Can Information Technology, Nursing and Informatics Shape Operations? A Case Study

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Conflict of Interest

Edwina Bhaskaran
Michelle Machon

Has no real or apparent conflicts of interest to report.
Agenda

Journey
• Background: What makes this discussion unique? Or is it?
• It started with IT: The Technology & Approach
• The People Factor
• To get to the Process

Summary
• The Challenges
• Outcomes
• Recommendations
Learning Objectives

• Demonstrate the advantages of information and technology, informatics and clinical partnerships during an EMR implementation

• Create a strategy for robust relationships with departments where strong partnerships are not the norm

• Identify the opportunities within organizations for managing the issues that arise within greenfield projects

• Apply their learning's to their own organizations as information and technology, clinical informatics and nursing work together

• Identify the challenges of opening a “first of its kind” American healthcare system in the Middle East
Introductions & Background

Clinical Applications Director
  – IT Employee # 2

Clinical Informatics Director
  – Nursing Employee # 1

Clinical Educator and Unit Manager
  – Clinical Educator # 1
Case Study: Background and Mission

Replicate the First US Multispecialty Hospital Outside North America

Cultivate a Sustainable Healthcare System

Support the Development of Local Healthcare Talent
Traditional Approach

“IT should never lead operations”
1. The Technology
Implementation Complexity

Clinical Application
- Heart & Vascular Institute
  - HI V PACS
- Neurological Institute
  - eBase
- Eye Institute
  - Ophthalmology PACS
- Respiratory and Digestive Institute
  - Procedural Documentation
- Radiology Institute
  - Radiology-RIS/PACS/IDV
- Lab Medicine & Pathology Institute
  - Clinical Pathology/Blood Bank
  - Anatomical Pathology

Shared Clinical Applications
- EMR
  - ADT
  - MyChart
  - EpicCare Ambulatory
  - EpicCare Inpatient
  - Kaleidoscope
  - Radiology Hospital & Prof. Order
  - ASAP
  - Content Mgmt.
  - EMR Reference Information
  - Patient Education
  - Case Mgmt.
  - Medication Tracking System
  - Dietary
  - Occupational Health
  - Medical Devices
  - Applications

Shared Administrative Apps
- HR
  - Licensing (Staff)
  - Financial Decision Support
  - aHR Eligibility & Document Image
  - CDM Management
  - Payor Contract Management

Shared Administrative Apps
- Finance
  - Medical Coding
  - Capital Planning & Forecasting
  - Nursing
    - Inpatient Whiteboard
    - Nurse Schedule
    - Policy Procedure Management

Facilities
- Clinical Inventory Management
- Environmental Services
- Linen Management
- Surgical Instrument Management
- Asset Tracking & Inventory
- Preventive Maintenance Management

Integration
- Integration Engine
- Medical Device Integration Hub

Data Centers
- Servers
- Racks
- Storage Space

Network
- Leased Lines
- LAN Office Network
- WiFi

Infrastructure
- Distributed Antennae System
- SQL Services
- Database
- Cable Management
- Document Management
- Medical Devices (~35,000)
Focus on EMR Implementation

Operational processes are now embedded within EMR more than ever.

In this case:

• EMR served as an “anchor” implementation project for the IT Portfolio and for clinical operations
  – Timeline & Strategy
  – Integration
Greenfield EMR Implementation Goal

**GOAL: Operational **Optimization & Efficiency

**Initiative Objective:**
Implementation of an integrated Electronic Medical Record system that supports hospitals future vision for patient care and will serve as the foundation for future optimization (captured during implementation).

**Accomplished By:**
- Use existing EMR as a point of reference
- Leveraging industry standards to establish interoperability standards and functions
- Rigorous documentation of implementation process, decisions, assumptions that will provide historical background
Content for EMR Design

EMR Design/Build Inputs

- Process Flows
- Regulatory Information
- Operating Models
- Organization Charts
- Staffing Plans
- Policies and Procedures
- Scope of Services
- Physical Locations
- Determining IP vs. OP areas
- Specialties
- Clinical Documentation Standards

In a standard EMR implementation, hospitals have provided services and many of the information listed already exist.
A different approach was required....

