

Patient Safety Initiatives at Partners HealthCare System

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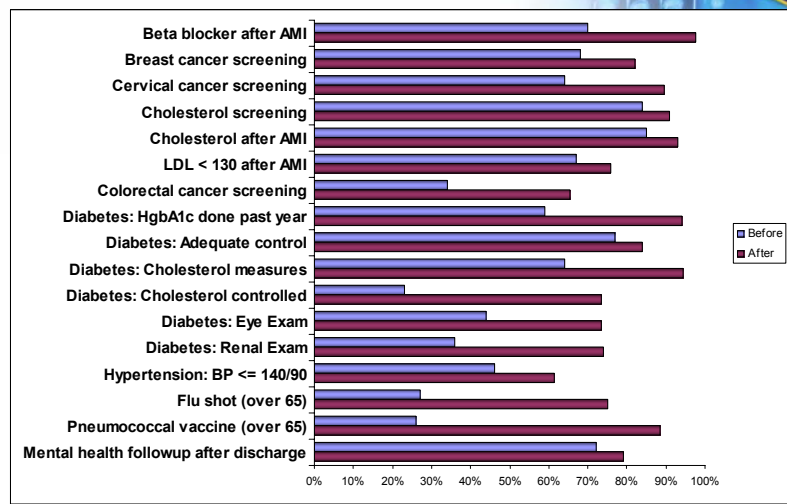
Overview

- The Evidence Base for CDS
- The AMIA Clinical Decision Support Roadmap II
- Patient Safety HIT Activities at Partners HealthCare System

The Evidence for CDS

- CDS yields increased adherence to guideline-based care, enhanced surveillance and monitoring, and decreased medication errors
— (Chaudhry et al., 2006)
- CDS, at the time of order entry in a computerized provider order entry system can help eliminate overuse, underuse, and misuse.
— (Bates et al., 2003; Austin et al., 1994; Linder, Bates and Lee, 2005; Tierney et al., 2003)
- For expensive radiologic tests and procedures this guidance at the point of ordering can guide physicians toward ordering the most appropriate and cost effective, radiologic tests.
— (Bates et al., 2003; Khorasani et al., 2003)
- Showing the cumulative charge display for all tests ordered, reminding about redundant tests ordered, providing counter-detailing during order entry, and reminding about consequent or corollary orders may also impact resource utilization
— (Bates and Gawande, 2003; Bates, 2004; McDonald et al., 2004).

VA's Success with Clinical Decision Support



Data Source: Thomson TG, Brailer DJ. The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care. Washington, DC: US Department of Health and Human Services; 2004.



United States Department of
Health & Human Services
Office of the National Coordinator for HIT

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A Roadmap for National Action on Clinical Decision Support



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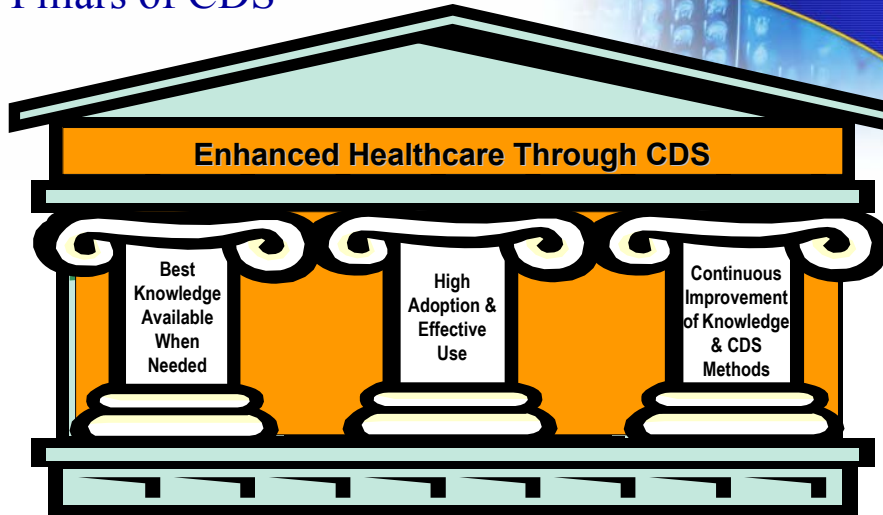


