The IT Challenge of Population Health

7th Annual CHIEF/SoCal HIMSS CIO Forum

Richard Nixon Library
November 18, 2014

Scott Joslyn
Sr. Vice President & CIO
MemorialCare Health System
The IT Challenge(s) of Population Health

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Main Themes

• Today’s IT realities, opportunities, and challenges in the era of population health – the drivers of what we do
• Where we are and what we are doing – our “translation” of market forces
• IT planning and innovation
• Thoughts and advice, for what they are worth
We Have Gone from This...

**Circa 2003**

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<td>Cerner</td>
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Now that we have arrived...

“The EHR Alone Is Neither Differentiating Nor Innovative”

– Gartner
What’s Next in a “Post-EMR World?”

“EMR”
Basic Business Intelligence/Analytics
Intra-organizational Integration
Basic Identity Management

“Population Health”
Multi-organizational Data Exchange
Multi-organizational Identity Management

Broader Business Intelligence/Analytics
Case Management
Care Coordination

“Social – Mobile – Cloud”

The new frontier – scale, affiliation, new tools, risk management

Tables stakes – Assumed
The future ain't what it used to be.

Yogi Berra
Hype Cycle for Healthcare Provider Applications, Analytics, and Systems, 2014
## Representative Population Health IT Requirements

<table>
<thead>
<tr>
<th>Process</th>
<th>Requirements</th>
<th>IT Functions</th>
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</thead>
</table>
| **1. Identify Populations**                  | • Data acquisition and aggregation  
• Predictive modeling  
• Algorithmic population segmentation  
• Patient-provider attribution | • Data aggregation platform: EMR, CDR, CDW; HIE data warehouse  
• Claims data source  
• Algorithms and analytics for inclusion/exclusion criteria by population  
• Processes, algorithms for attribution |
| **2. Map and Track Care**                    | • Identify chronic disease populations  
• Map against care guidelines  
• Map against care measures over time | • Disease registries |
| **3. Deliver Care**                          | • Clinical data view, e-prescribing, clinical documentation  
• Decision support for interventions  
• Patient outreach for interventions | • EMR or physician portal  
• Disease registry: patient-centered view  
• Virtual care, home monitoring |
| **4. Coordinate Cross-Continuum Care**       | • Care manager: patient data access; clinical documentation; communication tools  
• Care plan mapped against patient data  
• Remote data acquisition: vital signs; lab values  
• Real-time video interaction at remote locations | • Care management systems  
• Encounter notification system  
• Home monitoring data capture  
• Telemedicine capabilities |
| **5. Engage Patients**                       | • Patient contact info: email; mobile phone numbers  
• Multiple communication modalities | • Patient portal  
• Text-based communication systems  
• Call center |
| **6. Administer, Monitor and Report**        | • Performance data vs. goals; reporting at clinician, practice, organization-wide levels | • Data aggregation and analysis platform  
• Dashboards, other display tools |

Source: The Advisory Board Company
Bottom Line on Provider-led Care Management

<table>
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<th>Impacts</th>
<th>Top Recommendations</th>
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<tbody>
<tr>
<td>HDO CIOs and clinical leaders are learning that the requirements for care management far exceed their preconceptions, requiring fundamental rethinking of architecture and vendor purchasing and integration approaches.</td>
<td>• Include the experience of payer-led care management in cataloging the IT requirements for provider-led care management.</td>
</tr>
<tr>
<td>HDOs that expect to move to accountable care or move away from fee-for-service payment arrangements are discovering they currently have only immature solutions for care management.</td>
<td>• Expect that your first care management approach will not be your long-term choice.</td>
</tr>
</tbody>
</table>

“[Provider] institutions’ understanding of the requirements is as preliminary as vendors' offerings.”