The EMR Design Process included six steps per workflow validation session. Each session required approximately 22.25 hours per session in preparation time. This yielded a 96% validation rate.
## Design Deliverables

<table>
<thead>
<tr>
<th>EMR IT Workflow Validation Schedule</th>
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<tbody>
<tr>
<td>▪ Schedule of 149 sessions</td>
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</table>

<table>
<thead>
<tr>
<th>EMR IT Workflow Validation Materials</th>
</tr>
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<tbody>
<tr>
<td>▪ EMR IT Workflow Presentations</td>
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</tbody>
</table>

### Strategy Session

- Documented decisions from Strategy Sessions

### Deviations

- Documented differences in the sequence of which activities are completed by an end user within an application, or in the point of reference system

## Design Deliverables Under Change Control

<table>
<thead>
<tr>
<th>EMR IT Workflow Visios</th>
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<tbody>
<tr>
<td>▪ 446 EMR IT Workflow Visios and a Table of Contents listing co-dependent EMR IT Workflows</td>
</tr>
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<table>
<thead>
<tr>
<th>Business Operations Input Toolkit</th>
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<tr>
<td>▪ 806 Business Operational questions that define the design of the system</td>
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<thead>
<tr>
<th>Functionality Matrix</th>
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<tr>
<td>▪ Reference document to show the Epic functionality that will be used</td>
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<table>
<thead>
<tr>
<th>Facility Organization Structure</th>
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</thead>
<tbody>
<tr>
<td>▪ Document detailing departments, locations and service areas</td>
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</tbody>
</table>
Scheduling

The most significant challenge to completion of the EMR build was lack of operational resources and schedule maintenance. The EMR and operations teams re-visited SME identification, schedule approach and overall process several times during the course of Workflow and Content Validation.

- Established Operational Identification Owner (OIO) group to act as operational champions for the EMR Validation Schedule
- Had dedicated EMR Scheduling Analyst to manage schedule and meeting invites
- Used Change Control process to track changes

EMR Validation Schedule Facts

- 890 instances of session rescheduling
- 487 (54.7%) rescheduled sessions due to business operations availability
- 305 (34.3%) rescheduled sessions due to other EMR team changes (usually shortening of sessions)
- 51 (5.7%) rescheduled sessions due to follow up not being completed on time
- 33 (3.7%) rescheduled sessions due to EMR Project Team availability
- 14 (1.6%) rescheduled sessions due to other reason
2. The People
Let’s talk about people...

• The most crucial success factor for EMR implementations is operational involvement and input.

• When the EMR Implementation commenced the following individuals provided operational involvement:

  Medical Informatics Director
  Clinical Informatics Director
  Chief Nursing Officer
  Chief Medical Officer
  Pharmacy Director
  Administrative Services Director
  Revenue Cycle Director
  Finance Director

......that’s it!
Process Framework

• 200 design sessions back at Main Campus to prepare the on site SMEs with a “frame of reference”
The IT strategy was based on replication from reference US site

Became evident that answers were required to questions that the newly hired clinicians had not considered.

As the implementation progressed, the differences were evident:

- Cultural
- Regulatory
- Facility differences
- More complex issues such as
  - Anglicized spelling and date format
  - DNR status
  - Patient naming convention
  - Fasting during Ramadan.
Evolution of a Partnership

This could have caused friction however….

• The key clinical and informatics stakeholders realized that this was an **opportunity** to form **innovative collaboration avenues** and they took advantage and **respected** the direction IT was bringing to the clinical staff.

• Information Technology adapted to provide **flexibility** while meeting implementation timelines.
Resources Skill Mix

• Operational Resources were sought with these skills
  √ With local operational clinical experience
  √ With Main Campus clinical and IT Experience
  √ With EMR experience
  √ With Project Management experience
More Partnerships...

