Trends In Healthcare Technology

Accelerating Transformation, Engagement and Continuity Through Technology Innovation and Integration
Jim Deren is Director of Information Technology (IT) Healthcare Planning for CareTech Solutions. Mr. Deren has more than 36 years of IT experience, including 26+ in the IT healthcare industry.

Jim has presented at a number of national healthcare conferences including 2012 HIMSS national convention, the AHA Center for Governance Fall Symposium, 2010 HIMSS Virtual conference, 2009 Fall Midwest HIMSS conference and 2009 CHIME conference.

He has earned a B.S. degree in education/computer science from Eastern Michigan University.
Mark Herzog, FACHE
President and CEO
Holy Family Memorial, Manitowoc, WI

Mark Herzog

During Mark’s tenure since 2001, Holy Family Memorial has been recognized nationally for innovation, safety, and delivery system transformation.

Mark has presented the HFM story to ACHE, AHA, CHA & the National Center for Healthcare Leadership. He serves on several boards including the Wisconsin Hospital Association and AHA RPB 5. He was a finalist for AHA’s 2012 Shirley Ann Munroe Award. Mark is faculty to numerous ACHE programs and lectures at the University of Michigan.

Mark holds a MHSA from the University of Michigan and BA from St. Lawrence University, Canton, NY.
Please note that the views expressed by the conference speakers do not necessarily reflect the views of the American Hospital Association and Health Forum.
Learning Objectives

1. Discuss considerations in building a culture where IT is a strategic asset to healthcare
2. Begin to predict trends and initiatives in healthcare that will best engage multiple generations of consumers
3. Describe how a healthcare organization can fully leverage technology in order to achieve their business goals
4. Detect ways in which to utilize technology to fully engage patients, providers, and staff
Holy Family Memorial
INDEPENDENT, SINGLE-MARKET, TIGHTLY-INTEGRATED SYSTEM

- Although ‘Rural’, HFM has intense local & regional competition
- 90 provider multispecialty group practice employment model
- Hospital services include OB, Orthopedics, Cardiac, Cancer
- 1,300 staff, $135 million net rev., 25% IP, 37% Clinic
- Faith-based organization with a strong community focus
“Start by doing what is necessary; then do what is possible; and suddenly you are doing what is impossible”

*St. Francis of Assisi 1181-1226*

“Are you meeting the needs of a community, or the needs of a corporation?”

*Sr. Laura Wolf 2013*
Since 2010 HFM has been featured at:

- AHA’s Healthcare Forum, Partnership for Patients and Society for Healthcare Strategy & Mkt Development
- HHN Most Wired Hospital 3X- Top 1% of US hospitals
- HIMSS Level 6.5 EMR Adopter Top 5% of hospitals
- ACHE Congress 2010-2016
- Catholic Health Association National Assembly
- American Society for Quality International Forum
- University of Michigan Health Management and Policy Program & Griffith Leadership Center
- Published in HealthLeaders, Hospitals and Health Networks, Becker’s, Remington Report, Insight
Population Health Model
UNIVERSITY OF WISCONSIN

RANKINGS BASED ON THE FOLLOWING:

- Policies & Programs
- Health Factors
- Health Outcomes

FOUR TYPES OF HEALTH FACTORS MEASURED:

- Health Behaviors (30%)
- Clinical Care (20%)
- Social & Economic Factors (40%)
- Physical Environment (10%)

Adapted from Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute County Health Rankings
<table>
<thead>
<tr>
<th>Health Determinant</th>
<th>Primary Drivers</th>
<th>Alignment with HFM Mission, Capabilities and Degree of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Care (20%)</td>
<td>Preventive Services, Acute Care, Chronic Disease</td>
<td>Core to Mission Provide Expertise High Control</td>
</tr>
<tr>
<td>Health Behaviors (30%)</td>
<td>Tobacco Non-Use Activity, Diet/Nutrition Alcohol Use</td>
<td>Mission Driven Shared Responsibility Shared Control</td>
</tr>
<tr>
<td>Socioeconomic Factors (40%)</td>
<td>Education, Income</td>
<td>Mission Supported Limited Expertise Limited Control</td>
</tr>
<tr>
<td>Environmental Factors (10%)</td>
<td>Air, Water, Safety</td>
<td></td>
</tr>
</tbody>
</table>
Where Bars Trump Grocery Stores

Source: flowingdata.com
At 21st & Franklin Street
September 2012

21st & Franklin Street, Manitowoc WI
June 2013
The Big Picture: First-Curve to Second-Curve

HOW WILL HOSPITALS SUCCESSFULLY NAVIGATE THE SHIFT?