Source: Gartner (February 2013)

Top Actions for Healthcare Delivery Organization CIOs, 2013: Support Provider-Led Care Management
Wes Rishel, Gartner publication G00248027, February 2013
The Heart of the Matter: Information-driven Care Delivery

**HMO Patients** (Closed System)
- EMR Data
- Hospital ADT Data
- Biometric Data

**PPO Patients** (Wild West)
- Lab Results
- Pharmacy Data
- HRA Data

**“Big Data” (Not Just Our Data)**
- Payer Claims
- Case Notes

**1. “Population” Activities**
- Risk stratification
- Disease management
- Best practices
- Correlation/causation
- Predictive analytics

**2. Individual Patient Activities**
- Low-cost interventions
- Care management
- Venues of care
- Primary care
- Specialist care

**Determine what works, what doesn’t; understand risk, take risk**

**Stratify and arm workforce; spend time on patients who need it**
Jane Smith, Patient with Diabetes

OB-GYN

Mammography

Endocrinologist

Lab Test Results

Pharmacy

PH Data Warehouse and Disease Registries

Primary Care Physician • OB-GYN • Endocrinologist

Physicians on the front lines of treatment

“Portal”
The Population Health Über Warehouse

- Medicare Intermediary
- Health Plans
- Hospital Outreach & Physician Office Labs
- National & Regional Labs
- National Pharmacy Databases
- Primary Care Physicians
- Specialists & Ancillary Providers
- Web Based Administrative Data Inputs
- EMRs

Population Health DATA WAREHOUSE

Our information “footprint” today
What we are recognizing is that the most effective delivery model is an integrated delivery model. We can reduce waste, improve quality of care, provide people access to the top facilities in the nation, frankly, and do that in an integrated way.”

Pam Kehaly
Anthem Blue Cross
The Rationale of Mergers and Affiliations

Objectives of Partnership

"New Market" Partnership Value

Scale

Financial

Operational

Scope

Clinical

Reach

Geographic

Consolidate local position

Centralize supply purchasing

Merge back office functions

Increase operational efficiency

Integrate services across care continuum

Develop care management competencies

Stake regional footprint

Source: The Advisory Board Company.
Some Obvious Challenges: Which data, whose Data, and How?

- Biometric Data
- EMR Data
- Hospital ADT Data
- Payer Claims
- Case Notes
- Lab Results
- Pharmacy Data
- HRA Data

“Big Data” (Not Just Our Data)

1. “Population” Activities
   - Determine what works, what doesn’t; understand risk, take risk

2. Individual Patient Activities
   - Stratify and arm workforce; spend time on patients who need it

Our Collective Goals
“...The average [healthcare] company...is relatively small and can access only limited amounts of data. Larger players, however, usually swim in bigger pools of data, which they can more readily use to create value.”

“The US health care sector...is dotted by many small companies and individual physicians’ practices. Large hospital chains, national insurers, and drug manufacturers, by contrast, stand to gain substantially through the pooling and more effective analysis of data.”

Are you ready for the era of ‘big data’?

MCKINSEY GLOBAL INSTITUTE
October 2011
IT Building Blocks of Preparation for Digital Business in Healthcare

Provider
Real-time Health System
- Situational Awareness
- Mobile
- Connected
- Enabling

Payers
Admin. Transformation
- Modernize
- Outsource
- Adaptive

#GartnerSYM
A Brief Few Points Around the Perimeter of Our Information-driven Care Delivery Efforts

1. Meaningful Use
2. Interoperability
3. Patient engagement
4. Analytics
5. Managed care
6. IT Planning
7. Innovation
8. Optimization
9. Project Management
Meaningful Use is a Step to Population Health

### Population Health Management

- **Identify Populations**
- **Map and Track Care**
- **Deliver Care**
- **Coordinate Cross-Continuum Care**
- **Engage Patients**

### Meaningful Use

Clinical data (e.g., **Problem List, Medication List, Medication Allergy List, Demographics, Vital Signs**) collected and normalized in CEHRT\(^1\) for subsequent use to identify high utilizers, high-risk patients and patients with chronic diseases.

