

Computing Support for the Enterprise

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HST 950 3-04

Overview of Partners Information Systems

- ◆ 55,000 devices attached to the Partners network
- ◆ 110 locations on the network
- ◆ 750 servers
- ◆ 800 applications
- ◆ 540 active projects
- ◆ 1,100 employees based in 19 locations
- ◆ FY04 capital budget of \$35M
- ◆ FY04 operating budget of \$120M

Defining The Nature of “Support”

- ◆ Leverage of organizational strategies and goals
- ◆ Continuous improvement of core processes
- ◆ Technology vector
- ◆ Anticipate strategic trajectories

How Should We Support Our Disease Management Initiative?

- ◆ Develop and publish best practices
- ◆ Monitor costs, quality and care activity of a cohort
- ◆ Guide documentation
- ◆ Remind providers and patients of steps to be taken
- ◆ Critique specific care decisions
- ◆ Monitor and manage a specific patient

Partners Patient Safety Goals

Goal:

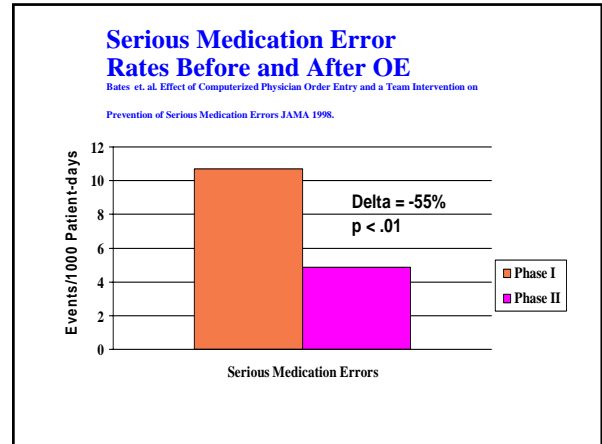
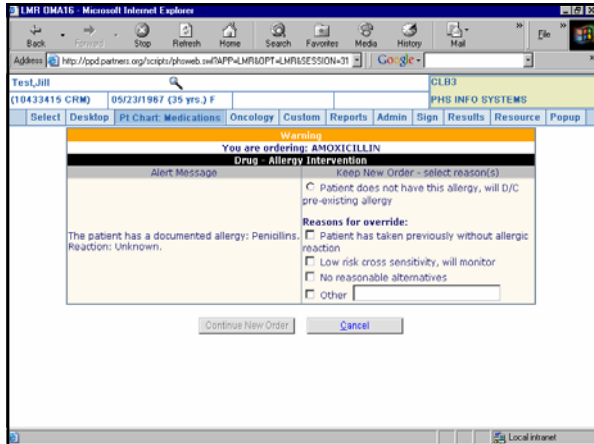
- » Establish uniform electronic error reporting in all Partners acute care hospitals in the next year
- » Increase standardized error-mitigating technology
- » Decrease drug errors
- » Implement critical clinical data transfer from acute to non-acute care sites in the next year

What: Building on Partners safety efforts by focusing first on medication error reduction and patient “hand offs”

- » Standardize decision aids for CPOE and EMR
- » Pilot, evaluate, and spread proven effective error mitigating technology (smart pumps, bar coding, eMAR) and spread electronic error reporting
- » Develop standardized sets of critical data to be required at patient transitions between sites of care and implement process to ensure data are transferred along with the patient

A Technology Vector

- ◆ Provider order entry
- ◆ Computerized medical record
- ◆ Remote provision of care



Impact of BWH Inpatient Provider Order Entry

Teich, et al. Effects of Computerized Physician Order Entry on Prescribing Practices Arch Int Med 2000.

