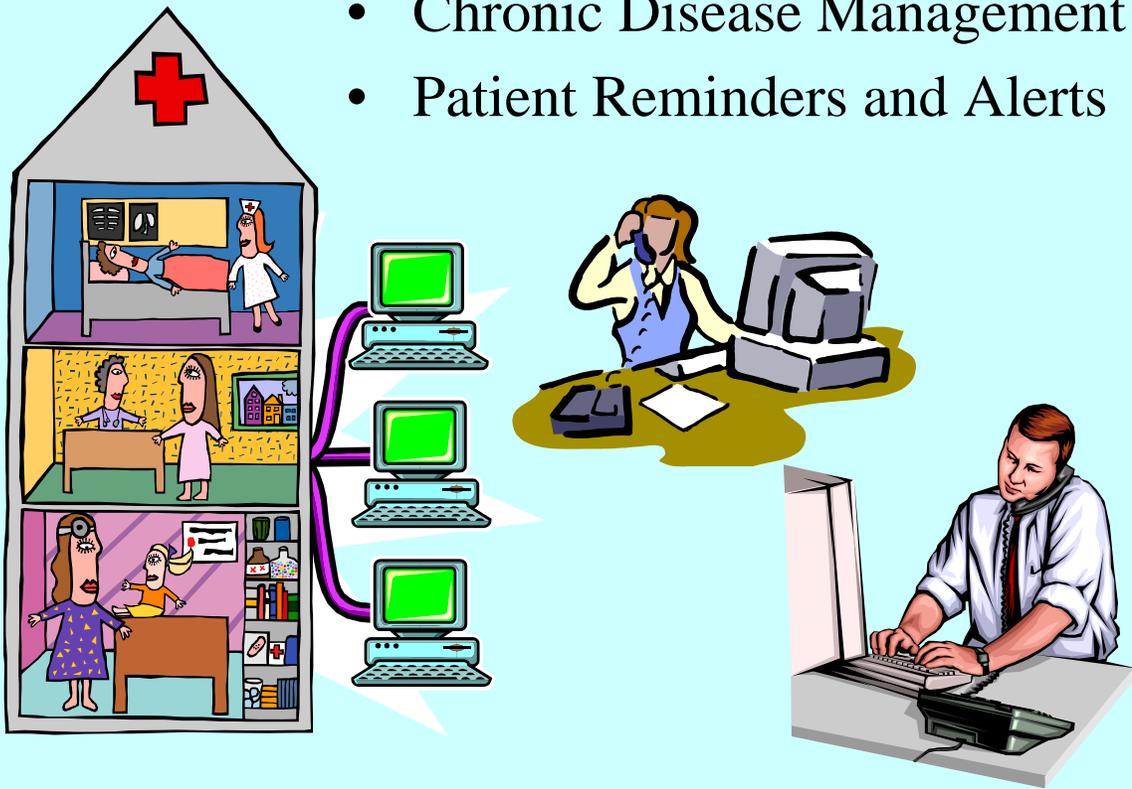
Why EMR?

- Replaces Paper Medical Records
- 100% Availability of Medical Records
- Interface with Lab, Radiology, Hospitals and Others
- Simultaneous access by multiple users
- Legible, accurate, non-redundant data
- Enhanced communication (staff, patients)
- Improved Messaging and Documentation
- Structured data entry and access
- Automated workflow, coding, reporting



Why EMR?

- Ability to Transmit Prescriptions to Pharmacy
- Portability of Patient Records
- Availability of Community Data
- Automated workflow, coding, reporting
- HIPPA compliance, reduced paper needs
- Reduction of Medical Errors (drug interactions, allergies, illegible orders)
- Chronic Disease Management
- Patient Reminders and Alerts



ROI Reasons for EMR – Cost Reduction

- Cost Reduction
 - Reduced Transcription Costs
 - Avg. Cost \$300 - \$1000 per physician/month
 - Usually cuts cost by 50% or more
 - Save time on assembling, reassembling, and filing charts
 - Paper and chart related costs
 - Reduced Internal and External Copying Expenses
 - Print record directly or e-mail if allowed
 - Save time on assembling, reassembling, and filing charts
 - Labor Savings

ROI Reasons for EMR – Cost Reduction

– Labor Savings and Efficiencies

- Fewer Chart pulls and less filing
- Reduction in phone tag
- Improved internal office communications
- Fewer pharmacy call backs
- Time for value added services
- Reduced overtime
- Practices with EMR report 2.0 to 2.5 FTE'S per doctor, compared with MGMA average of 4.0
- Compliance with Chart requests/audits

– Malpractice Insurance Savings

- Improved risk profile on quality of care and quality of documents
- Premium reductions often offered

ROI Reasons for EMR – Cost Reduction

– Lower Paper Chart and Storage Costs

- Paper supplies
- Filing systems and space
- Estimated cost is \$3.00 per chart
- Reclaiming space over time

– Decreased Pharmacy Costs

- Recommended Medication
- Formulary Compliance
- Contraindications
- Pharmacy Call backs
- Prescription preparation
- Prescription recall

ROI Reasons for EMR – Revenue Enhancement

- Revenue Enhancement
 - Health Maintenance
 - Reminder of Overdue Health Maintenance
 - Increase Volume
 - Demonstrate Quality Practice
 - Coding Accuracy
 - Accurate level of service
 - Completeness of Documentation
 - Conservative under coding 3% - 15% of revenues
 - Templates
 - Match code with chart

ROI Reasons for EMR – Patient Care

- Patient Care
 - Higher Quality Documentation
 - Built in Protocols and Reminders
 - More Efficient Signing of Charts
 - Patient Education and Involvement

Plenty of Venders - How Do You Choose?