**Patient List, Public Health Objectives, and Clinical Quality Measures** contribute to map and track care of patient population, as well as the health of the community and public.

**CDS,\(^2\) CPOE,\(^3\) ePrescribing** are gearing towards evidence-based care delivery at the point of care and beyond. Ensure the right care is delivered correctly.

**Transitions of Care** with care plans and future requirements to **Follow Through the Orders and Referral** focus on care coordination across different settings.

**View, Download, and Transmit, Patient-Specific Education Resources, Patient-Generated Health Data** engage patients into their own care. Allow patients to be proactive in their own health.

“We envision a future where information follows patients, *unconstrained by competitive rivalry, by geographic boundaries, by cultural disinclinations to collaborate,*” he said. “We want teams to emerge in local communities that make exchange possible. *And we will be using the meaningful use framework and all other levers at our disposal to make that possible.*”

David Blumenthal, MD

National coordinator for health information technology at the federal Office of the National Coordinator for Health Information Technology (ONC)

CHIME Meeting, Phoenix, AZ, October 6, 2010
Care Everywhere

Epic Care Everywhere team monitoring things from the Command Center

- Francine – First patient to be linked using Care Everywhere

MemorialCare ↔ Talbert Medical Group
Use of Interoperability

760,000 Patient Records Exchanged per Month

- Epic to Epic
- Epic to Non-Epic: Cross-Organization
- Epic to Non-Epic: Internal Exchange
- Epic to Non-Epic: Abstraction
Epic MyChart
Patient Portal

Your paper chart is history

We’re pleased to bring you the nation’s highest rated electronic medical record system. Introducing myChart, your access point to your health information.

myChart is a patient portal where you can:
- Check the accuracy of your health information
- Complete health questionnaires
- Get test results for you and your family members
- Obtain information and instructions on your health condition

To get started or to learn more, email MyChartSupport@memorialcare.org or call our helpline at 562-933-9450 or toll free at 1-855-647-7787 and select option 4.

Interested in the free myChart App for your smartphone? Go to MemorialCare.org and click on myChart for more information, or search for “myChart” in iTunes or Google Play.

Note: The app screenshot may reflect another participating hospital. Once you have installed myChart, you will be given the opportunity to select MemorialCare’s myChart portal.

Copyright 2013 Epic Systems Corporation. All rights reserved.
Current myChart Stats

Active myChart Patients

- Active myChart Patients over time from Jan '14 to Oct '14.
But Disparate EMRs Pose HIE and Multiple Portal Challenges

What’s needed is a solution that aggregates the information across our various systems (e.g. Epic, NextGen, Allscripts) and disseminates that information to our patients and providers.
Motivations for Engagement Vary: Activating the “Non-Activated”

- **High Motivation, Big Behavior Change Needed**:
  - Myopia
  - Asthma

- **Low Motivation, Small Behavior Change Needed**:
  - Hypertension
  - CAD, Diet, Exercise (Rising Risk)

**Challenge:**
Lots of benefit, but hard to effect

Derived from Clement Chen, CHIME Focus Group
Consumer Driven Balance of Privacy and Accountability

Do Not Disturb

My Behavior My Business

Shape Up or Pay Up
Data Warehouse Overview

Current Source Systems
- Epic
- Siemens (CHLB)
- Keane
- EPSi
- Avatar (HCAHPS)
- Truven (Core Measures)
- QualNet
- Medversant (Hospital Credentialing)
- ORMIS
- SunQuest (OCM Lab)
- XIFIN (Lab Billing)
- OBstat
- Peminic (Risk)
- EZ-Cap
- EMPI

Sources In Development or Planned
- MHS
- Echo
- InterSystems: HIE, HL7, NLP
- Health Language API/MTM
- NHMG
  1. MC400 (Dec 14)
  2. MHC (Q3 15?)
- NextGen
  1. QNX
  3. QNX
- TXF
- IDX

Legend
- In Prod
- In Dev/Queue

Legend
- Source Data
- Integrated Warehouse
- Query Methods
- Presentation Layer

Enterprise Data Dictionary
(MetaPedia)

Universes
(Drag & Drop Query Composition)
Available by Subject Area/Domain:
Hospital Billing, Professional Billing, Orders, Results, OR, ER, etc.

