Seven Essentials in
Clinical Information Technology Adoption

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Conflict of Interest

George Gellert, MD, MPH, MPH
Lilliana Saucedo, RN, MSN

-- have no real or apparent conflict of interest
Agenda

1. Background and Setting

2. Focus

3. Implementation

4. Seven Strategic and Operational Contributors to Successful Implementation of Clinical Information Technology

5. Conclusions

6. Questions
Learning Objectives

1. Identify the seven most critical strategic and operational contributors to the successful, systematic implementation of clinical information technologies, as deployed within a leading multi-state hospital system, using a detailed case illustration.

2. Describe the most valuable strategies that the Health Informatics (HI) team deployed to achieve very strong physician adoption of clinical information technology (CIT), along with critical lessons learned.

3. Illustrate how the seven success factors described are not limited in their value and impact on any single adoption of CIT, and how they generalize to – and can drive success in – all clinical information technology implementations within any hospital in the nation.

4. Discuss specific new organizational process generation which collectively creates a highly customer-centric service culture in Health Informatics as a foundation to facilitate and ensure strong CIT adoption.
**Benefits Realized for the Value of Health IT: STEPS**

**S** = The strategies and process generation reviewed contribute directly to clinical end user satisfaction, and insofar as clinical information technology benefits the safety and clinical care of patients, their satisfaction will also increase.

**T** = The strategies and process generation reviewed drive successful implementation of clinical information technology, which in turn improves care safety, clinical treatments and outcomes.

**E** = As our presentation focuses on successful implementation and adoption of clinical information technology, it is centrally concerned with electronic information and data.

**P** = Effective, strong adoption of clinical information technology will enable higher quality and more focused patient engagement and population management.

**S** = Successful implementation of clinical information technology, through its positive impact on patient care outcomes, yields substantial savings in terms of preventable healthcare expenditures.
Background and Setting

• CHRISTUS Health is a multi-state system comprised of more than 350 services and 60 hospitals with over 9,000 physicians.

• Santa Rosa region of CHRISTUS Health, located in greater San Antonio, Texas is comprised of 3 adult community hospital facilities and 1 Children’s hospital each with bed capacities of 142-180.

• Computerized Patient Order Entry (CPOE) was first implemented in 2012 within a complex market environment.

• Santa Rosa region has 2,417 credentialed physicians and 263 mid-level allied health professionals.
Background and Setting

• The Electronic Health Record (EHR) deployed by CHRISTUS Health is MEDITECH Client Server Version 5.66

• Facilities in the region implemented CPOE in a phased, overlapping manner over the first 8 months of 2012, one facility at a time

• Each hospital did not launch across the entire facility at once but was phased in service line by service line

• In close collaboration with facility clinical-administrative leadership, a specific plan for each was determined well in advance of go-live
Focus

• We focus on the 7 most valuable strategies deployed by our Health Informatics (HI) team in a large 4 hospital CHRISTUS region to achieve strong CPOE adoption

• Critical success lessons learned as best practices for any implementation of clinical information technology (CIT)

• For many physicians, CPOE is the most dislocating change in clinical practice/workflow in a generation – many reports of failed or troubled attempts to implement and high end user resistance and dissatisfaction
**Implementation**

- First 4 weeks of each facility go-live, HI deployed **intensive team resources** drawn from across the entire region and all facilities to support the launch period of new service lines and **creation of a schedule of overlapping 24/7 shift coverage**

- After 4-6 weeks, resources gradually reduced, facility moved into a **routine or maintenance CPOE support**, with 1 dedicated full time facility **Clinical Informaticist (CI) on site** to support physicians and overcome specific problems during day shift
Implementation

• The Clinical Informaticist (CI) and Information Management (IM) team members round in their facility individually multiple times daily, and when possible together

• Can be contacted by any end user or super user in the hospital through a local facility wireless communication device

• A Help Desk is available telephonically as well 24/7 and is often used during the evening and night shifts to manage end user issues and lend continuing CPOE support around the clock
<table>
<thead>
<tr>
<th>Facility</th>
<th>Month/Year CPOE Launch</th>
<th>Month/Year 80% CPOE Use Rate</th>
<th>Months Required to Achieve 80%+ CPOE Use Level</th>
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<tbody>
<tr>
<td>CSR-Westover Hills</td>
<td>March 2012</td>
<td>February 2013</td>
<td>11</td>
</tr>
<tr>
<td>CSR-New Braunfels</td>
<td>May 2012</td>
<td>May 2014</td>
<td>24</td>
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<tr>
<td>CSR-Medical Center</td>
<td>August 2012</td>
<td>February 2014</td>
<td>18</td>
</tr>
<tr>
<td>CSR-Children’s Hospital of San Antonio</td>
<td>November 2014</td>
<td>January 2015</td>
<td>2</td>
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Table 2 Seven strategic and operational contributors to successful implementation of clinical information technology