FIRST CURVE FFS
INFRASTRUCTURE
CULTURE
COLLABORATION
PAYMENT MODEL

SECOND CURVE
POPULATION HEALTH & VALUE-BASED HEALTHCARE

American Hospital Association “Hospitals & Care Systems of the Future” Fall 2011
“Each hospital and care system must develop its own transition plan. For example, one of our interviewees, Holy Family Memorial of Manitowoc, Wisconsin has developed a “reform roadmap” with engagement of key stakeholders in order to meet financial and quality goals for 2017.”

~AHA “Hospitals and Care Systems of the Future”
September 2011
Holy Family Memorial
Reform Roadmap and Change Model

OPERATIONAL INNOVATION
Improve the Process
- Lean Healthcare
- Operational SPURs*
- Bright Ideas

STRATEGIC INNOVATION
Redefine the Program
- V SPURs*
- Internal Disruption
- Open Innovation

BLUE OCEAN INNOVATION
Redefine the Market
- Scenario Planning
- External Disruption
- Partnerships

*Value Stream Strategic Program Unit Review
*Strategic Program Unit Review

Emotional Q
Internal Focus

Behavioral Q
Others Focus

Organizational Q
Outer Focus

Acknowledgements: D. Goleman and Clayton M. Christensen
Framing Strategic Thought

KNOWLEDGE DOMAINS

KNOW

What you know, and you're not aware you know it.

INSIGHT & DISCOVERY

DAY-TO-DAY FUNCTION

DON'T KNOW

What you don't know, and you're not aware you don't know it.

BLUE OCEAN

RESOLVE WITH EDUCATION & TRAINING

NOT AWARE

AWARENESS

AWARE

Source: Gary Hauer, Bay Park Associates Inc. Copyright 2012
Our Core Care Beliefs

Right Care Model

- **The most effective evidence based** approach possible
- **The most cost effective, safest, highest quality and greatest value**
- **Achieve the greatest long term benefit** to the patient and society while minimizing physical and financial risk
HFM’s Technology Journey

• In 2003 CEO sought “Applied” IT: CMO was appointed CIO to leverage technology to improve care/safety/processes

• Maximized MEDITECH Platform
  ( currently 99% IP CPOE (12 years), Clinic 92% (9 years) )

• Most Wired & HIMSS EMR recognition reflect deep IT/Operations integration

• IT Strategic Plans annually aligned with Strategic, Right Care and Innovation plans
Technology Investment Criteria

• To express our LEAN philosophy technology must add value or remove waste from every process it impacts.

• Technology investments must facilitate Second Curve care delivery.

• Technology investments must improve patient quality and/or safety.

• Information technology must support & accelerate innovation and improvement.
2001-14 HFM Care System Transformation

**HOSPITAL**
- 2001: 90 bed hospital
- 2014: 35 bed hospital

**PHYSICIANS & NP/PA**
- 2001: 35 Employed Physicians
- 2014: 90 Employed Providers

**MANAGEMENT**
- 2001: Over 100
- 2014: Under 50

**MISSION FOCUS**
- 2001: Focus on the Sick
- 2008: Focus on Health of a Community
Transformation Metrics
2001 - 2014

Based on and facilitated by Improvement, innovation and technology HFM:

• Reduced admissions by nearly 50%
• Delivered patient safety top 5% in nation*
• 40+% growth in clinic visits
• Margins last 3 years 0-3%, 220 Days Cash
• S&P BBB+ stable outlook
• Care delivery system among top 13% in Wisconsin

*The safest patient is the one never admitted
Regional Growth in Hospital Charges
Population Adjusted 2001 through 2013

*If HFM were the only provider the increase would have been 95%.