Direct SQL Queries

Managed Care
Data Model:
Claims, Eligibility, etc.
Go-Live with Tapestry and MC400 with NHMG Tapestry Go-Live

SAP BI Suite Analysis Tools

Enterprise Data Warehouse

Custom Applications
- Productivity Tracker
- Audit Trail Analytics
- Asset Tracking
- RAC Audit Tracker

Sepsis
- OBstat/Perinatal
- Medication Reconciliation
- Insight

3rd Party Applications
- MHS Enterprise Data Warehouse & Analytics Portfolio
- June 2014

Legend
- Productivity Tracker
- Audit Trail Analytics
- Asset Tracking
- RAC Audit Tracker
- OBstat/Perinatal
- Medication Reconciliation
- Insight
- PCAC Palliative Care Collab
- CJRR Joint Registry

MHS Enterprise Data Warehouse & Analytics Portfolio
June 2014
A “Universe” layer enables powerful analysis without requiring SQL/Software Development skill set
“Big Data”

- **Content Attributes**: The V’s (Volume, Variety, Velocity)
- **Required Technology**: New generation of purpose-built, in-memory database, high-performance computing machines and associated software programs
- **Connecting the Dots**: Need to be able to discover the associative meanings of the interesting patterns hidden underneath massive content-stores.

*Naeem Hashmi, Chief Research Officer, Information Frameworks*
HANA Clinical Analytics Pilot - Performance Summary

• Data sourced from an Epic enterprise installation
  – 1.5 Billion flowsheet entries
  – 177 Million Orders
  – 107 Million Results, and more...

• Takes about 45 seconds to collect and process over 2 Billion rows of data
  e.g., “Get the list of all data relevant to sepsis performance improvement”

• Takes another 2 Seconds to calculate 250 Measurements
  e.g., “Determine if encounter had lactate result >2.2 within 1st 3 hours; if so, what was the result and when?”
Big Data-enabled Best Practice Development

1. Identify Focus Population Data
2. Integrate analytics into the EMR for use by clinicians at “Point of Care”
3. Develop models, views, and reports
4. Migrate data to HANA for Exploration and Analysis
5. Define Semantic Layer in alignment with Data Governance and Stewardship
6. Deploy via multiple BI Suite tools based on use-case

4. Analytics
WASHINGTON (AP) - "Just spit." With those simple instructions, health care providers in California are hoping to expand the use of genetic testing to make sure patients get the right medication.

Scripps Health hospital system has begun using a saliva-based genetic test to detect whether patients will respond to Plavix, a widely used blood thinner that usually prevents clots.

But recent studies show about one-third of people of European descent, and more than 40 percent of people of African and Asian descent don't properly respond to Plavix, putting them at increased risk of fatal blood clots.

The new laboratory test from Quest Diagnostics detects four genetic mutations found in more than 90 percent of patients who won't benefit from the drug, which is marketed by Bristol-Myers Squibb and Sanofi-Aventis…

Source: Associated Press
Will We Have All the Trained People We Will Need?

Demand for deep analytical talent in the United States could be 50 to 60 percent greater than its projected supply by 2018.

Supply and demand of deep analytical talent by 2018:

- Thousand people
- 2008 employment: 150
- Graduates with deep analytical talent: 180
- Others\(^1\): 30
- 2018 supply: 300
- Talent gap: 140–190
- 2018 projected demand: 440–490

\(^1\) Other supply drivers include attrition (−), immigration (+), and reemploying previously unemployed deep analytical talent (+).