- 134 Product Categories Unique to Healthcare
- Over 2,500 IT Companies selling in Healthcare Market
- Over 10,000 different applications to choose from
- Over 250 new IT companies have entered the market since July 1, 2000. Over 300 have left the industry.
- Top 5 companies generate more than 40% of IT Revenue
- 80% of IT companies generate less than \$10 Million/yr.
- Over 40% of the companies will be consolidated or closed within 3 years.

Plenty of Venders - How Do You Choose?

A4 Health Systems	Experior Corporation	Momentum Health Information Systems
AIC (Advanced Imaging Concepts)	Green Mountain Software Corporation	NextGen Healthcare Information Systems
AllMeds	Health Care Software, Inc. (HCS)	Nirvana Storage
Allscripts Healthcare Solutions	HealthCare Data, Inc.	Opus Healthcare Solutions
American Management Systems	Healthcare Mngt. Sci. Corp. (HMSCI)	Patient Care Technology Systems
American Medical Software	HealthCare Management Services, Inc.	Physician Micro Systems, Inc.
Amicore	HEALTHCAREfirst	PhyzBiz, Inc.
Aquave Group, Inc.	ibex Healthdata Systems, Inc.	Picis
ArticSoft	ICANotes	Practice Velocity
AutoMedicWorks, LLC	Infinity / Civerex LLC	Praxis EMR
Axolotl Corp.	Information Access Systems	Securit-e-Doc
Cerner Corporation	Initiate Systems, Inc.	SoftMed Systems
ChartCare, Inc.	Integrated Systems Management, Inc.	Spectron Corporation
Cogency Solutions, LLC	InteGreat	Sphere Health Systems, Inc.
CompassCare, Inc.	Intelligent Medical Objects, Inc.	STI Computer Services, Inc.
CRYPTOCARD Corporation	JMJ Technologies, Inc.	Sunrise Services
CureMD Corp.	LifeCare Technologies, Inc.	Surgical Information Systems
Cyber Records	MAJI Technologies	T-System, Inc.
Cypress Corporation	Mardon Healthcare Information Systems	Thornberry Limited
Data Assurance	McKessonHBOC	TriZetto Group, The
DataNet Solutions, Inc.	MDanywhere Technologies, Inc.	WEBeDoctor
Dolbey	MEDCOM Information Systems, Inc.	Webmedx, Inc.
Dr. Notes, Inc.	MEDecision, Inc.	Wellogic
e-MDs	Medical Communication Systems, Inc.	Wellsoft Corporation
Eclipsys	Medical Linguistics Transcript.and Consult.	WES Group
Emergisoft Corporation	MediSolution	XIMIS, Inc.
Ergo Partners, LC	Misys Healthcare Systems	

Highlights of American College of Rheumatology Survey of EMR

- Few top-of-the-line products offering 85% or better EMR functionality.
- Systems for desktop (PC) operation offer functionality in wireless applications.
- Few companies offer full functionality on portable devices.
- EMR marketplace is particularly volatile - frequent turnover.
- The best products offer providers multiple options and innovative short cuts for documentation of the clinical encounter.
- Cost, vendor viability, and suitability for the small physician office should be considered.

What not to do

- Rely on your friends or associates.
- Rely on hearsay.
- Rely on vendor advertising claims
- Research the products only by yourself.
- Rely on vendor claims of functionality (Vaporware) and company viability.
- Try to implement the product by yourself.
- Assume that software installation includes implementation

Avoidable Results?

- 74% of discarded EMRs were because the software did not meet the physicians actual needs.
- Spending too much for the software
- 80% of the vendors implement the software but do not help the practice determine “how” to use the product to improve operations.
- The wrong EMR decision could cost the average physician more than \$50,000 per year.

Purchase Strategies

- Get Good Advice
- Narrow RFP Definition
- Hands-on Product Demo
- Reference Checking
- Vendor Longevity
- Minimize Physician Typing
- Remote Hosting
- Group Purchasing Power - Server Farms

Server Farms Server Farms

- Why a Server Farm?
 - Hardware/Software Cost
 - Communication
 - IT support
 - Shared software/interfaces

- When a server farm?
 - 150 plus licenses
 - Common interfaces
 - Compatible groups
 - Willingness to surrender autonomy

What should you do

- Start with third-party independent published studies – 6 Things you must know
 - Functionality
 - End User Evaluation
 - Financial Viability Vendor
 - Client Base
 - Technology
 - Price, now and tomorrow
- Consider using a third-party independent advisor
 - 68% reduction in time spent looking for a system
 - 18% reduction in costs
 - 95% retention rate after 3 years
 - Improved contract terms
 - Product functionality matches Physician needs

Based on a study of 654 physicians that have purchased EMR's

Some Sources of Evaluation

- AC Group www.acgroup.org
- KLAS www.healthcomputing.com
- Forrester Group www.forrester.com
- AAFP www.aafp.org
- ACP www.acponline.org
- MEDRECIINST www.medrecinst.com
- HIMSS www.himss.org
- Aesculapius Research Group www.Aesculapiustech.com
- Barbara Drury, President, bdrury28@earthlink.net Pricare Inc.