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1 - Health Informatics as a Customer Service Endeavor: Relentless Pursuit of Service Excellence

• The imperative to insert the scientific evidence base and standardization via CPOE adoption is driven by the 210,000 to 440,000 Americans who die every year* due to care delivery-related errors -- an injury epidemic

• A great challenge HI teams face in advancing CPOE adoption is that the need to improve care safety and clinical effectiveness is not met with EHR and CPOE products that are intuitive, easy and fast to use

• EHR and CPOE products are still advancing in terms of basic usability and effective workflow -- producing another epidemic of physician dissatisfaction

1 - Health Informatics as a Customer Service Endeavor: Relentless Pursuit of Service Excellence

• Thus hospital leaders and HI departments are challenged with facilitating adoption of an unpopular – but essential – healthcare technology

• We responded to this challenge using a number of strategies, but central was to ensure that every member of the HI team pursued their duties with a foundational understanding that we are engaged in customer service delivery in every end user encounter

• We consider our patient customers as integral with their clinicians, and refer to them as a single entity – Health Informatics' "customers"
Health Informatics as a Customer Service Endeavor: Relentless Pursuit of Service Excellence

HI/IM customer-centricity translates into:

• We respect & exploit intelligence of clinician customers/end users, recognize their *importance as partners* in process of continuous EHR improvement

• Even where clinicians’ dispassion for CIT is high, it is possible to leverage that dissatisfaction by engaging them in EHR and HI service improvement

• We need end users not only to utilize CIT despite poor perceived usability, but to help us identify/drive improvements we can execute or pass to our EHR manufacturer for resolution (or build into next generation product)
1 - Health Informatics as a Customer Service Endeavor: Relentless Pursuit of Service Excellence

• Clinicians as customers = “the customer is never wrong“ – misinformed or require education on proper technology use/limitations – but not “wrong”

• Because HI is "selling" (i.e., implementing and supporting) EHR products with perceived poor usability --

• Clinicians’ concerns and issues must be recognized and responded to, even when a specific request does not fall under Health Informatics’ aegis but another department

• Every HI team member managing any concern not HI-related MUST ensure it is communicated to the right department -- dismissing or ignoring a clinician’s issue because "it's not my job" is anathema to HI service culture
1 - Health Informatics as a Customer Service Endeavor: Relentless Pursuit of Service Excellence

• HI must regard end users not merely as customers requiring service excellence, but as foundational partners in efforts to identify and execute opportunities for continuous improvement of EHR/CPOE products.

• Without clinicians’ engagement and input, our ability to improve EHR is vastly diminished, perhaps crippled.

• HI is dependent on our clinicians’ good will.

• These principles are the basis for all HI team members’ behavior and produced strong CPOE adoption.
2 - Engage Recurrent HI Meetings to Build Trust with Facility Leaders and Clinical End Users

• Meetings = an exchange of concerns, issues and ideas on how to improve usability and facilitate physician CPOE adoption, clinical content (order sets), navigation, and service support (plus end user "tips" to accelerate physician workflow in CPOE)

• Served as a reporting vehicle to identify and troubleshoot specific individual or specialty CPOE navigational issues and adoption challenges

• A line listing or dashboard of end user reported issues, requests and problems to resolve is generated and continually updated
2 - Engage Recurrent HI Meetings to Build Trust with Facility Leaders and Clinical End Users

• CPOE Issues Dashboard distributed at each meeting and posted on HI intranet so clinical end users could monitor issue resolution – but also ensured HI accountability in responding to concerns

• Scheduled at a time when physicians can attend, with a meal provided, significant numbers of high order volume physicians participate (8-18+ at each facility), who recognize their self interest

• Some physician contracts enabled physicians to be remunerated for the 1 hour meeting for the first years of the CPOE go-live, facilitating attendance
2 - Engage Recurrent HI Meetings to Build Trust with Facility Leaders and Clinical End Users

• Health informatics leaders round regularly at all live facilities to meet informally with clinical end users as they work, and to check in and speak with the facility leaders whenever visiting the facility.

• Enables frequent ad hoc and private face to face time with leaders to assess and discuss CPOE adoption progress and specific challenges.