<http://www.amia.org/inside/initiatives/cds/>

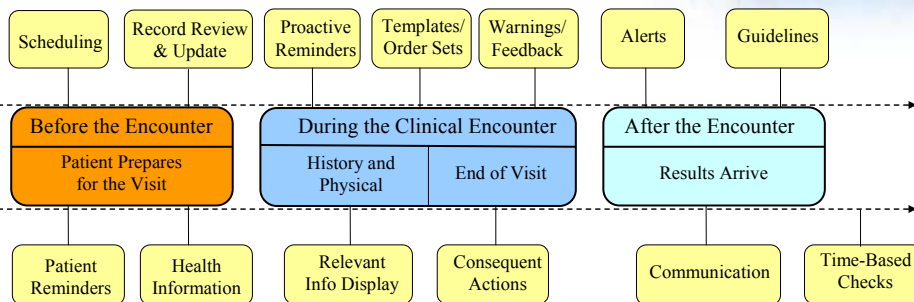
The Goal

*“to ensure that **optimal, usable and effective** clinical decision support is **widely available** to providers, patients, and individuals **where and when they need it** to make health care decisions.”*

Pillars of CDS



Opportunities for an EHR to intervene

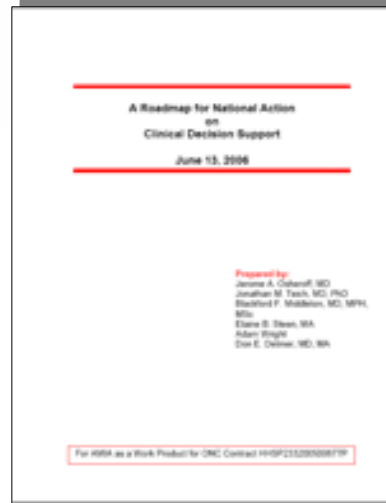


Adapted from Osheroff JA, Pifer EA, Sittig DF, Jenders RA, and Teich JM. Clinical Decision Support Implementers' Workbook. 2004.

Six Strategic Roadmap Objectives

- A. Represent clinical knowledge and CDS interventions in standardized formats
- B. Collect, organize, and distribute clinical knowledge and CDS interventions
- C. Address policy/legal/financial barriers and create additional support and enablers
- D. Improve clinical adoption and usage of CDS interventions
- E. Assess and refine the national experience with CDS
- F. Advance care-guiding knowledge

<http://www.amia.org/inside/initiatives/cds/>



ADVERTISEMENT



Quite possibly the biggest development in patient care since the telephone.

When Alexander Graham Bell invented the telephone in Boston in 1875, he was able to call his assistant in a nearby room using a wire. Today your physician can instantly call up your medical history, tests, medications and physicians' notes on a computer screen. It's called electronic medical record, EMR, and it's part of what we at Partners HealthCare call High Performance Medicine. We began installing EMR in 2003. Today about 90 percent of our primary care physicians have it at our two academic medical centers, Brigham and Women's Hospital and Massachusetts General Hospital. Two of our community hospitals, Faulkner Hospital and Newton-Wellesley Hospital are finalizing implementation of EMR now. Our hospitals in North Shore Medical Center expect full implementation by next June. Among our community-based primary care physicians, more than 60 percent are using EMR or are in the course of implementing it. High Performance Medicine provides our doctors with guidance on the appropriate tests to order. For example, EMR tells them when an x-ray will be just as revealing as an MRI, but at a fraction of the cost. Physicians can write prescriptions on-line. This allows them to safely

order the right medication, detect any allergies you might have, and know which other medications you are taking, in order to avoid dangerous drug interactions. Prescribing by computer also displays which generic drugs are effective, which have the lowest co-pay, and which are covered by your insurance. High Performance Medicine brings technological advances to the doctor's office, the pharmacy, and the neighborhood health center. We believe EMR will soon be used as effortlessly as the telephone. But with the power to help your doctor diagnose, treat and heal. For more information, go to www.Partners.org/HPM.