10 Vendor Questions You must Know

- How is the product licensed?
- What does each license provide?
- How soon are the licenses released when a user exits?
- What technical support is available and when?
- How much does technical support cost?
- How is text imported into the system?
- Which image formats will the system support?
- What printers will the system support?
- What if you need to replace the system?
- Is everything in writing (Vaporware)?

AC Group Methodology

EMR Evaluation

- RFP was sent to 181 contacts representing 161 companies
 - Criteria included EMR installation in an office with 1-149 physicians
 - 20 indicated that they could not meet the requirements or usually do not complete RFPs
 - 33 completed the survey
 - **All 33 are in the IOM's top 40**
 - **Many of remaining IOM top 40 are not applicable for physician based offices**
- Each question was assigned a relative value unit (RVU) based on perceived importance
- Points awarded to each vendor's response

EMR/HER Survey – AC Group

- Questionnaire included 5,455 functional questions divided into 27 categories and 4 methods of operations. The four methods of operation:
 - Desktop capability (1,718 questions)
 - Wireless capability (1,447 questions)
 - Remote access capability (1,418 questions)
 - PDA and mobile capability (872 questions)
- The 27 functional categories included sections on the Institute of Medicine's (IOM) requirements for a computerized patient record (CPR)
- Functional questions relating to operational areas included:
 - Prescriptions
 - charge capture
 - Dictation
 - interface with laboratories
 - physician order entry
 - decision support
 - and alerts, security, personal health records, reporting and documentation.

AC Group - Ratings of EMR's

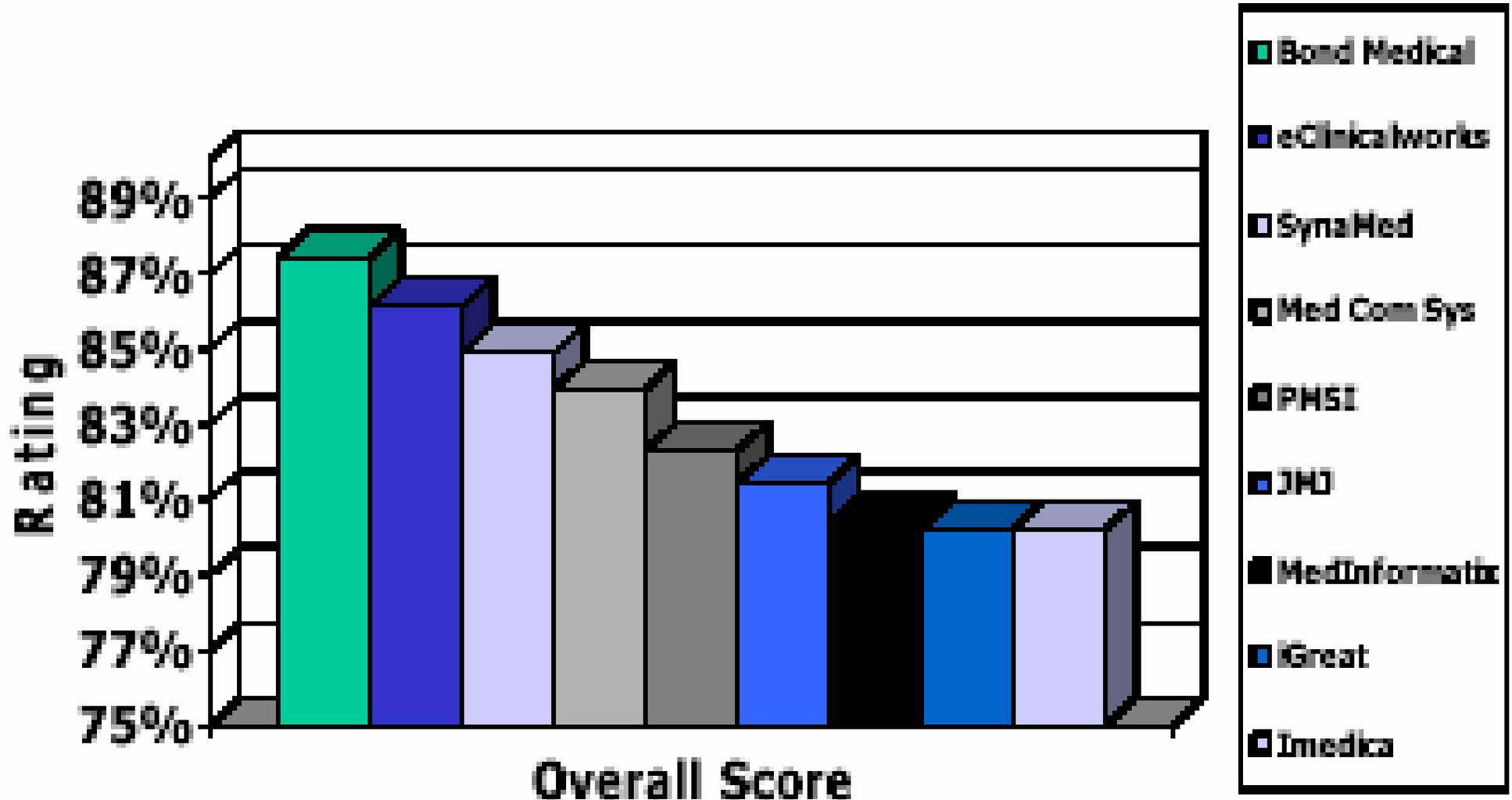
*****	The EMR product has more than 90% of the important functionality available today
****	The EMR product has more than 80% and less than 90% of the important functionality available today
***	The EMR product has more than 70% and less than 80% of the important functionality available today
**	The EMR product has more than 60% and less than 70% of the important functionality available today
*	The EMR product has less than 60% of the important functionality available today

