



MedStar Health

The Case for EMRs (and Strategies for their Acquisition)

Clinical Decision Support – Shared Decision Making

Center for Medicare and Medicaid Studies

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Overview

- **The case for the electronic medical record (EMR)**
- **The evolving business case for EMRs**
- **Acquisition strategies for having EMR purchase (and use) support healthcare transformation**



The chasm...

- **Informational medicine is suffering**
 - Suboptimal quality
 - Too many errors





...is growing deeper and wider

New definition of quality includes

- **Decreasing unwanted variability**
- **Decreasing the time from “bench-to-bedside”**
- **Increasing (or perhaps resuming) care coordination**
- **Reducing / eliminating disparities in care**
- **Proactive population and disease management**
- **Shifting focus from episodic to longitudinal care**
- **Making health information more mobile and shareable**
- **Increasing involvement of the patient**
- **Acknowledging the necessity of reporting / transparency**
- **Efficiency measures**
- **Patient satisfaction**





And what was once considered good care...

- **Reactive episodic visits**
- **“Top-of-mind” decisions**
- **Paper-based ad hoc prescribing**
- **Non-interactive documentation**
- **No news = good news**



...is no longer

- Reactive episodic visits
- “Top-of-mind” decisions
- Paper-based ad hoc prescribing
- Non-interactive documentation
- No news = good news
- **Reactive and proactive care**
- **Embedded CDSS / guidelines**
- **Knowledge-based medication management (eRx)**
- **Interactive documentation**
- **Orders loop management**



Particularly when

- **Caring for patients with**
 - **Chronic disease**
 - **Multiple disorders**
- **Attempting to follow complex guidelines in a time-efficient manner**
- **Coordinating complex medication regimens**
- **Collecting / reporting quality data to Medicare, QIOs, payers**
- **Participating in pay-for-performance pilots / programs**



EMR – the point-of-care solution

Go Actions Options Help



TEST PATIENT

65 Year Old Male (DOB: 01/01/1940)

Patient ID: 53551-0015001

PCP: Peter Basch MD

Home: None Work: None

Insurance: Group:



Summary Problems Medications Alerts Flowsheet Orders Documents

Problems

HYPERTENSION
HYPERLIPIDEMIA
DIABETES, UNCOMPLICATED, TYPE II
PHLEBITIS

Medications

HYDROCHLOROTHIAZIDE 25 MG TABS (HYDROCHLOROTHIAZIDE)
METFORMIN HCL 500 MG TABS (METFORMIN HCL) 1 bid
COLUMADIN TAB 5MG (WARFARIN SODIUM) 1 qd

Allergies

AMOXICILLIN

Directives

Empty box for directives.

Registration Notes

Empty box for registration notes.

Flowsheet: Enterprise/HEALTH MAINTENANCE

	Date	Value
COMPPHYSICAL		
HEIGHT		
WEIGHT		
TEMP ORAL		
BP SYSTOLIC	06/26/2005	140
BP DIASTOLIC	06/26/2005	90
PULSE RATE	06/26/2005	78
EKG		
EKG INTERP		
SIGMOID		
COLONOSCOPY		

Documents: All

Date	Summary	Status
06/26/2005	Clin Updt: Clinical Lists Update	Signed





EMR or EHR?

	Information analysis	Information exchange	Personal health management	Enterprise	Ambulatory care
Across organizations		LMR EHR			
		PHR	PHMT		
Within one organization				CPR	EMR
				Direct Care Tools	



The business case for EMRs...

- **Upfront costs / clinician = ~ \$20,000 - \$40,000**
 - Hardware
 - Software
 - Networking
- **Annual support / maintenance costs = ~\$3,000 - \$8,000**
- **Benefit per clinician per year – highly variable**
- **Net at year 3 = ~-\$20,000 - ~+\$34,000**
- **Variables in achieving benefits**
 - Software pricing
 - Cost of risk
 - Cost of connectivity
 - Pre-EMR conditions
 - ▶ Staffing ratios
 - ▶ Use of transcription
 - ▶ Average E/M coding level
 - ▶ Cost per chart pull?
 - Additional revenue from P4P efforts



...is improving

Barrier	Solution	Current Work
Confusion about quality of application	EMR product certification	Certification Commission on HIT (CCHIT)
Not knowing which EMR is best for which type of practice	Trusted specialty-specific EMR guidance	Medical specialty societies; KLAS, HIMSS, others
Wide variability in contracting and business practices	Standard contracting language, RFP guidance	eHealth Initiative
Risk of implementation failure	Trusted technical advice	DOQ-IT
Difficult and expensive access to external information	Standards-based solutions for labs, imaging centers, etc	California Health Care Foundation (eLINCS)



Acquisition Strategies - #1

- **Decrease risks of bad purchase**
 - CCHIT certification likely
 - Advice from medical specialty societies, colleagues
 - Careful review of purchase / lease contract
- **Decrease initial and ongoing costs**
 - Group purchasing
 - ASP model?
- **Maximize benefits of implementation**
 - Include sufficient time / clinician in purchase
 - Focus on practice efficiencies, not just learning software
- **While EMRs can make care better...**

There is little evidence that they have (thus far)!



