Computing Support for the Enterprise

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Partners HealthCare System

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
Serious Medication Error Rates Before and After OE


Impact of BWH Inpatient Provider Order Entry


- 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%

Summary of the Scope of the Outpatient Care Problem

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

Comparison of Site Scores on Five Quality Domains
**LMR Benefits**


- Chart pull savings 5%
- Transcription savings 5%
- ADE prevention 15%
- Drug savings 29%
- Lab savings 4%
- Decreased billing errors 13%
- Increased billing capture 14%
- Radiology savings 15%

**Teledermatology Trial Results**

Dermatologists are at least 3 times as efficient providing teleconsultations as they are in the office

Supporting evidence from patients:
- Achieved symptom relief twice as fast with teledermatology consult

**Care Impact of eConsults**


- 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%

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**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

**Outpatient Registration Reconciliation**

<table>
<thead>
<tr>
<th>Member #</th>
<th>Demographics</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Y</td>
<td>87%</td>
</tr>
<tr>
<td>Y</td>
<td>N</td>
<td>3%</td>
</tr>
<tr>
<td>N</td>
<td>Y</td>
<td>7%</td>
</tr>
<tr>
<td>N</td>
<td>N</td>
<td>3%</td>
</tr>
</tbody>
</table>

**Days A/R Outstanding has Shown Steady Improvement**

- GH "Billing Process" A/R Days
- BWH "Billing Process" A/R Days

**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.

<table>
<thead>
<tr>
<th>Number of Patients with a Medical Record Number at Both Entities (Pair)</th>
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<tbody>
<tr>
<td>Entity-Pair</td>
</tr>
<tr>
<td>MGH/ BWH</td>
</tr>
<tr>
<td>SRH/ BWH</td>
</tr>
<tr>
<td>SRH/ MGH</td>
</tr>
<tr>
<td>FH/ BWH</td>
</tr>
<tr>
<td>NWH/ BWH</td>
</tr>
<tr>
<td>NWH/ MGH</td>
</tr>
<tr>
<td>PCHI/ BWH</td>
</tr>
<tr>
<td>PCHI/ MGH</td>
</tr>
</tbody>
</table>

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 MPI.

Healthcare Utilization of the Chronically Ill

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

<table>
<thead>
<tr>
<th>Number of Chronic Diseases</th>
<th>Avg. Number of Annual Prescriptions</th>
<th>Avg. Number of Unique Physicians Seen in a Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
<td>14.4</td>
<td>5.2</td>
</tr>
<tr>
<td>Three</td>
<td>23.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Four</td>
<td>31.5</td>
<td>8.1</td>
</tr>
<tr>
<td>Five or more</td>
<td>48.4</td>
<td>13.8</td>
</tr>
</tbody>
</table>

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