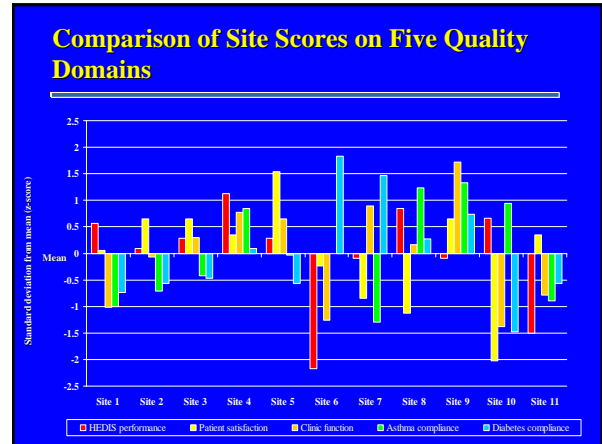
- ◆ Nizatidine use, for all oral H2 blocker orders, increased from 12% to 81%
- ◆ The percent of doses over the suggested maximum decreased from 2% to .6%
- ◆ The percent of orders for Ondansetron, with a frequency of 3 times daily, increased from 6% to 75%
- ◆ The percent of bed rest orders with a consequent order of heparin increased from 24% to 54%

Medications	Problems	Procedures	Allergies
Synthroid 100 QD [N]	Coronary artery disease	Hysterectomy	Codine
Inderal 20 TID [N]	Congestive heart failure	Appendectomy	Sulfa
Lasiprill 20 QD [N]	Hypothyroidism [N]	Pnea	
	Sinusitis		
	Hypertension [N]		
	Gerd [N]		

Summary of the Scope of the Outpatient Care Problem

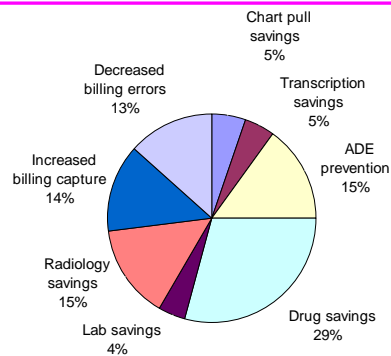
(1) Gandhi T et al. Adverse drug events in primary care, under review, NEJM. (2) Gandhi T et al. Drug complications in outpatient settings J Gen Int Med 2000. (3) Gandhi TK et al. Adverse drug events in primary care, under review, NEJM. (4) Poon E et al. Failure to follow mammographers recommendations on marginally abnormal mammograms: determination of associated factors (abstract). J Gen Intern Med 2001. (5) Gandhi T et al. Communication breakdown in the outpatient referral process. J Gen Intern Med 2000. (6) Mavaglia SM, et al. Using an electronic medical record to identify opportunities to improve compliance with cholesterol guidelines. J Gen Intern Med 2001.

For Every:	There Appear to Be:
1000 patients coming in for outpatient care (1)	14 patients with life-threatening or serious ADEs
1000 outpatients who are taking a prescription drug (2)	90 who seek medical attention because of drug complications
1000 prescriptions written (3)	40 with medical errors
1000 women with a marginally abnormal mammogram (4)	360 who will not receive appropriate follow-up care
1000 referrals (5)	250 referring physicians who have not received follow-up information 4 weeks later
1000 patients who qualified for secondary prevention of high cholesterol (6)	380 will not have a LDL-C, within 3 years, on record



LMR Benefits

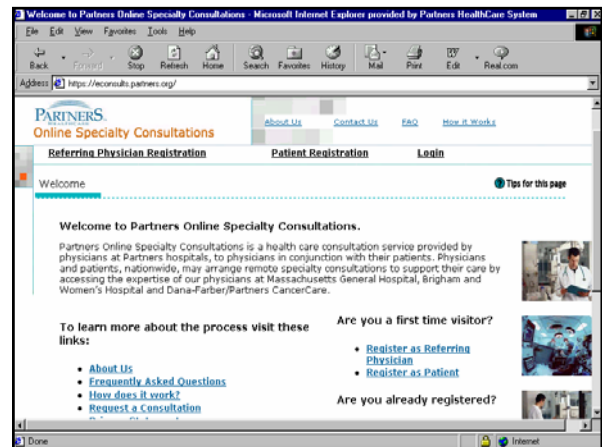
Wang, et al. A Cost-Benefit Analysis for Ambulatory-Care Electronic Medical Records in Primary Care. American Journal of Medicine 2003



Teledermatology Trial Results

Partners Internal Analysis 2001.