Before you buy...

■ Why?

- Culture?
- Right tool?
- Training?
- Reimbursement?

■ Toxic reimbursement system

- Only financial incentives are for visit volume
- Improving care = ↑ cost to clinicians / ↑ benefit to payers

■ Having a sustainable business case for information management and quality (such as Section 646)

- Creates a market for advanced EMRs
 - Bundled with the right tools (and the drafting of some not yet in existence)
- And training
- And performance



Acquisition Strategy – Create a compelling vision





The EMR as enabler of healthcare transformation

- Informing practice
- Transforming practice



Informing practice

- Most care is now reactive / episodic
- Including more proactive care in reactive visits

Go Actions Options Help

TEST PATIENT
65 Year Old Male (DOB: 01/01/1948)

HPI-CCC: TEST PATIENT

HPI Additional Hx

History of Present Illness Select Specialty: **Internal Medicine**

PCP: [] Referring Provider: []
Visit Type: [] CC: []

History: [] **Clear All**

brief (1-3 elements) extended (4 or more elements)

Check Box to Insert Form(s) or Template

- Acute Visit Form
- Anticoagulation Form
- Asthma History Form
- Asthma Plan Form
- Back Pain Form
- CHF Form
- Depression Form
- Diabetes Form
- Dyspepsia Form
- Headache Form
- Hypertension Form
- Lipid-NCEP III Form
- Minor Procedures Form
- Preventive Care Form
- Annual Physical
- Cardiovascular Risk Form
- Cardiovascular Reports
- Data Entry
- Diabetes Education
- New Patient Template

Problems **Medications**
Allergies

Universal Forms: [] Oh, by the way: [] **Enter**

Coag **AsthmaHx** **AsthmaPlan** **Back** **CHF** **Depress** **DM** **Dyspepsia** **HA** **HTN** **Lipids** **Prevent** **CV Risk**

HPI **ACV** **PMH** **FH-SH** **Risk factors** **ROS** **PE** **Problems** **CPOE A/P** **Instructions/Plan** **Copyright**

Prev Form (Ctrl+PgUp) Next Form (Ctrl+PgDn) Close

For Help, press F1



Informing practice

- Most care is now reactive / episodic
- Including more proactive care in reactive visits
Or even in the process of scheduling visits

Go Actions Options Help

Summary | Flags | Documents | File Attachments

Appointments for: **Basch** Flags to: **Peter Basch MD**

Time	From	Due	Subject	Message
8:30				
8:45				
9 am				
9:15				
9:30				
9:45				
10 am				
10:15				
10:30				
10:45				
11 am				
11:15				
11:30				
11:45				
Noon				
12:15				
12:30				
12:45				
1 pm				
1:15				
1:30				
1:45				
2 pm				
2:15				
2:30				
2:45				
3 pm				
3:15				
3:30				
3:45				
4 pm				
4:15				
4:30				
4:45				
5 pm				
5:15				

Napoleon Dynamite
55 Year Old Male:

The following Tests are now due:

- 1) Lipid Panel
- 2) Microalbumin (urine)

The following Procedures are now due:

- 1) Due for Colorectal Cancer Screening

Would you like to see the Indications for these recommended Tests/Procedures? Click 'Yes' to see the Indications; Otherwise click 'No'.

Status Reason

For Help, press F1



Informing practice

- Most care is now reactive / episodic
- Including more proactive care in reactive visits
- **All visits can include optimization of concurrent and chronic care management, as well as necessary preventative care**

Go Actions Options Help

CPOE-Anticoagulation-CCC: TEST PATIENT

TEST PATIENT
65 Year Old Male (DOB: 01/01/1940)

Summary Problem
Doc ID: 2 Property
Summary:

HPI-CCC
Lipid Q&E-CCC
Hypertension Q&E-CCC
Diabetes Q&E-CCC
CPOE-Anticoagulation
PMH-CCC
FH-SH-CCC
Risk Factors-CCC
ROS-CCC
Adult Vital Signs-CCC
PE-CCC
Problems-CCC
CPOE A&P-CCC
Patient Instructions-C
E&M Advisor