HIGH PERFORMANCE MEDICINE
Better, safer, more cost-effective care.

BRIGHAM AND WOMEN'S HOSPITAL



MASSACHUSETTS GENERAL HOSPITAL

Ways IT Can Improve Safety

- Prevent errors and adverse events
- Facilitating a more rapid response after an adverse event has occurred
- Tracking and providing feedback about adverse events

Bates and Gawande, NEJM 2003

Main Strategies for Preventing Errors and AEs Using IT

- Tools to improve communication
- Making knowledge more readily accessible
- Requiring key pieces of information
- Assisting with calculations
- Performing checks in real time
- Assisting with monitoring
- Providing decision support

Bates and Gawande, NEJM 2003

Specific IT Applications

- Computerized physician order entry
- Smart pumps
- Smart monitoring
- Computerized notification about critical test results
- Computerized ADE monitoring
- Tracking abnormal test results
- Electronic health record (outpatient)
 - Includes computerized prescribing

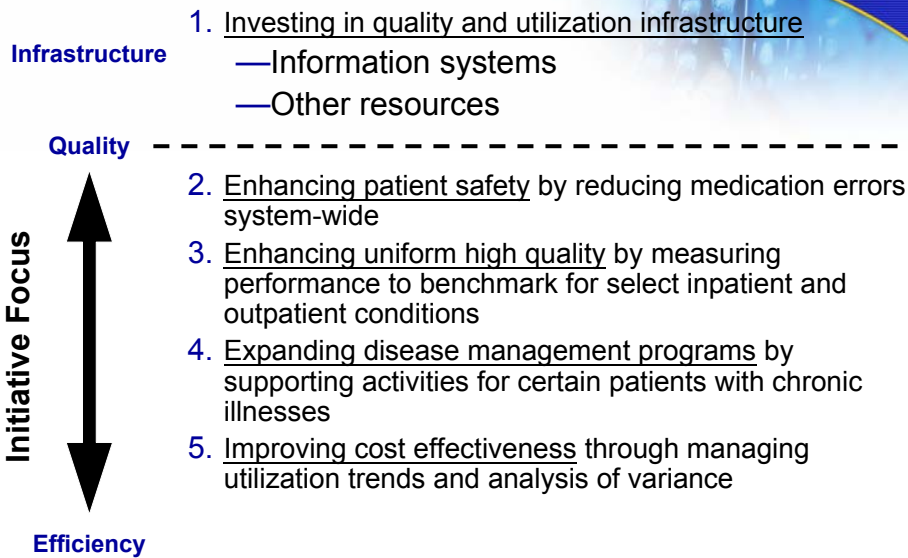
What Are the Signature Initiatives?

The Signature Initiatives are five System-wide projects with one common goal:

To deliver better care to patients.

- **Care that is:**
 - **Safer**
 - **Better coordinated**
 - **More reliable in delivering proven interventions**
- **Systems that support providers in “doing the right thing.”**

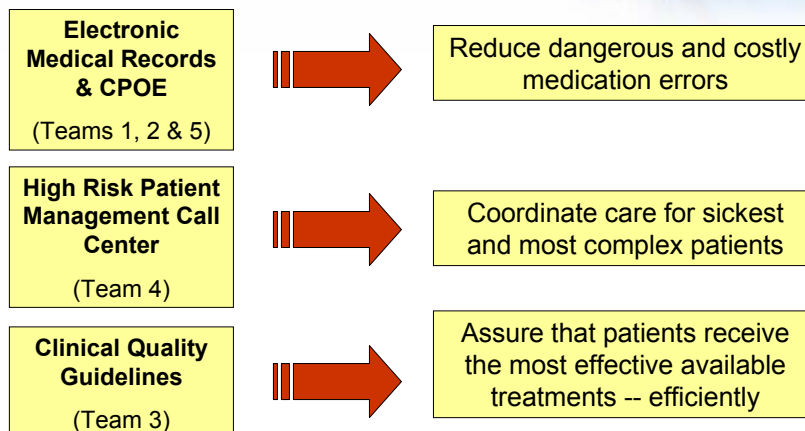
What Are the Signature Initiatives?