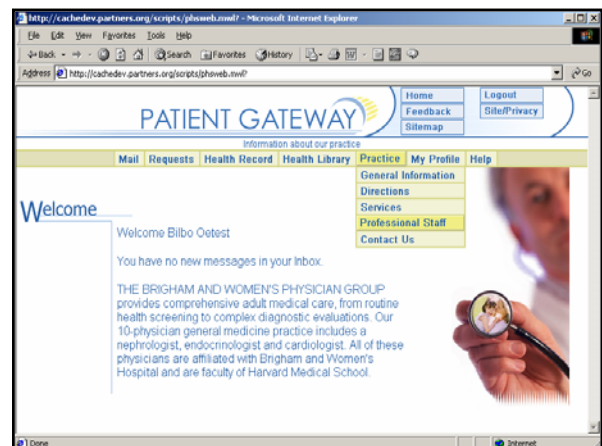
- ◆ Dermatologists are at least 3 times as efficient providing teleconsultations as they are in the office
- ◆ Supporting evidence from patients
 - Achieved symptom relieve twice as fast with teledermatology consult



Care Impact of eConsults

Kedar I. Physician-to-Physician Internet-Based Consultations. BMJ 2003.

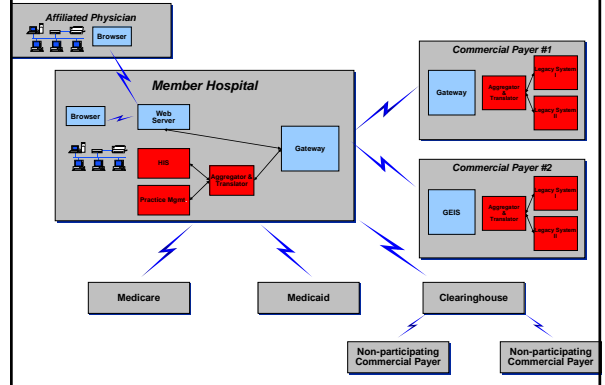
- ◆ Diagnosis changed in 5% of cases
- ◆ Care plan changes discussed in 85% of cases
 - New chemotherapy regimen recommended - 67%
 - Other medical regimen & surgery discussed - 17%
 - Radiation therapy suggested - 13%
 - Termination of drugs recommended - 3%
 - Drug dosage change suggested- 3%



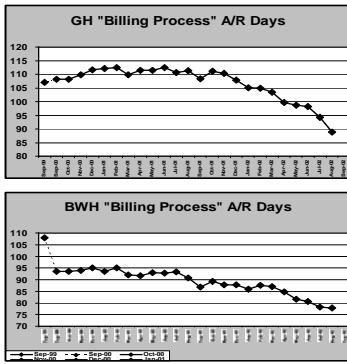
The Kaiser Experience

- ◆ KP-Online supports:
 - Ask a question
 - Review guidelines and consumer information
 - Review benefits
- ◆ Piloted with 100,000 members
- ◆ Resulting in:
 - 11% fewer office visits
 - 14% treated their illness at home
 - 46% fewer calls to nurses
 - 42% improved perception of Kaiser
 - 59% reported understanding their disease better

NEHEN Architecture



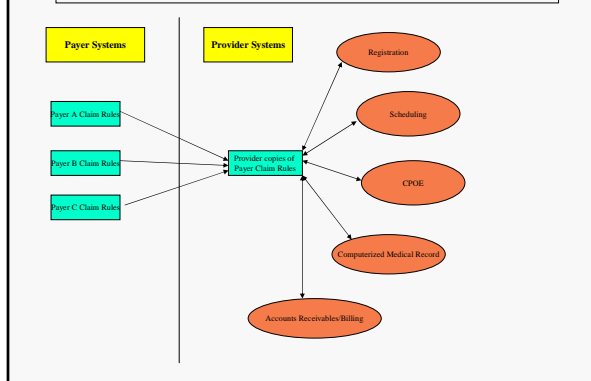
Days A/R Outstanding has Shown Steady Improvement