Top Evaluated EMR Vendors 1- 9 physicians

	Company	City	State	Desktop	Last Updated*	EMR Rating	Total Points
1	Bond Tech	Tampa	FL	87.4%	Oct 2004	5	21
2	eClinicalworks	Northboro	MA	86.1%	Oct 2004	5	25
3	SynaMed	Kew Gardens	NY	84.9%	Oct 2004	5	19
4	Medical Comm. Systems, Inc.	Woburn	MA	83.9%	Oct 2004	5	19
5	PMSI	Seattle	WA	82.3%	Oct 2004	5	27
6	JMJ	Marietta	GA	81.4%	Oct 2004	5	22
7	MedInformatix	Los Angeles	CA	80.4%	May 2004	5	21
8	MeridianEMR		NJ	73.2%	Oct 2004	4	14
9	PraxisEMR	Woodland Hills	CA	71.4%	Oct 2004	4	20
10	A4 Healthcare	Cary	NC	68.4%	Oct 2004	3	26
11	e-MDS	Cedar Park	TX	67.8%	2003	3	21

EMR Vendor Evaluations

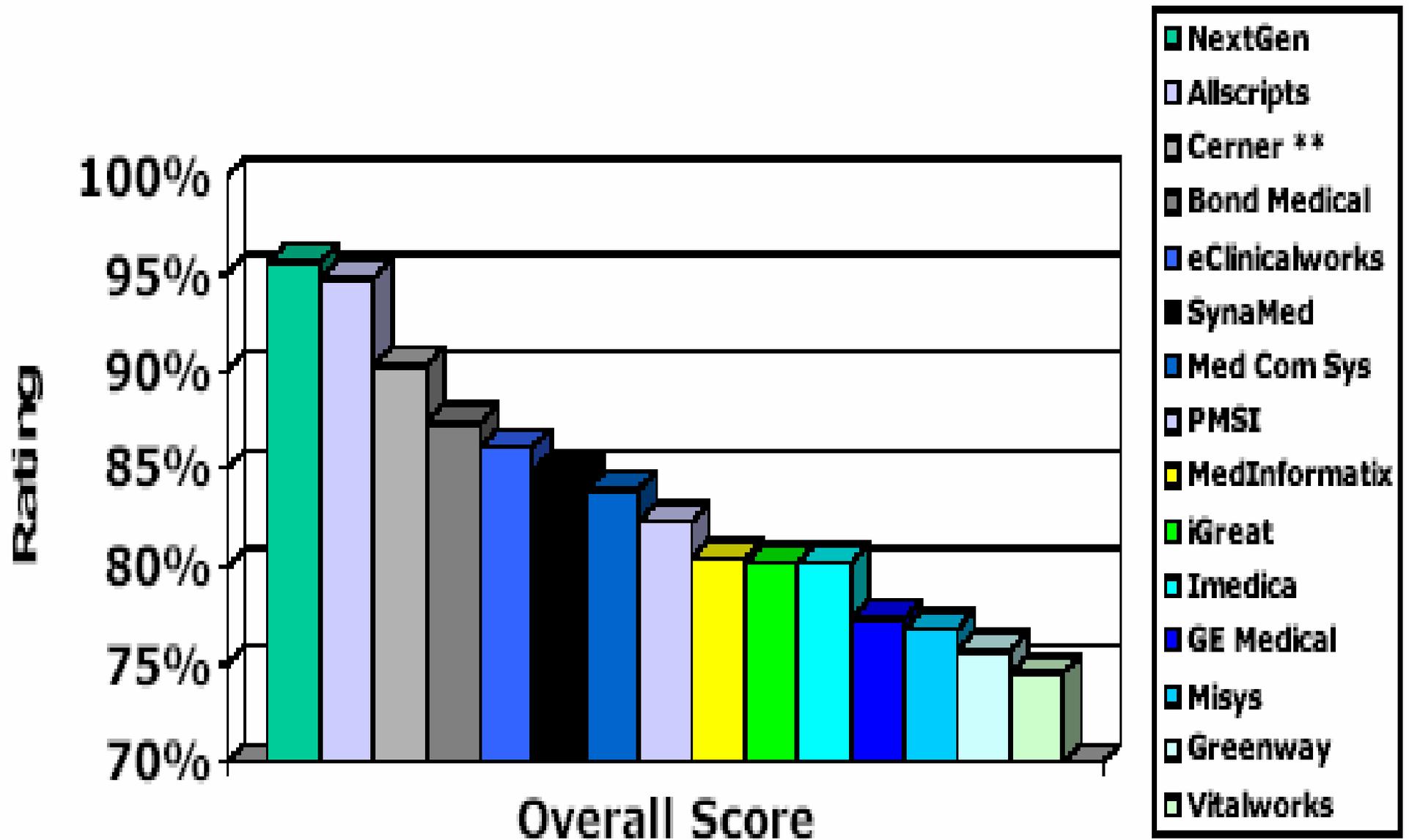
Vendors Meeting a Minimum of 80% of Required Functionality