Why Are the Signature Initiatives So Important?

The Signature Initiatives promote systems that make it easier for doctors to provide better care to patients.

Some Systems of Care Incorporated into The Signature Initiatives



Secure Clinical Communication And Notification of Results

Automatic Reminders

Summary Flowsheets

Intuitive Chart Summary

Coded Clinical Data

Customizable Desktop

The screenshot displays a complex clinical interface with multiple panes. At the top, a navigation bar includes 'Select', 'Desktop', 'Pt Chart', 'Summary', 'Oncology', 'Custom', 'Reports', 'Admin', 'Sign', 'Results', and 'Resource'. The main area is divided into several sections: 'Demographics' (Patient name: Test, Test; ID: 16732339), 'Medications' (listing various drugs like Acetaminophen, Aspirin, etc.), 'Allergies' (listing allergies like Cephalosporins, Penicillins), 'Health Maintenance' (listing items like MCV, Ab, Test, etc.), and 'Notes' (a table of clinical notes with columns for Date, Subject, and Provider). A 'Physicians' list is also visible on the right side.

Automatic Alerts in the Clinical Workflow

The screenshot shows a warning alert box titled 'Warning: You are ordering: AMOXICILLIN Drug - Allergy Intervention'. The alert message states: 'The patient has a documented allergy: Penicillins. Reaction: Unknown.' Below the message, there are radio buttons for 'Keep New Order - select reason(s)' and a list of reasons for override: 'Patient does not have this allergy, will D/C pre-existing allergy', 'Patient has taken previously without allergic reaction', 'Low risk cross sensitivity, will monitor', 'No reasonable alternatives', and 'Other'. At the bottom of the alert box are 'Continue New Order' and 'Cancel' buttons.

LMR OMA16 - Microsoft Internet Explorer provided by Partners HealthCare System

Test,Test
15286826 (BWH) 10/19/1982 (20 yrs.) F SMM7 BIMA

Select Desktop Pt Chart: Medications Oncology Custom Reports Admin Sign Results Resource Popup

ALLERGIES:
Erythromycins - Rash / Sulfa - Steven's Johnson / ASA (ACETYSALICYLIC ACID) - Itching

Medica MICROMEDEX(R) Healthcare Series - Microsoft Internet Explorer provided by Partners Health...

Dose: 25 MG
Duration: day(s)
Dispense:
Refills:

Co

Add to Favorites for: My Lis

Done

Start LMR OMA16 - Microsof...

MICROMEDEX(R) Healthcare Series Integrated Index

Terms Matched{VIOXX, VIOXXALT, }

- Summary Documents
 - Drug Summary Information [ROFECOXIB - Drug Summary Information]
- Drug Information
 - Ingredients from DRUGDEX Tradename Products [ROFECOXIB - Drug Evaluation]
 - PHYSICIANS' DESK REFERENCE [VIOXX ORAL SUSPENSION - Complete Monograph]
 - Ingredients from MARTINDALE Tradename Products [ROFECOXIB - Complete Monograph]
 - List Of DRUGDEX® Tradename Products
 - List Of MARTINDALE Tradename Products
- Disease Information

KnowledgeLin

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CAD Quality Dashboard – Summary Page

Quality Dashboards: Coronary Artery Disease

Institution: BWH Clinic: BIMA User: LINDER,JEFFREY A.,M.D.,M.P.H. Role: Provider

Summary Measures Patient Lists

Measure	My Value (N)	Clinic Average (N)	Target
Lipid Management: % of patient with LDL < 100	61% (19)	63% (1747)	> 62%
Anti-platelet Management: % of patients on anti-platelet agent	90% (28)	82% (2271)	
Blood Pressure Management: % of patients with BP at or below goal	74% (23)	64% (1778)	> 68%
Smoking Status Documentation: % of patients with smoking status documented	97% (30)	75% (2072)	
BMI Documentation: % of patients with BMI documented	61% (19)	54% (1501)	
Beta-blocker Management: % of patients on beta-blocker	84% (26)	74% (2035)	> 80%
ACE Inhibitor/ARB Management: % of patients on ACE inhibitor/angiotensin-receptor blocker	71% (22)	67% (1843)	
Zero Defect Care: % of patients with zero deficiencies	0% (0)	1% (19)	
Total # of My CAD Patients:		31	

Knowledge Management Portal

Home Browse by Topic Filter-based Search

Welcome to the KM portal!