Source: WHA 1/9/15
Regional inflation in monthly health insurance large group premiums from 2000-2015

- Appleton*: 247%
- Green Bay: 366%
- Manitowoc: 225%

*Includes Appleton and Oshkosh
Source: HTR 9/20/14, Wisconsin Health Insurance Rankings Report
INFLATION ADJUSTMENT FOR
HFM Operating Expense Trends

HFM Operating Expense Consolidated Total
HFM Operating Expense Consolidated Total – Inflation adjusted for medical care CPI

$130M
$97.5M
$65M
$32.5M
$0


$88.7 M  $102.2 M  $114.8 M  $120.8 M  $129.8 M  $129.5 M  $129.7 M

$84.6 M  $88.8 M  $90.3 M  $85.2 M  $83.1 M  $74.2 M  $67.9 M
Holy Family Memorial – Patient Engagement Strategy

Culture of Inspired Caring and Innovation

Operational Excellence

Consumer Transparency

Community Engagement

2015-2017 Strategic Themes

Strategic Themes

Culture of Inspired Caring and Innovation

Operational Excellence

Consumer Transparency

Community Engagement
Strategic Use of Technology

- Healthcare is a knowledge based process relying on delivery of the *right* information to the *right* decision maker at the *right* time, in the *right* format to be easily used.

- Technology can squeeze waste out of the process *while delivering knowledge* and promoting safety & reliability.

- Wise and thoughtful integration of technology to operations, service delivery and decision making can dramatically *accelerate transformation* to a better and less costly system.

- IT *must* make it easy to do the right thing, every time as standard work.
Questions To Take Home

• What’s Your Second Curve Value-Based Strategy?

• How does your organization evaluate technology?

• How well integrated & aligned are your IT, Capital, Quality/Safety, operations & Population Health plans?
Innovation Building Blocks

Safety
Quality
Continuity
Community
Portfolio Project Management System

Jim Deren
Emerging Technology in Healthcare
Safety Innovation

- Positive patient ID – increases security
- Reduce time to access information
- Touchless facial, fingerprint technology – reduced infection
- Increased accuracy
- Can work in smaller space
- Reduce infections
Quality Innovation

- Remote access to specialists
- Support when needed
- Patient convenience
- Emergency and real-time care
- Reduce costs & increase convenience

- Create artificial limbs
- Create complex human tissue
- Improved diagnostic capabilities
- Organ replacements
- Better quality, quicker treatment
Continuity Innovation

- Real-time monitoring of vital signs
- Condition specific feedback
- Ability to transmit to PHR
- Awareness and alerts
- Patient convenience
- Timely access to healthcare
- Reduce waiting
- Transparent and reduced costs
Community Innovation

- Quick access to healthcare information
- Improved knowledge of consumers
- Increased involvement in patients' own care
- Numerous resources with best practices
- Determine action for best results
- Serve a particular population
- Data to forecast and predict outcomes
- Support pro-active planning
Future Focus - What is the new normal?

Continuum of Care

Adverse Event
- Prevention
- Diagnosis
- Treatment
- Rehab
- Follow Up
- Behavior Change
- Education
- Wellness
- Environment
- School
- Hospital
- Providers
- Work
- Specialty Care Center
- Long Term Acute Care
- Rehabilitation

Future Focus - What is the new normal?
Technology Drivers
The Affordable Care Act Triple Aim

- Automation of clinical processes
- Reaching multi-generational customers
- Patient access to their own healthcare
- Shift to preventative medicine

- Payer reform driven by quality vs. quantity
- Transparency of costs
- New models of delivery

- Data analytics to prevent & predict disease
- Social media in healthcare
- Patient education
- Healthy living incentives
How technology is affecting our patients
Imagine – Doing your jobs without these….

70s……

80s……

Bar code
CT Scanner
Email
Laser Printer

Microprocessor
Cell Phone
Ethernet
MRI

World Wide Web
Spreadsheets
Fax Machine
Personal Computer
Mac
MS Windows
Current Technology to Care for Patients

- Patient Portals
- Google Glass
- Teleradiology
- 3D Printing
- FaceBook
- iPad
- PHI Security
- Cloud Computing
- Electronic Medical Records - growth
- Voice Recognition
Future and Emerging Healthcare Technology

- Electronic Aspirin
- Bionic Limbs
- Wearable Technology
- Mobile Healthcare Expansion
- Self Service Kiosks
- Needle Free Insulin
- Biometric Face Recognition
- Data Analytics
- Home Medical Devices
- Stem Cell Research
Engaging Patients & Caregivers
Generational Impact

- **Millennials** (1981 - current): 31%
- **Generation X** (1964 - 1981): 19%
- **Baby Boomers** (1946-1964): 20%
- **Greater Generation** (pre 1946): 30%

Source: Smith & Jones; Healthcare Consumers, the New Reality
Engaging Patients & Caregivers
Generational Impact

Desire quickness
Prefer choices
Use many providers
High tech users
Value / cost conscious
Trust providers