Based on 4,533 Functional Questions Divided Between 27 Categories

Top EMR/EHR Vendor Applications

Mid-Sized Practices from 9 to 99 Physicians



1. EMR Functionality

- No regulatory body to test vendor claims or certify system behaviors.
- Vaporware is still as common as real software: beware the “feature in the next release” if needed now.
- Automating poorly designed processes just increases chaos.

1. EMR Functionality

- Local and Remote Information
- Alerts and Decision Support
- Authorized User Access
- Basic Functional Overview
- Billing, Charge Capture and Coding
- E&M Compliance and Documentation
- Clinical Data Repository
- Confidentiality, Privacy and Audit Trails
- Problem Lists, Procedure Notes, and Progress Notes
- Links with Other Patient Records
- Cost Measuring/Quality Assurance
- Dictations
- Document management
- Documentation
- Drug Reference
- Electronic prescription writing
- Electronic Prescriptions
- Integration and Interfacing
- Clinical Problem Solving
- Order Entry and Results
- Patient education and tracking
- User Interface and Administrative Tools

Points	10	5	3	1
Current Functionality	Over 90%	80 to 89%	70% to 79%	60% to 69%
Future Functionality within the next 12 months	Over 95%	85 to 95%	80% to 84%	75% to 79%

2. End-User Satisfaction

- Company Performance in relation to End-User Satisfaction. Surveys by independent analyst firms can be helpful.
- Looks at satisfaction level ability to meet client needs, to respond to problems, and the number of clients that are satisfied.
- Call physicians to determine their overall satisfaction levels. The minimum number of client contacts should be 10.

Points	10	5	3	1
End-user Satisfaction	Over 90%	80% to 89%	70% to 79%	Below 70%
KLAS Rating	Over 8.00	8.00 to 8.99	7.00 to 7.99	Below 7.00

3. Company Financial Viability

- Strength of a company in relationship to their annual revenues, profitability, and percentage of revenues that are placed back into future development.
- If an EMR product is discontinued, the physician will generate \$80,000 in additional costs and operational inefficiencies.

Points	10	5	3	1
Annual Company Revenues	> \$100M	\$50M to \$100M	\$5M to \$49M	< \$5 M
Annual Revenues specifically allocated to EMR	> \$50M	\$25M to \$50M	\$5M to \$24.9M	< 5M
% of revenues that is used for future development	> 25%	10.1% to 25%	5% to 10%	< 5%

4. Client Based:

- The current client helps to determine the company's ability to understand and meet the needs of their current and future clients.
- If the vendor has less than 10 EMR clients fully operationally, the risk factor increases by 10 fold.
- Vendors with a low installed base have not experienced the issues and difficulties that other companies with 10 fold installs have faced.
- Vendors with low installed base may still have an excellent product.

Points	10	5	3	1
Number of Practices that are using the EMR in their daily operation	> 250	100 to 249	50 to 99	10 to 49

5. Technology:

- Product is based upon windows or web browser, in order to meet the needs of the digital office of the future.
- Product utilizes one of the commercially acceptable relational databases like Oracle, MS SQL Server, Cache, or Sybase.
- EMR product uses open architecture. It should be fully integrated into “one” patient database with the company’s Practice Management System (PMS) and Document Image Management (DIM) solutions.
- If not fully integrated into one database, vendor has proven record for reliable interfaces with multi PMS or DIM applications.
- The EMR is configured and tested for a wireless environment.