Tapestry is used in several different business models:
- Delegated/shared risk provider
- Management service Organization (MSO)
- ACO participation
- Care management
- Health plan

**Eligibility/Enrollment**
- Electronic Eligibility
- Coverage Level PCP
- Primary Location
- Network Management
- Coverage Attributes

**Benefit Plans**
- Co-pays, co-insurance
- MOOPs, deductibles
- Benefit limits, lifetime max
- Accumulators
- Co-pays per day rules
- Referral Requirements

**Case Management**
- Case Identification & Documentation
- Integrated Bed Days
- Workflows Management
- Financial Tracking
- Cost Variances
- Integration with EpicCare for Care Plans

**CRM**
- Call Documentation
- Problem acceleration
- Task management
- Workflow tool between modules

**Utilization Management**
- Auths & Pre-certs
- Provider Steering
- Automatic Letter Generation
- Denial Management
- Bed Day Tracking
- Guideline Integration

**Claims Payment**
- Adjudicate/Pay Claims
- COB, retroactivity
- Refunds & adjustments
- Reimburse Subscribers
- Print checks
- Generate 1099s

**Reimbursement**
- Global fees, tiered pricing
- DRG, APC, RVS, RBRVS, U&C
- Per diems, fee schedules
- Capitation, provider penalties

**Capitation Payment**
- PCP, Specialty Payment
- Risk Pools
- Withholds and Adjustments
- Member Level Transactions

**Premium Billing**
- Flexible Invoicing, EFT
- Small group rating
- Rates, tiers, riders
- Bill Employers & Individuals

**Utilization Management**

**Claims Payment**

**Reimbursement**

**Capitation Payment**

**Eligibility/Enrollment**

**Benefit Plans**

**Case Management**

**CRM**
• **Risk Stratification** – Evaluate the level of risk in patient populations
• Measure and improve the quality of care
• Provide credible data to physicians to decision making
• Increase generic medication use and adherence to prescribing guidelines
• Influence physician and patient behavior with timely and clear communications
• Track clinical measures and calculate physician pay-for-performance (P4P) incentives

*Displaced by Tapestry at some point?*
IT Plan As a (Mostly) Derivative Work

Technology 20%

Current Systems

Business Processes

Lean Management System

Environment

Drives

- Healthcare Reform
- Accountable Care
- Population Health

Choices – Where to Play

IT Plan

80%

Business Plan

Informs

Google Glass handed out to medical students at UC Irvine

Drives (e.g.,)

• Healthcare Reform
• Accountable Care
• Population Health
Figure 1. Hype Cycle for Consumer Engagement With Healthcare and Wellness, 2014

Source: Gartner (July 2014)
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<td>Benefit</td>
<td>Years to Mainstream Adoption</td>
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- Conservative space
- Become “table stakes”
### 6. IT Planning

#### More aggressive space
- More risk

#### But...
- Potential for differentiation
- 2 to 7 years of competitive advantage
“We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.”

Roy Amara, Institute for the Future
The three will emerge as healthcare's ruling triumvirate. Here's why.

... And together, I think they [the three companies] will emerge as healthcare's new leaders. Why?

All three companies have a history of and reputation for innovation... But I think their healthcare dominance will hinge more on Apple, Epic and IBM being seen not necessarily as the most innovative but rather as the safe choice.

...And that's what healthcare organizations want — solutions that work, and work with what they already have. ...faced with mounting challenges and financial pressures, hospitals and health systems will pick what they know will work.
Expect Disruption in the Industry From Other Arenas

- Hotel firm enters hospital facility management services including patient registration, scheduling, room preparations, and cleaning.
- Home security firm morph into home healthcare environmental monitoring services.
- Retail chains commoditize common medical services, procedures.
- Travelocity/Expedia/Kayak-like firm enters medical shopping space and transforms channels to care services and scheduling.
- Manufacturers proliferate consumer things with touchpoint in healthcare.
What Will Happen When Smart Things Integrate Into Care Delivery Path?