Low - High

Source: Smith & Jones; Healthcare Consumers, the New Reality
Meet Harold, HFM Customer

Harold Scenario

- Retired, long time Manitowoc resident, pre-baby boomer generation (*Born before 1946*)
- Harold likes Holy Family Memorial because he sees it as a reliable organization with caring services and good doctors
- Slightly high blood pressure – statin for cholesterol, occasional asthma, feeling a little sick
- Moderately tech savvy – uses email, internet, cell phone
- Schedules annual physicals & goes to physician office as needed

*Harold is feeling ill – with a slightly high temperature and muscle weakness. He is having trouble breathing*
Diagnosing Harold

1. Checks home supply of statin medications using electronic pill box (low)
2. Checks asthma and environment (risky)
3. Looks for next available appointment on patient portal
4. Messages with provider
5. Advised to check vital signs at home – upload vitals to portal
Treating Harold

1. Physician checks BP and orders prescription
2. Harold checks “GoodRX” for best price
3. Prescription order sent to local pharmacy – wife picks up
4. Re-checks vitals
5. Sends results and schedules follow-up visit
Technology in Healthcare - Risks

SECURITY
- Growth linked to electronic records & social media
- Healthcare identity theft worth 10X credit card information

COST OF TECHNOLOGY
- Rural hospitals must meet same EHR reqs. as others
- Average capital investment per hospital $10-70 million, $15-75K per provider

WORKFLOW & CULTURE
- Process change linked to automation is lagging
- Complex technology difficult to implement and learn

PATIENT BEHAVIOR
- Caregivers have limited control on patient behavior
- Increasing unhealthy lifestyle trends of the population

LOSS OF PERSONALIZATION
- Clarity of follow up – may be misunderstood without face to face interaction
- Regulations reduce time caregiver has with patient
IT Financial Challenges in Small & Rural Hospitals

**HFM**
- HIMSS Level: 6.5
- M.U. Stage 2
- IT Operations: 2.8%

**IT Operational Expenses / Hospital Expenses**

Source: CMS Public Use File, HIMSS Analytics 2015
## Holy Family Memorial – IT Transformation

<table>
<thead>
<tr>
<th>Area</th>
<th>Old Model</th>
<th>New Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>No IT plan</td>
<td>IT Strategic plan linked to HFM goals</td>
</tr>
<tr>
<td></td>
<td>Unclear committee charters</td>
<td>Defined objectives that are measurable</td>
</tr>
<tr>
<td>Staffing</td>
<td>Lack skills and experience</td>
<td>Expertise when needed</td>
</tr>
<tr>
<td></td>
<td>No accountability</td>
<td>Service levels for performance</td>
</tr>
<tr>
<td>Processes</td>
<td>Redundant processes</td>
<td>Optimizes workflow that leverages IT</td>
</tr>
<tr>
<td></td>
<td>Not linked to information systems</td>
<td>Processes re-engineered for IT</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Reactive to problems</td>
<td>Pro-active monitoring</td>
</tr>
<tr>
<td></td>
<td>Limited on call availability</td>
<td>24 x 7 support</td>
</tr>
<tr>
<td>Culture</td>
<td>Hospital-centric</td>
<td>Patient-centric</td>
</tr>
<tr>
<td></td>
<td>Inadequate information</td>
<td>Information excellence</td>
</tr>
<tr>
<td>Applications</td>
<td>Financial based functionality</td>
<td>Full EMR</td>
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<tr>
<td></td>
<td>Departmental based (silo)</td>
<td>Community-based (enterprise wide)</td>
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</table>
Connecting a healthy future

Source: Kaiser Permanente
Mark’s Words of Wisdom

1. All technology, especially IT, must be planned for as strategically as anything else senior leaders do.

2. Technology & IT plans must directly support and enable strategic improvement and operational initiatives.

3. Ideally a clinician should lead technology and IT planning and integration. Rural hospitals especially benefit.
Jim’s Words of Wisdom

• Healthcare regulatory demands will continue to grow, requiring effective use and proper investments of technology
• Carefully consider the value to your organization when pursuing quickly emerging technology
• Effective customer service requires considering the specific needs of multiple generations of consumers
• Success must include addressing needs in the areas of IT applications, culture, process change, environment, and infrastructure
• IT is no longer a department, it is a critical strategic component necessary for success
Conclusion

Thank you!

Questions and Discussion