CPOE-Anticoag History

CPOE-Anticoagulation **Insert Text** Other contact #

Reason for visit: Select Coumadin Dosing Regimen daily weekly

	Last	Date	Current	Target	
INR	1.0	06/26/2005			View Labs
PT					Therapeutic Recommendations

View Serial PT/INR **Flowsheet View**
Edit Flowsheet **Go To Med List**

Therapeutic Recommendations:

- The following fields have not been addressed yet:
Indication for Anticoagulation.
Duration of Therapy.
Therapeutic goal (Target INR).
Coumadin Dosing Regimen: either DAILY or WEEKLY.
- A Target INR has not been selected. Select now so anticoagulation recommendations can be given.
- No Hemoglobin, Hematocrit, or Platelets can be found. Consider checking NOW and every 6 months while patient is on Warfarin therapy.
- No Hemocult documented. Consider checking now and annually while patient is on Warfarin therapy.

OK

Prior Co
Patient I

Instructions given to Reviewed/authorized by Patient notified by

HPI **ACV** **PMH** **FH-SH** **Risk Factors** **ROS** **PE** **Problems** **CPOE A/P** **Instructions/Plan** **Copyright**

Prev Form (Ctrl+PgUp) Next Form (Ctrl+PgDn) **Close**

For Help, press F1

TEST PATIENT
 65 Year Old Male (DOB: 01/01/1944)

Diabetes Q&E-CCC: TEST PATIENT

Summary | Problem List

Doc ID: 2 | Properties

Summary:

- HPI-CCC
- Lipid Q&E-CCC
- Hypertension Q&E-CCC
- Diabetes Q&E-CCC
- CPOE-Anticoagulation
- PMH-CCC
- FH-SH-CCC
- Risk Factors-CCC
- ROS-CCC
- Adult Vital Signs-CCC
- PE-CCC
- Problems-CCC
- CPOE A&P-CCC
- Patient Instructions-C
- E&M Advisor

Hx	Exam	Diabetes Self Ed	Diabetes Tx	Insulin
----	------	------------------	--------------------	---------

Diabetic drug class(s) patient is taking:

Insulin	None	Values CHECKED IN RED have been extracted from data in patient's chart. These values cannot be changed unless the appropriate chart data is changed first.
Sulfonylurea	None	Current HYPERTENSION & DIABETES medications ONLY listed below.
Biguanides (Glucophage)	<input checked="" type="checkbox"/>	

Go to Medication List to view ALL of patient's medications.

Thiazolidinediones

Alpha-Glucosidase Inhibitors

Meglitinide

HTN drugs

Diuretics

Beta blockers

ACE-I

ARB

Calcium Channel Blockers

Alpha Blockers

Vasodilators

BP: No

BP Goal: Not Recorded

Therapeutic Recommendations:

- 1) No Blood Pressure recorded yet as of this visit. You may enter this on the EXAM Page of this form.
- 2) No BP Goal has been recorded. You may enter this on the EXAM Page of this form.
- 3) Consider entering patient into a Diabetic Education Program.
- 4) Patient is on Glucophage and no liver function tests have been done. Consider ordering this NOW and annually (or as needed).
- 5) Patient has an LDL cholesterol > 100. Consider starting a lipid lowering agent to get LDL below 100 if diet alone does not seem to be working.
- 6) Patient has a diagnosis of Diabetes and is not currently on an ACE-I or ARB. Should this be considered?
- 7) Since the patient is Diabetic, the following are now due:
 - Urine Microalbumin
 - Diabetic Eye Exam
 - Foot exam needs to be completed for this visit
 - Pneumovax

<input type="button" value="Insulin"/>	<input type="button" value="Sulfonylurea"/>	<input type="button" value="Biguanide"/>	<input type="button" value="Glitazones"/>	<input type="button" value="Alpha-G-I"/>	<input type="button" value="Meglitinide"/>	<input type="button" value="Lipid Meds"/>	<input type="button" value="Aspirin"/>	<input type="button" value="Med List"/>		
<input type="button" value="Diuretic"/>	<input type="button" value="Potassium"/>	<input type="button" value="B-blocker"/>	<input type="button" value="ACE-I"/>	<input type="button" value="ARB"/>	<input type="button" value="Ca-blocker"/>	<input type="button" value="A-blocker-C"/>	<input type="button" value="A-blocker-P"/>	<input type="button" value="Vasodilator"/>		
<input type="button" value="HPI"/>	<input type="button" value="ACV"/>	<input type="button" value="PMH"/>	<input type="button" value="FH-SH"/>	<input type="button" value="Risk Factors"/>	<input type="button" value="ROS"/>	<input type="button" value="PE"/>	<input type="button" value="Problems"/>	<input type="button" value="CPOE A/P"/>	<input type="button" value="Instructions/Plan"/>	<input type="button" value="Copyright"/>