5. Technology:

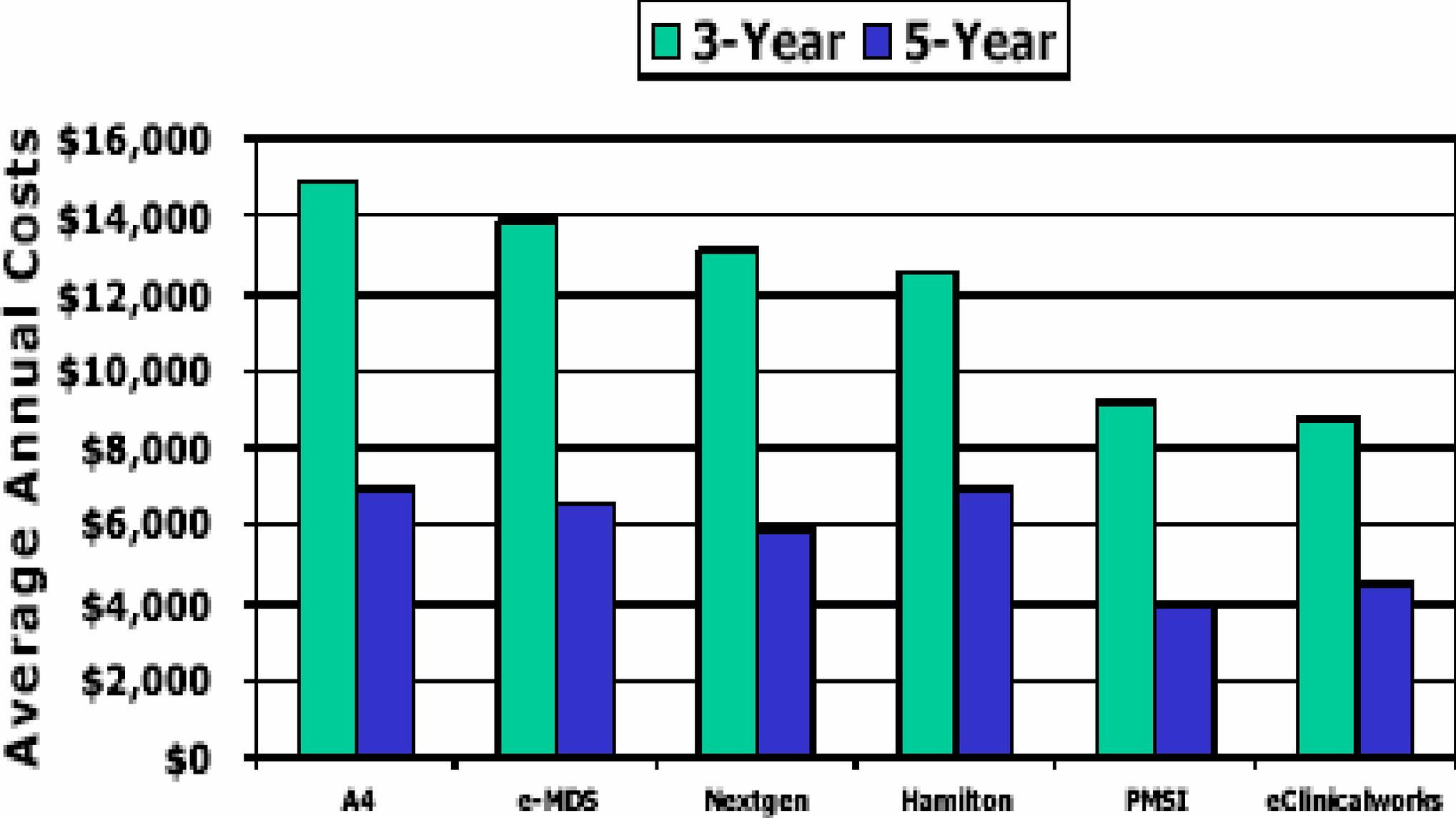
Points	10	5	3	1
Relational Database	Oracle, MS SQL Server	Cache, or Sybase	Other Relational Databases	Non-Relational Database
Integration	Fully Integrated with PMS and DIM under one Database	Fully Interfaced with a minimum of 10 PMS or DIM vendor applications	Fully Interfaced with a minimum of 5 PMS or DIM vendor applications	Limited interface with < 5 other PMS vendors
Flexibility	The EMR uses open architecture and can be interfaced with any HL7 product	The EMR uses open architecture and can be interfaced with a minimum of 5 HL7 compliant PMS products	The vendor does NOT recommend outside interfaces with other PMS applications	The product does not allow interfaces with multi PMS applications
EDI	The EMR product provides intelligent charge capture, connection to the practice's PMS, and can transmit to any third party clearing house		The EMR product provides intelligent charge capture, connection to the practices EMR, but most and can transmit to any third party clearing house	