**People:**
- Location
- Status
- Skills
- Capacity

**Supplies:**
- Medication Inventory
- Instruments
- General Supplies

**Telemedicine:**
- Monitors
- Status
- Medication
- Instruments
- Devices

**Patients:**
- Requirements
- Condition
- Location
- Status

**Facility/Rrooms:**
- Availability
- Status
- Type
- Condition
- Capacity

**Equipment:**
- Location
- Condition
- Availability
- Capacity
- Schedule

**Bedside:**
- Monitors
- Status
- Medication
- Instruments
- Devices
Keep an Eye on These Nine Sectors of HIT Investment

...A reflection of evolving business requirements

- ACO-Oriented RCM
- Employer Wellness
- Benefits Management
- Health Consumers
- ACO Tools
- Remote Care
- Patient Engagement
- PM & EMR
- Big Data

Guiding Themes
- Transparency
  - Cost & Quality
- Risk-Management
  - Employer & Provider (& increasingly patient) vs Ins Carrier
- Patient vs Consumer Engagement
  - Informed, connected patient
- Utilization Management
  - Real-time CDS
- Care Coordination
  - Non-Acute care focus

Healthcare Growth Partners, 2013 Year-end Review
Cedars-Sinai and MemorialCare Health Systems Launch Strategic Partnership to Accelerate Innovation in Health Care

Summation Health Ventures Offers Valuable Gateway for Entrepreneurs to Refine and Accelerate Product Development; Ensure Community Access to Latest Health Care Advances

ORANGE and LOS ANGELES Counties, Calif., May 7, 2014 /PRNewswire-USNewsswire/ — To help develop and accelerate innovative technology to benefit patients, two prominent health systems in California—Cedars-Sinai Health System and MemorialCare Health System—announced they are launching Summation Health Ventures, a new partnership that will accelerate health care innovation.

The goals of the collaboration are to improve quality of care, enhance patient experiences and decrease the cost of care. The partnership enables entrepreneurs, innovators, inventors and companies focused on technologies in the health information, medical device and health care services sectors to leverage clinical and technical expertise of the two health systems.

Read more →
Epic Yesterday and Today
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<th>Year</th>
<th>Functions</th>
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<td>2004</td>
<td>Reporting Workbench, ICU module, Home Health</td>
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<tr>
<td>2005</td>
<td>EpicCare Cardiology (Cardiant), EpicCare Clinical Laboratory, EpicCare Oncology (Beacon) work begins</td>
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<tr>
<td>2006</td>
<td>Beaker (Clinical Lab), Cardiant, Beacon, Stork (OB), Epic Europe (now Epic Den Bosch), Verona Campus opens</td>
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<td>2007</td>
<td>Care Everywhere, Rover, Welcome kiosk, Voyager Hall Learning Campus opens</td>
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<tr>
<td>2008</td>
<td>Anesthesia, early EpicRx (Willow) Ambulatory</td>
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<tr>
<td>2009</td>
<td>Willow Ambulatory, Phoenix (Transplant), Reporting</td>
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<tr>
<td>2010</td>
<td>EpicCare Link/Plan Link, Haiku, early Beaker Anatomic Path</td>
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<tr>
<td>2011</td>
<td>Canto, Analytics and Data Warehousing, Anatomic Path</td>
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<tr>
<td>2012</td>
<td>Cogito Enterprise Data Warehouse, Population management, Long Term Care, increased Specialty focus</td>
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<tr>
<td>2013</td>
<td>Acuity, Epic Earth, MyChart Bedside, Telemedicine; Deep Space opens</td>
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<tr>
<td>2014</td>
<td>Blood Admin module, Clinical Case Management (Inpt), Wisdom (Amb -Dental), Orthopaedics, Infection Control (Inpt), Long-term care (Inpt), Willow inventory</td>
</tr>
<tr>
<td>Coming in 2015</td>
<td>Patient location RTLS, Medicare Advantage (Tapestry), Improved Trackboard &amp; Disposition workflow in ED; New mobile capabilities: Jot, Video visits, IP handoff, Epic monitor, eCheck-in for patients, Fast Pass (real-time appointment availability), MyChart mobile app branding, Epic App Exchange</td>
</tr>
</tbody>
</table>
Focusing on the Growing Gap