Announcements

We've changed!

With usability in mind, we recently underwent a redesign of our Knowledge Management portal. Alan Rose, usability expert in CARD, has completed interface redesign for other Partners applications such as Patient Gateway and LNK to name a few. The Knowledge Management portal is about a year old and we thought it would be the right time to implement usability improvements and provide our users with easier to use search interfaces.

What has changed? First, we upgraded our code to a .NET platform through the hard work of **Web Integration Team** and **PHS Web Development**. Second, we've improved our graphical interface and site layout, and we've added bread crumbs for improved taxonomy navigation. With filter-based search, you will find you can refine your search within the same screen without having to use the back button. With keyword search, navigation between pages of search results is easier to use. These are just a few of the improvements you will find.

If you are visiting the site for the first time, please visit our getting started guide which provides an overview of search capability and functions. You can also review the glossary of terms to familiarize yourself with our site's terms and terminology.

If you have feedback related to the site's redesign, please email Cathyann Harris at charris@partners.org who is coordinating the development, deployment efforts for this site.

This site is intended to help anyone at Partners who is engaged in embedding clinical knowledge into the various electronic health record systems share that knowledge with each other. Partners has a rich inventory of order sets, rules, reminders, expert dosing databases, drug information, and documentation templates embedded in a rich array of clinical systems. The Partners Knowledge Management Team has begun the process to inventory and catalogue these assets to support sharing and efficient maintenance.

You can access these assets in three ways:

[Keyword Search](#) [Browse by Topic](#) [Filter-based Search](#)

Site navigation is organized by the four key domains of the Partners Signature Initiatives: Quality, Safety, Disease Management, and Trend Management.

Filter-based search makes it possible to look at content comparatively. For example, if one would like to compare order sets for cardiac interventions at the Brigham and Women's Hospital and the Massachusetts General Hospital, then filter-based search is the simplest way to view information sifted for these attributes.

Alternatively, if one wants to see all the content related to managing anticoagulation, then navigating there from the Safety section of site navigation will be the simplest. For more information on this please go to "Getting Started". Our team will continue to catalogue and update in the upcoming years, particularly as more hospitals implement physician order entry systems and the LNK.

In addition, in 2005, we'll begin implementing specialized tools to support better collaboration with subject matter experts in content development as well as more efficient management of the tracking, versioning, and cataloging needed for content management. We look forward to working with all of you to make the portal work for you.

If you are looking for content and cannot find it, or if you are having technical difficulty with the site, please contact the Help Desk at 617-732-5927 and open a ticket under the **KNOWLEDGE MANAGEMENT** queue, we'll be glad to help. Our hours of primary support are **8:30-4:30 Mon-Friday**.

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Compare Content Across Organizations

Knowledge Management Portal

Keyword search → Site Search:

Home Browse by Topic **Filter-based Search**

Search Criteria

Clinical Disciplines

- All Clinical Disciplines
- Anesthesiology/Perioperative Medicine
- Behavioral Medicine
- Burn Management
- Cardiology (Interventional)
- Cardiology (Surgical)
- Emergency Medicine
- Endocrinology
- Gastroenterology
- General Medicine
- General Surgery
- GI Colorectal Surgery
- Hematology and Oncology
- Infectious Disease
- Nephrology
- Neurology
- Neurosurgery
- Neurophysiology
- Obstetrics and Gynecology
- Orthopedic

Filters

Entity: All Entities (BMH) (MGH) (RFCI)

Venue: Clinic Care All Venues Ambulatory Care

Patient Age Group: All Patient Age Groups Geriatric

Application: All Applications BICS Event Monitor BICS Order Entry

Content Type: All Content Types Drug Information Expert Dosing

Patient Safety: Clinic and Lab Orders All Patient Safety Consequent Order/Lab Display