6. Price

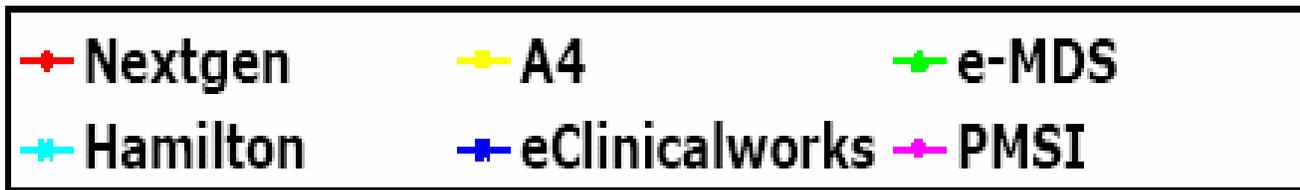
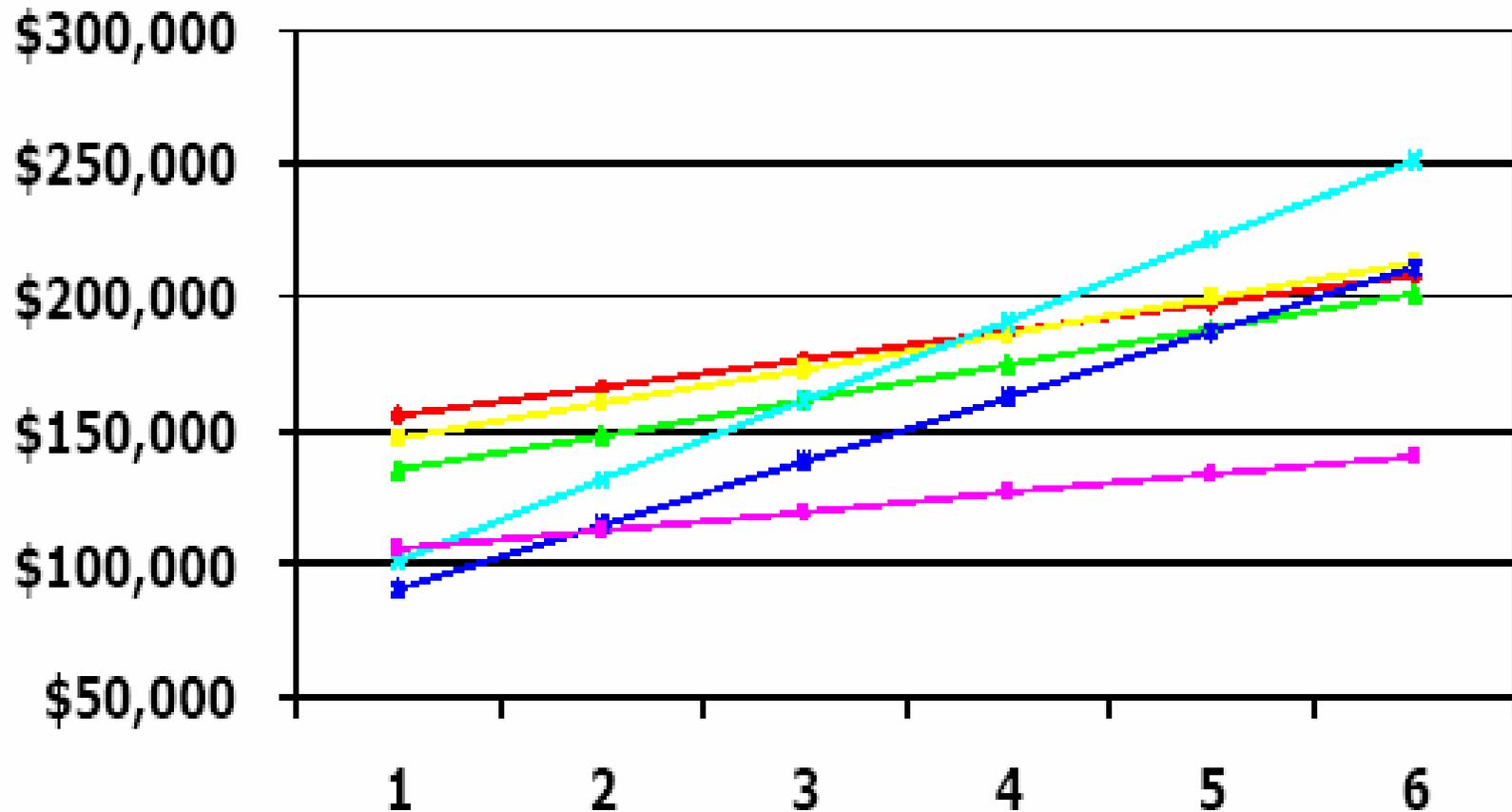
- Practices should determine the “Product Total Cost of Ownership” (PTCO) when evaluating the numerous potential solutions.
- The PTCO is calculated by adding the cost of:
 - EMR software
 - + main computer server + installation and training
 - + interfaces to a Practice Management System
 - + interfaces to a lab reporting system
 - + the maintenance contract for the first 36 months.
- The PTCO doesn't include the cost for the workstations and printers.
- Don't Ignore downstream Costs

Points	10	5	3	1
Total Cost per Physician	< \$30K	\$30K to \$50K	\$50K to \$90K	Over \$100K

Average Annual Cost per Physician for EMR



5-Provider Costing Model by Year



Change

“Change requires a coalition of people who, through position, expertise, reputations, and relationships, have the power to make change happen.”

John P. Kotter in “Leading Change”

Implementation Strategies

- **Steering Committee - Agreements with Partners**
 - Initially, the best systems take more clinician time per encounter than manual processes they replace (Learning Curve).
 - Cheerleader, Prodder, Big Stick (It gets better)
 - Attitudes toward and use of computerized systems are not age-dependent
 - Communication Strategies Are Key - Refocus
 - Stay the Course
- **Micro-Manage Project Kick-Off**
 - Vocabulary Learning Curve
 - Data Requirements
 - Get Live Quick
 - Technology-intensive practices need exquisite attention to detail.
 - Professionals On-Site Break Inertia