Functions Available vs. Used

Opportunity challenge:
- Refining build
- Using all that we have
- Expanding use
- Implementing new features
- Setting aside for now

CIO Mantra...
Don’t overbuy
Don’t underutilize
You Cannot Be Too Good at Governance, Project Management, Master Data Management, and Overall Decision-making
# IS Projects: Count by Project Type

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Description</th>
<th>LBM</th>
<th>MCH</th>
<th>MCF</th>
<th>OCM</th>
<th>SMC</th>
<th>SSC</th>
<th>MCSS</th>
<th>MHS</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects*</td>
<td>An new implementation to deliver new features and functionality to meet MHS standards &amp; performance goals.</td>
<td>31</td>
<td>31</td>
<td>5</td>
<td>14</td>
<td>134</td>
<td>215</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upgrades*</td>
<td>Complex support undertakings to improve upon features and functionality of current applications. Unlike pure Support, Upgrades are project-like in that they have a beginning and an end. They are essentially projects that could also be viewed as an aspect of Support.</td>
<td>29</td>
<td>15</td>
<td>7</td>
<td>73</td>
<td>124</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>Routine maintenance of current hardware and software systems (KLO).</td>
<td>42</td>
<td>32</td>
<td>3</td>
<td>7</td>
<td>123</td>
<td>6</td>
<td>213</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Includes 39 high priority projects that must be completed in order to comply with urgent conditions (regulatory, sunset, etc.).

Moves us down the road

Keeps the lights on
Arrival vs. Completed

<table>
<thead>
<tr>
<th>Month</th>
<th>Arrival</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-13</td>
<td>34</td>
<td>9</td>
</tr>
<tr>
<td>Feb-13</td>
<td>39</td>
<td>10</td>
</tr>
<tr>
<td>Mar-13</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Apr-13</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>May-13</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Jun-13</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Jul-13</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>Aug-13</td>
<td>49</td>
<td>16</td>
</tr>
<tr>
<td>Sep-13</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>Oct-13</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Nov-13</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Dec-13</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>Jan-14</td>
<td>119</td>
<td>14</td>
</tr>
<tr>
<td>Feb-14</td>
<td>45</td>
<td>36</td>
</tr>
<tr>
<td>Mar-14</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Created: March 13, 2014
Gating the Intake Process

Queued Projects

IDEA - Preliminary stage where one project-idea out of several alternatives is chosen and defined. A stub is created to document the needs, goals and objectives.

REQUESTED - The defined idea is carefully initiated and developed into a formal proposal, usually with the assistance of Information Services resources.

EXPLORING - Every aspect of the idea is analyzed and subjected to systematic and comprehensive evaluation. This is when a formal business case is prepared for project approval.

PLANNING - After necessary approvals and financing in place, an I.S. Project Manager is assigned to formalize the project plan. These projects typically do not have a implementation date and is waiting to be slated based on resource availability.
### Queued Projects

#### IDEA - Preliminary stage where one project-idea out of several alternatives is chosen and defined. A stub is created to document the needs, goals and objectives.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Project Type</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBMMC Modify ADT message to LB/M/CH McKesson ConnectRx servers</td>
<td>Czarina in Pharmacy requests IE to send patient ADT to LB and MCH connectRx server only when the patient is checking-in or arrived.</td>
<td>Upgrade</td>
<td>LB/M/CH/CHLB</td>
</tr>
<tr>
<td>Now, that we understand more about EPIC admitting/scheduling etc., and since EPIC is specific can, no open encounter anymore, it’s best to get the interface message when the patient is checking-in or arrived.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBMMC Scheduler Plus-&gt;Resource Scheduler Migration</td>
<td></td>
<td>Upgrade</td>
<td>LB/M/CH/CHLB</td>
</tr>
<tr>
<td>SMMC Placeholder - Remote Access to Rx Verification</td>
<td>SMMC Implementation Project</td>
<td>Project</td>
<td>SMC</td>
</tr>
</tbody>
</table>