Disease Management: All Disease Management Coronary Artery Disease Diabetes

Submit Filter Search

Results

Document Title	Content Type	Entity	Selected Search Filters:
Aortic Surgery Post Op Pathway - BMH	Order Sets and Templates	BMH	Clinical Disciplines • Cardiology (Surgical)
Atrial Fibrillation Protocol - MGH	Order Sets and Templates	MGH	Entity • BMH • MGH
Cardiac ICU Additional Post Op Orders Transplant Patients - MGH	Order Sets and Templates	MGH	Venue • All Venues
Cardiac Surgery Admission Pre-Op - BMH	Order Sets and Templates	BMH	Patient Age Group • All Patient Age Groups
Cardiac Surgery Admission Pre-Op - MGH	Order Sets and Templates	MGH	Application • All Applications
Cardiac Surgery Elbow B Front Door Same Day	Order Sets and Templates	MGH	Content Type

IBUPROFEN - Microsoft Internet Explorer provided by Partners Healthcare System

Address: https://e7.documentum.com/eRoom/SEAST3/ClinicalContent/Update/0_B072

EMC documentum eRoom

My eRooms > Partners Geriatric v2 > NSAIDs and COX-2 Inhibitors > NSAIDs database > IBUPROFEN

IBUPROFEN
a database entry created by Severio Navigla on 10 Sep 04

next	previous	summary
Rollup Name	IBUPROFEN	
Route	PO	
Lexicomp Reference	... Use lowest effective dose for shortest period possible...	
Current BCS FOC	Q6H, PRN	
Current BCS Min.Dose	200 MG	
Current BCS Max.Dose	800 MG	
Current BCS Prt.Dose	400 MG	
Current BCS Substitute Meds		
Current BCS Message	Q6h	
Proposed Geriatric FOC	Q6h	
Proposed Geriatric Min.Dose	200 MG	
Proposed Geriatric Max.Dose	800 MG	
Proposed Geriatric Prt.Dose	400 MG	
Proposed Geriatric Substitute Meds		
Proposed Geriatric Message		
Comments	<p>Suggest regular, not prn, treatment for 5-7 days and then re-evaluate. (Claus Hamann, Partners Healthcare, 30 Sep 04 10:29am)</p> <p>Agree (Jatin Dave, 30 Sep 04 11:21pm)</p> <p>Round 1 Summary (Oct 18) (Eileen Yoshida, Partners Healthcare, 18 Oct 04 4:00pm)</p> <p>1. Agreement on min dose, max dose and preferred (default) dose. 2. Re: frequency - suggestion made to change to q6h (NOT q6h prn) for better pain management. In addition, in LMR, we technically, we default to prn dosing, therefore, must use q6h.</p> <p>I would like to see max dose at 600mg (James Rudolph, 26 Oct 04 8:51pm) However, I can be easily persuaded to keep it at 800.</p> <p>Ibuprofen (Andrew Seger, 29 Oct 04 8:55am) Default Dose = 400 mg every 6 hours; current labeling says max is 3200 mg daily; max dose = 800 mg max frequency= Q6H = 2400 mg QD</p> <p>Round 2 Summary (Nov 14) (Eileen Yoshida, Partners Healthcare, 15 Nov 04 10:56am)</p> <p>1. Still need to finalize max. dose of ibuprofen. 2. I will try to pull (and post) Ann Rheum Dis 2004 reference to see if this is helpful</p>	

Multi-Clinician Collaboration on a 300 x 5 Decision Table

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Ten Commandments for Effective Decision Support

1. Speed is everything
2. Anticipate needs and deliver in real time
3. Fit into the user's workflow
4. Little things can make a big difference
5. Physicians resist stopping
6. Changing direction is fine
7. Simple interventions work best
8. Asking for information is OK—but be sure you really need it
9. Monitor impact, get feedback, and respond.
10. Knowledge-based systems must be managed and maintained.

Bates DW, Middleton B, et al JAMIA 2003

“I conclude that though the individual physician is not perfectible, the system of care is, and that the computer will play a major part in the perfection of future care systems.”

*Clem McDonald, MD
NEJM 295:1355, 1976*



Thank you!

Blackford Middleton, MD
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