Transforming practice – Achieving 'STEEEP' care

- **Different / additional software**
 - **Advanced granular / actionable decision support**
 - **Registry**
 - **Patient connectivity**
 - ▶ **Secure portal / tethered PHR**
 - ▶ **Can write to / read from PHR**
- **Practice redesign**
 - **Evidence-based preventative services**
 - **Proactive care for select chronic diseases**
 - **Improved care coordination**
 - **Enabling collaborative care with patient**
 - **New definition of 'reactive' care**
 - ▶ **Patient satisfaction**
 - ▶ **Recent hospital discharges**
 - ▶ **Most difficult / expensive**



Sharing decision support with patients

Go Actions Options Help

TEST PATIENT
65 Year Old Male (DOB: 01/11/1940)

Diabetes Q&E-CCC: TEST PATIENT

Hx Exam **Diabetes Self Ed** Diabetes Tx Insulin

Click ? Action Buttons to review Diabetes Self Education Topics with Patient

Today's Blood Pressure	None Recorded		
No Blood Pressure recorded this visit. ENTER NOW!			
Most Recent HgA1c	7.8 (06/26/2005)	Next due	09/24/2005
Hemoglobin A1C in the 7 -- 8 range is acceptable, with a goal of less than 7.			
Most Recent Microalbumin	None Recorded	Next due	now
Consider ordering this test yearly as long as urine dipstick protein remains negative.			
Last Dilated Eye Exam	None Recorded	Next due	now
Dilated eye exams should be done yearly.			
Last Influenza Vaccine	None Recorded	Next due	Each fall / winter
Diabetics should have an annual influenza immunization.			
Last Pneumovax	None Recorded	Next due	now
Initial Pneumovax vaccine recommended unless contraindicated.			
Last Lipid Panel	06/26/2005	Next due	06/26/2006
Last Chol. 200	Last LDL 135	Last HDL 40	Last Trig. none
Goals: 200	100	40	150
Consider interventions to lower LDL cholesterol. HDL goal has been met.			

CCC-Wired.MD Patient Education Videos

Language English

Video Time

Monitoring BS ?

Low Blood Sugar ?

Diabetic Diet ?

Eye Care in DM ?

Foot Care in DM ?

Kidney Care in DM ?

About Insulin ?

Aspirin in DM ?

Click to Print Handouts

Diabetes Ed

Click to go to Diabetes Links

Wired.MD Home Page

ADA Home Page

Local DM Link

Reference

HPI ACV PMH FH-SH Risk Factors ROS PE Problems CPOE A/P Instructions/Plan Copyright

Prev Form (Ctrl+PgUp) Next Form (Ctrl+PgDn) Close

For Help, press F1



Adding a DM registry

PMG - Diabetes Prevention Registry - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail Word Pad Find Favorites People

Address <http://columbia.phsor.org/DiseaseRegistryDiabetesDemo/DiabetesMain.aspx> Go Links

Providence | Medical Group **Diabetes Registry**
Patent Pending

User: Doctor A MD

Performance Feedback Diagnosis **Treatment** Drug Monitoring Screening Resources Help Main

[Instructions](#) Logout Print ALL Patients Print Checked Patients

Patients	Date of Birth	LDL	BP	A1c	ASA	Last Visit	Next Appt.	Print
Patient 1	02/05/1957	89	98/64	7.6		04/20/2004		<input type="checkbox"/>
Patient 10	03/15/1935	OVERDUE	128/56	7.6		02/19/2004		<input type="checkbox"/>
Patient 107	05/20/1934	121	126/62	6.8		03/29/2004		<input type="checkbox"/>
Patient 108	05/20/1949	93	136/74	6.7		04/09/2004		<input type="checkbox"/>
Patient 109	03/30/1936	132	122/70	6.7		03/23/2004		<input type="checkbox"/>
Patient 11	10/07/1957	100	120/82	7.3		01/28/2004		<input type="checkbox"/>
Patient 110	07/23/1938	OVERDUE	124/70	6.6		12/01/2003		<input type="checkbox"/>
Patient 112	08/01/1932	86	92/62	6		04/13/2004		<input type="checkbox"/>
Patient 113	10/21/1942	147	110/60	10.9		02/27/2004		<input type="checkbox"/>
Patient 114	04/04/1968	90	114/70	6.5		04/14/2004		<input type="checkbox"/>
Patient 115	05/20/1947	152	124/84	6.9		11/21/2003		<input type="checkbox"/>
Patient 116	06/03/1941	131	130/80	10.5		04/14/2004		<input type="checkbox"/>
Patient 12	10/16/1957	137	142/84	10.1		04/16/2004		<input type="checkbox"/>