#### REQUESTED - The defined idea is carefully initiated and developed into a formal proposal, usually with the assistance of Information Services resources.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Project Type</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requested Projects: proposed projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC21 Build new AIX Non-PRD Server</td>
<td></td>
<td>Project</td>
<td>MCSS</td>
</tr>
<tr>
<td>MCH Implement Vantage Plus Digital Wireless Ophthalmoscope</td>
<td>Our PICU department obtain funding to purchase and implement a new Vantage Plus Digital Wireless Ophthalmoscope that will be utilized on pediatric patients.</td>
<td>Project</td>
<td>LB/M/CH/CHLB</td>
</tr>
<tr>
<td>LBMMC Add Healthtech Lab info as performing lab to Anaheim reference lab interface</td>
<td>Anaheim Reference Lab interface. Please add Healthtech name and address to the last NTE of each simple result.</td>
<td>Upgrade</td>
<td>LB/M/CH/CHLB</td>
</tr>
</tbody>
</table>

### Key Metric: Planned or Unplanned?

\[
\text{Measurement: } \frac{P}{U + P} > \ ? (75\%)
\]

Created: March 13, 2014
The MGI studies instead traced these differences in productivity to organizational differences, to the way tasks were allocated within a firm or a division—essentially, to failures in managerial decisions... If you asked why there were differences that could be erased or diminished by better management, the answer was that it took the spur of sharp competition to induce managers to do what they were in principle capable of doing.

Robert Solow

Career Highlights

Robert Solow is professor emeritus of economics at the Massachusetts Institute of Technology. He received the Nobel Prize in economics in 1987 for his contributions to the theory of long-term macroeconomic growth.
We have been at this a while…

“Much work remains to be done before a practical computer-automated hospital information system is developed. In particular, a full understanding is needed of the present system, of the hospital environment, and of the reactions physicians, nurses, and hospital personnel have to new procedures.”

“How fast this work proceeds at Memorial Hospital depends on a number of factors including our success in obtaining outside funding. However, we are optimistic in our belief that a practical system can be developed using the concepts described in our model and that the system will improve the quality of medical care without increasing the cost to the patient.”


NOTE: Highlighting added.
One patient, one record [for whom we can provide complete care and potentially take risk]

…and for whom we can make these promises:

We promise to safeguard whatever results are produced as a result of your encounters with us, and to make them securely available to our physicians when needed for your care.

We promise you will not be a stranger if you have been seen or treated in another part of our organization.

We promise that our affiliated providers will not ask you fill out another “intake” form. We will give you the latest information we have so you only have to update it.
## Impact of IT Cuts Across the Spectrum of Population Health Drivers

<table>
<thead>
<tr>
<th>Health Care</th>
<th>Genetics</th>
<th>Social, Environmental, Behavioral Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>20%</td>
<td>60%</td>
</tr>
</tbody>
</table>
If you don't know where you are going, you might wind up someplace else.

Yogi Berra

I'll settle for knowing in which half the compass to head, and be really happy if I can narrow things to half that.
The Migration to Digital Business in Healthcare — Two Paths, a Winding Road

Longitudinal Incentive-driven

Health Management (Accountability, Finances, Life Cycle, Consumer)

E-Healthcare

Digital Business Healthcare

Current State

Digital Care Delivery

Care Delivery (Diagnosis, Treatment, Outcome)

#GartnerSYM

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Thank You!

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sjoslyn@memorialcare.org