Implementation Strategies

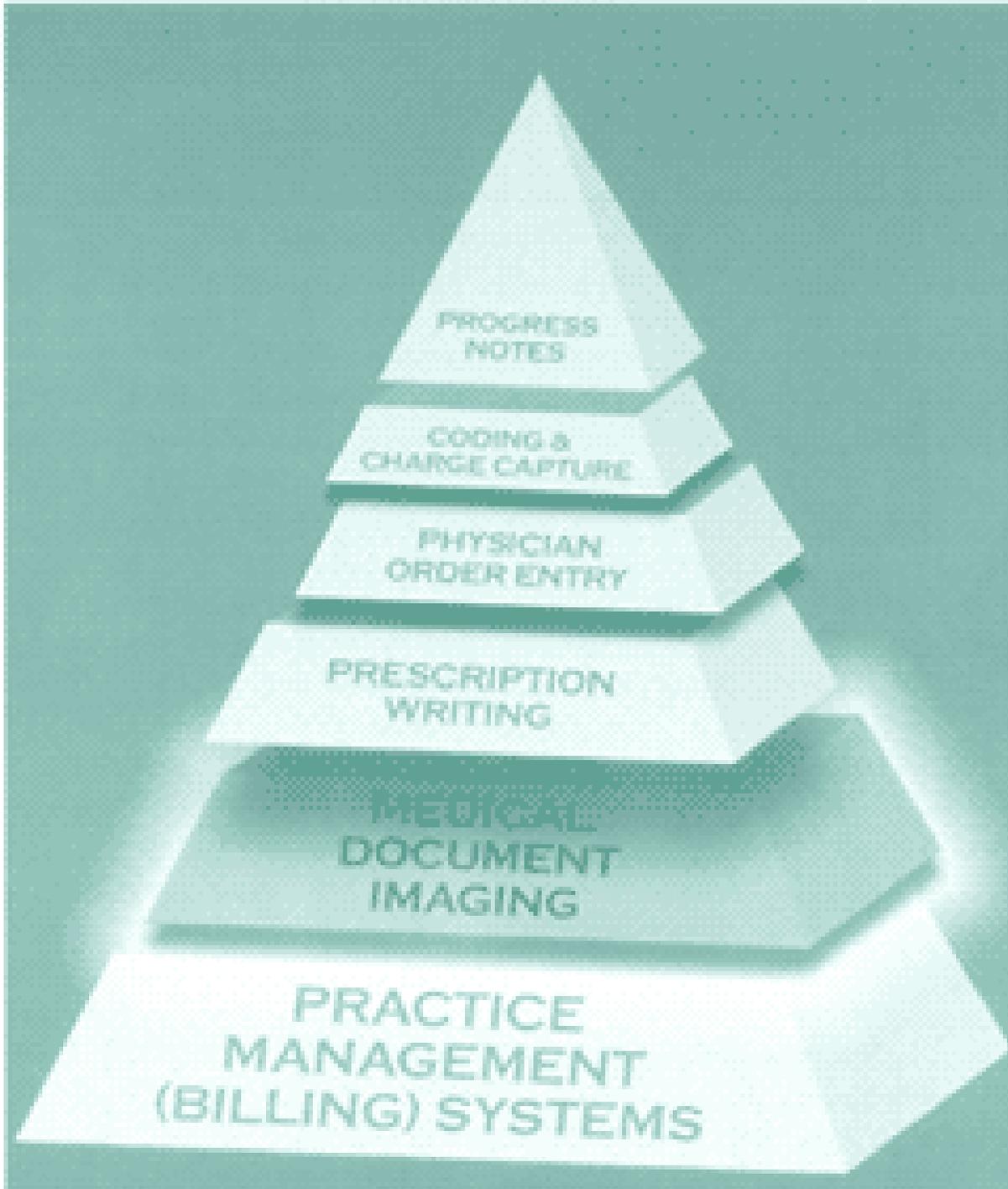
- Control Vendor and Associated Fees
 - Caveat Emptor
 - Vaporware - beware the “feature in the next release”
 - No regulatory body to test vendor claims or certify system behaviors.
 - Well-designed mainstream vendor products meet about 80% of identified functional needs. The other 20%?
 - Data acquisition costs may dominate the operational expense of medical records systems
 - Don't Assume The Vendor Will Provide:
 - Detailed Project Plan
 - Competent Project Leadership
 - Completed Templates
 - Product Training Curriculum
 - Budget Management
 - Unit and Integration Test Scripts

Implementation Strategies

- Hardware
 - Interfaces Are Complex and Difficult
 - Hardware May Not Be Compatible
 - Scanning – Understand Options
- Redundancy – Mirrored System
 - Backups Have to Work
 - To error is human, to really mess up requires a computer.
- Eliminate Transcription ASAP
 - Multiple options and innovative short cuts for documentation of the clinical encounter.
 - Fastest realized cost saving

Implementation Strategies

- Utilize Best Practices – Practice Templates
 - Users will accept a trade-off if there is a clear payback in functionality
 - Has capability to get physicians excited by process.
 - Beg, Borrow, Modify Templates
 - User Groups
- Phase Out Paper Medical Record Quickly
 - Realize there is life beyond the paper chart
 - Highlight your successes
- Incremental Track To Full Functionality
 - It will not happen overnight
 - Make it Manageable



The Incremental EMR

by Advanced Imaging Concepts,
Inc.

Celebrate Your Victories

Bottom Lines

- EMR is finally becoming Cost Justified
- Financial Savings Exist
- May not reduce time in front of Patients
- Saves time after the visit
- Every vendor is NOT the same
- Health plans starting to pay more for EMR
- Malpractice rates may decrease with EMR
- Remember, there will still be paper
- EMR changes the way physicians work
- Start incrementally
- Change Incrementally
- Celebrate your Victories