Integrating eCare

Send Blood Sugars to My Doctor - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Mail Print Word Pad Find Links

Address <https://secure.yourdoc.net/Portal/eForms/Send+Blood+Sugars+to+My+Doctor/default.aspx> Go Links

Google Search Web PageRank 59 blocked AutoFill Options

[Logout](#) | [Edit sample's Profile](#) Search: Go

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Section Links

- eForms
- New Patient Histories
- Review of Systems
- Send Weight and BP to My Doctor
- Home Asthma Readings
- Send Blood Sugars to My Doctor

New Section

1	HOME FASTING My Blood Sugar Range at home first thing in the morning is	<input type="text"/>
2	HOME BREAKFAST My Blood Sugar Range at home after breakfast is	<input type="text" value="8 mmol/l"/>
3	HOME LUNCH My Blood Sugar Range at home after lunch is	<input type="text" value="7 mmol/l"/>
4	HOME BEDTIME My Blood Sugar Range at home at bedtime is	<input type="text" value="8 mmol/l"/>

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Internet



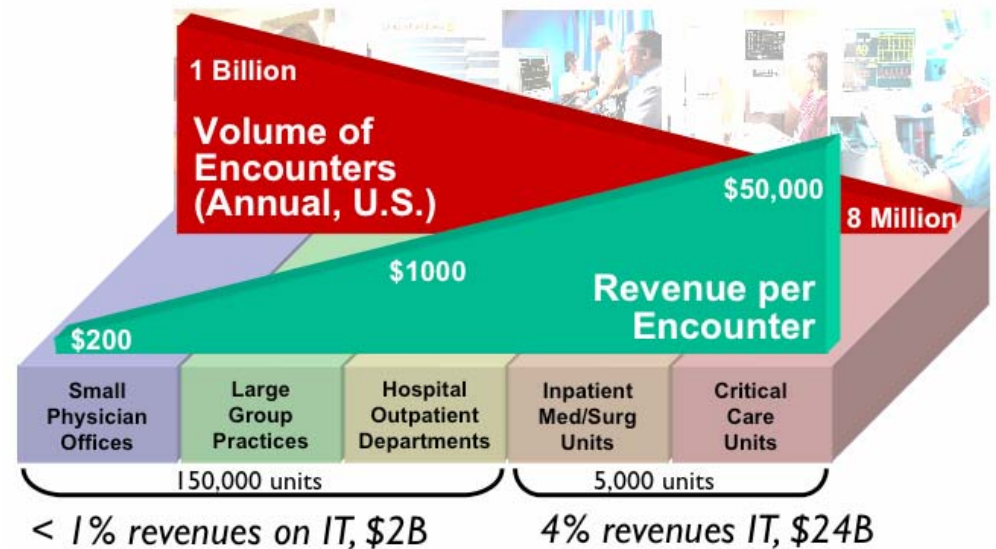
Acquisition Strategy – Purchase towards vision

- **Embedded granular / actionable decision support**
 - Reactive care (both definitions)
 - Proactive care
 - Chronic care management
 - Shared care
- **Knowledge-based medication management**
- **Robust orders loop management**
- **Enabling collaborative care with patient**
- **Performance measurement**
 - Measures and aggregates select structured elements
 - Readily able to share reports with others PRN



Remember small practices

- > 50% of all healthcare expenditures in the US on ambulatory care (rate of increase is greater for outpatient than inpatient services)
- ~80% of the nearly 1 billion annual outpatient visits take place in practices of 10 or fewer clinicians (and ~50% in practices with fewer than 5 clinicians)





Summary

- **EMRs are an essential element of achieving ‘STEEEP’ care**
 - EMRs and HIE are enablers of effective / efficient process change – not the end-result or vision
- **Having a sustainable business case for robust information management and quality**
 - Makes advanced EMR purchase a wise investment
 - Makes it more likely that the EMR will be used to support system level change / transformation
- **Acquisition strategies**
 - #1 – Decrease risks & costs; maximize returns
 - #2 – Purchase EMRs that support compelling vision