• Back in the States
  – SMEs from every area were referred to daily
• From external local organizations
  – Other hospitals
  – Payors
  – Regulators
3. The Processes
Operational Questions Examples

Scope of Practice
What is the scope of practice for Physician Extenders and Associate Physicians?

Scope of Services
What types of organ transplants do you plan to perform? Do any of these types require specialized units? How often do you expect to be doing these transplants?

Policy
Will a second signature (not a co-sign) for specific medications (i.e. antibiotics) from infectious disease be required? If not, will Pharmacy restrict the ordering of certain medications to specific medical specialties (Infectious Disease)?

Patient Flow
Where will direct admission patients arrive in the hospital? A registration desk, the ED or directly on the floor? Will this change based on acuity or time of day?
A Process to get to the Process

1. IT generated “design questions”
2. Needed a forum for these discussions which became a multidisciplinary committee responsible for the clinical decisions needed

“Informatics Clinical Advisory Group (iCAG)

Example:
- “how often will you be reassessing your patients in pain”
- “how often are you documenting on patients in restraints”.
The options were trifold:

- let iCAG decide the processes,
- look to the evidence
- reach back to the main campus in the States.

✔ All three of these were utilized
✔ IT drove timelines, deadlines and the project plan in general.
The Challenges
Challenge:

The local cultural, regulatory and legal environment prevented a replication of the US processes in the UAE

Solution:

Every single US process, document, order set and workflow had to be touched and revisited for the environment of the new facility.
Lack of clinical workflows

Challenge:
- Only IT workflows had been documented

Solution:
Utilizing the index from a standard nursing textbook and the IT workflows, the basis of nursing operations was formed.
Multiple Workstreams

Challenge

“Bigest Bang” go live:

- **All** Clinical Applications, including the EMR
- **All** Medical Equipment + Device Integration
- **All** hospital policies & procedures, job orientation, department orientation.
  - Everyone was onboarding **together**, at the same **time**.

Solution

A highly coordinated operations training plan orchestrated by the IT PMO
Extended timeline and changes

Challenge:

The original construction timeline elongated and so did the correlating IT implementation/EMR build. New employees were onboarded during these delays and there were challenges with these new SMEs asking for new iterations of the formal design.

Solution:

Workflows that were developed were placed under “change control” and incorporated into the IT change control process.
Resources eventually came but...

The EMR Team ran monthly sessions for new hires as an introduction to the EMR, including work-to-date to design, build, test the EMR system, policies and procedures related to workflow and/or content changes, and related IT PMO processes.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Audience</th>
<th>Type of Orientation</th>
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<tbody>
<tr>
<td>Physicians (Chairs)</td>
<td><strong>One-on-One Meeting</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency: As needed</td>
<td></td>
<td></td>
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<tr>
<td>Topics Covered:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- EMR Overview</td>
<td></td>
<td></td>
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<tr>
<td>- Demonstration of related Epic functionality</td>
<td></td>
<td></td>
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<tr>
<td>- Governance and Change Control Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physicians (Non-Chairs), Nursing Directors, Finance Directors, Department Administrators</td>
<td><strong>“Introduction to EMR” Session</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency: Monthly</td>
<td></td>
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<tr>
<td>Topics Covered:</td>
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<tr>
<td>- EMR Overview</td>
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<tr>
<td>- Demonstration of related Epic functionality (breakout session)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Governance and Change Control Process</td>
<td></td>
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</tr>
<tr>
<td>Managers, Analysts</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools / Supporting Documentation</th>
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<tbody>
<tr>
<td>- Powerpoint Presentation</td>
<td>- EMR IT Workflows</td>
</tr>
<tr>
<td>- Epic System Demonstration</td>
<td>- Validation Session Materials</td>
</tr>
<tr>
<td>- Access to EMR Sandbox</td>
<td>- EMR Decisions &amp; Assumptions Documentation</td>
</tr>
<tr>
<td>- Epic Glossary</td>
<td>- Epic E-Learning</td>
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Training

Challenge:

– frontline staff were not immediately using the system so knowledge gained was often lost
– learning multiple business/clinical apps at once meant the caregivers were often confused/ had cognitive overload

Solution:

– Hundreds of end-to-end multi-disciplinary walkthroughs
– Post go-live round the clock shoulder to shoulder support, geographically located in depts
– Peer to peer (super-user) learning was vital.
# 70+ Applications to train on

<table>
<thead>
<tr>
<th>Application Description</th>
<th>Vendor</th>
<th>DRAFT Training Lead</th>
<th>Caregivers Involved</th>
<th>Manager response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoscopy-Procedural documentation is a solution that replaces dictation and transcription and allows physicians to efficiently document procedures at the point of care. It produces complete, coding-ready, and image-enhanced documentation that results in greater efficiency, increased profitability and clinician satisfaction.</td>
<td>Provation</td>
<td>Horrie Calmey, Jesus Manalo/Tim Murphy</td>
<td>All RNs, techs and MDs involved in Endoscopies.</td>
<td>From Manalo, Site Support will support Provation. From Margaret, I think this would be appropriate and realistic. From Joe RCE will be able to assist with the support of equipment, training will fall under the clinical department I believe.</td>
</tr>
<tr>
<td>Ophthalmology PACS improves ophthalmic practices by taking the data captured by ophthalmic imaging devices and integrating them into a single system, enabling physicians to pull up all of a patient's data on a single screen, from anywhere, instantly.</td>
<td>Zeiss</td>
<td>Alex</td>
<td>Ophthalmology</td>
<td>Site Support Specialist</td>
</tr>
<tr>
<td>Medical Device Integration allows hospitals to improve efficiency by connecting medical devices to EMR. The medical device and EMR connectivity solution is designed to retrieve and deliver data from virtually any type of bedside medical device and send it to clinical or hospital information systems using HL7 standards.</td>
<td>Capsule</td>
<td>Interface only</td>
<td>Ophthalmology</td>
<td>Site Support Specialist</td>
</tr>
<tr>
<td>Case Management/Utilization Management is a process to provide appropriate and quality health care to individuals in a fragmented environment. Health care administrators are readjusting current systems rapidly to improve and maximize reimbursement while attempting to maintain quality of care for their patients.</td>
<td>3rd</td>
<td>Sheila Burns</td>
<td>Case Management only</td>
<td>Sheila Burns: yes we will manage within dept and Jacqui will support as our super user.</td>
</tr>
<tr>
<td>Medication Tracking System records and monitors the status of the medication preparation and delivery activities. The system identifies when the medication will leave the pharmacy and where the medication will go.</td>
<td>MedMined</td>
<td></td>
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Post go-live Change requests

Challenges

– After opening, clinicians wanted nearly every process to be adapted, changed or redesigned

Solutions

– Strong leadership commitment to a governance process
Eventually worked with IT to put a change management process in place…
The End Result
Partnership

• Trust
  – Operations needed to rely heavily on IT expertise.
  – IT needed to rely heavily on operations to keep the implementation moving.

• Collaboration
  – Approach needed to be modified several times over the course of the implementation to facilitate changes to hospital operations (e.g. organ donation)

• Open (Effective) Communication
  – Welcomed and acknowledged risk and issues
Result

• Facility opened HIMSS stage 7 enabled

• Virtually “paper” less system

• IT Implementation enabled hospital operations and provided a foundational system for optimization
The Recommendations
Recommendations from IT

• View go-live as a “phase”
• Plan resources to projected patient volume
• Create an agile governance process
Recommendations from Nursing

• Create a robust Mock Operations plan
• Mirror your “Sandbox” environment as close to reality as possible
• Remember that “perfection is the enemy of progress” (Winston Churchill)
Recommendations from Informatics

• Maintain your strategic partnerships
• Create a strong clinical governance process pre-opening.
• Do not be “married” to your build.
• Set very clear expectations with your Clinicians
Questions

• Michelle Machon, RN, MSN
• Edwina Bhaskaran, RN, MSN

Please complete your evaluations!