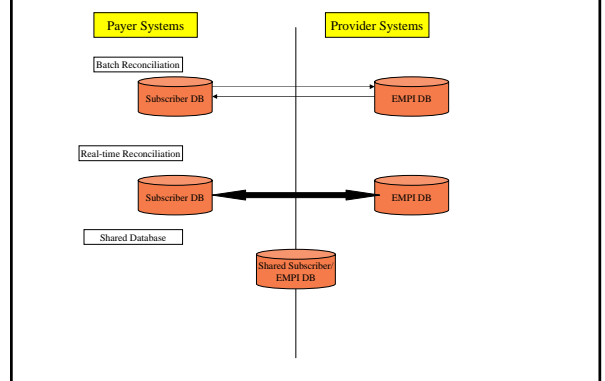
Outpatient Registration Reconciliation

Member #	Demographics	Percent
Y	Y	87%
Y	N	3%
N	Y	7%
N	N	3%

Payer-Provider Shared Business Logic



Synchronization of Subscriber and Master Patient Index Databases



Massachusetts Healthcare Organizations Cooperate on Innovative Strategy: Regional Collaboration

Health plans, hospitals, physicians, and state government commit to S.H.A.R.E. initiative

WALTHAM—April 25, 2003-- A group of health care organizations, under the auspices of the Massachusetts Health Data Consortium (the Consortium) (<http://www.mahealthdata.org>), have made a commitment to collaborate and explore how information technology can be used to address the critical issues of healthcare quality and administrative efficiency and integration. This new venture is called S.H.A.R.E. – Simplifying Healthcare Among Regional Entities. Two of the region’s prominent healthcare organizations, Blue Cross Blue Shield of Massachusetts (BCBSMA) (<http://www.bcbsma.com>) and Partners Healthcare System (Partners) (<http://www.partners.org>), are playing leadership roles in the start-up of the S.H.A.R.E. initiative and encouraging the participation of other organizations.

Number of Patients with a Medical Record Number at Both Entities (Pair)

Entity-Pair	9/20/01	12/19/02	Percent Increase
MGH/BWH	193,170	227,685	18%
SRH/BWH	22,938	27,870	22%
SRH/MGH	43,896	54,676	25%
FH/BWH	52,025	84,506	62%
NWH/BWH	42,224	61,235	45%
NWH/MGH	42,415	64,280	52%
PCHI/BWH	6,337	8,112	28%
PCHI/MGH	4,871	6,642	36%

Total number of MRNs (12/02) - MGH (1.2M), BWH (1.2M), SRH (105K), FH (170K), NWH (304K), PCHI-CRM (63K)
PCHI numbers are from the Charles River Medical Associates MPL

Healthcare Utilization of the Chronically Ill

Anderson, G. Presentation to Pfizer Health Systems Advisory Board, June 18, 2003

Number of Chronic Diseases	Avg. Number of Annual Prescriptions	Avg. Number of Unique Physicians Seen in a Year
Two	14.4	5.2
Three	23.5	6.5
Four	31.5	8.1
Five or more	48.4	13.8

Candidate MA_SHARE Projects

- ◆ Prescription history available in the ED
- ◆ Community-wide surveillance
- ◆ Personal health record
- ◆ Cancer care network
- ◆ Home care mobile computing
- ◆ Patient “thin” directory
- ◆ Provider “thin” directory
- ◆ Regional shared credentialing function

Conclusions

- ◆ Information technology can be a critical contributor to the strategies and plans of integrated delivery systems
- ◆ Implementing the technology is difficult and may never be easy; there is nothing looming that will fundamentally ease the challenge
- ◆ The support agenda is developed through four fundamental vectors:
 - Derived from overall strategy
 - Continuous improvement of core activities
 - Technology vector
 - Assessment of strategic trajectories