• Cultivation of personal, trust-based relationships with facility leaders is a central focus of HI team and of inestimable value to CPOE adoption.
3 - Inclusion of CIT Use Requirement and Performance Metrics into Physician Contracting

- Facilities struggled with CPOE adoption early on, achieving low overall facility use rates in the 55-70% even a year after go-live
- HI worked with regional and facility executives to ensure that a CPOE performance and use metric was included in physician group contracts
- Inclusion of CPOE performance as a contractual obligation had a powerful – perhaps essential – impact on adoption
- In specialty contracting, HI works with executive leadership to identify an achievable minimum CPOE performance target and a stretch objective
3 - Inclusion of CIT Use Requirement and Performance Metrics into Physician Contracting

- CPOE use objectives are linked to physician incentive payments for multiple critical physician specialties: ED physicians; hospitalists; various surgical specialties; nephrology and cardiology

- Contracting a performance objective fostered strong CPOE adoption -- central to achieving consistent 84-88% month-over-month CPOE facility use rates in all facilities

- Hospitalists and ED physicians comprise 58-74% of total order issuance in adult facilities; contracts had CPOE use requirement/performance target
3 - Inclusion of CIT Use Requirement and Performance Metrics into Physician Contracting

• The power of physician contracting for CPOE performance is well illustrated by the history of CPOE adoption in one facility.

• After declining to renew a contract with one hospitalist group (poor CPOE adopters) and recruitment of another with demonstrated CPOE use experience, a 24-28% improvement in the facility’s overall CPOE use rate occurred rapidly (6-8 months).

• All physicians within this group subsequently achieved 90-94% sustained individual CPOE use rates.
4 - Executive Leadership Engagement, Commitment and Co-Ownership of HI Strategies and Deliverables

- The establishment of a Clinical Information Technology Steering Committee – comprised of regional executive leadership and HI/IM leaders – has been a key contributor to successful CPOE adoption
- Meets monthly, sponsored by regional CEO and co-chaired and managed by HI and IM leadership
- Attended consistently by regional leaders (CEO, CMO, CNE, COO, CFO) and by facility leadership teams as needed
4 - Executive Leadership Engagement, Commitment and Co-Ownership of HI Strategies and Deliverables

• The 90 minute meeting moves rapidly through a packed agenda, enables HI leaders to ensure that executive leadership is updated – and aligned with – all critical HI activities and objectives

• Empowers HI regional leaders to drive complex or obstinate issues and problems to the highest level of authority and decision-making

• Resulted invariably in acceleration of stagnated processes and improved facility administrative/clinical leadership engagement (and compliance) -- essential in facilitating HI achievement of objectives and value delivery
5 - Robust Facility Integration of the Clinical Informaticist into the Hospital Team

• Leadership made a seminal decision – and investment – at the outset of the CPOE go-live: to dedicate a full-time, on-site Clinical Informaticist (CI) to each live facility

• Placing a CI in each facility did not guarantee engagement of the CI by facility leadership team or clinical end users

• Demonstrating the value the CI provided – and building trust – required 2-4 months, but soon each facility CI was an integral member of the multidisciplinary hospital care
5 - Robust Facility Integration of the Clinical Informaticist into the Hospital Team

• CI performance is one of the most important predictors – along with aggressive contracting and facility leadership engagement – of facility success in CPOE adoption

• Each CI has been selected to ensure that s/he has the essential professional and personal skills to shepherd successful CPOE & other CIT adoption; often recruited in house nurses already having relationships

• Well integrated into the hospital team, CIs actively round multiple times each day, attend varied facility meetings of clinicians, and are on call to providers, nurses and other end users throughout the hospital
5 - Robust Facility Integration of the Clinical Informaticist into the Hospital Team

• Best way to build relationships of trust and collaboration with providers and facility leaders is having a skilled, fully dedicated and passionate CI "living in the house“ with customers and stakeholders served by HI

• Facility leadership must be educated and encouraged (when necessary directed) by executive leadership to genuinely welcome and fully integrate the CI into the facility care team

• CPOE use rates exceeded 70-75% level when robust integration of the CI into the hospital team was achieved - strong relationship between facility adoption/implementation success and degree of facility CI integration
6 - Visibility and Accessibility of Health Informatics Team to Clinicians and Facility

- HI leadership team spends their time predominantly within our region’s hospitals in order to attend important meetings with different segments of our end user/customer community.
- To meet with facility leaders.
- To work with the facility Health Informatics Physician Liaison (next section) and with the facility CI.
- HI leaders attend various provider and nursing meetings in each facility to educate, communicate and advocate HI's adoption strategies and tactics.
6 - Visibility and Accessibility of Health Informatics Team to Clinicians and Facility

• HI leaders regard visiting each facility to **round regularly** and spend time with the facility CI and end users as one of our **most important** activities and essential responsibilities.

• In this manner, HI leaders **secure ongoing, real time updates from each facility CI**

• Can pose a critical recurring question: **What can we do to help this CI be maximally effective and successful?**
7 - Recruitment of a Facility Clinical Leader to Serve as "Physician Health Informatics Liaison"

• In order to build trust and **engage true co-ownership** of adoption with each facility's physician community, a **respected physician leader** was recruited to **chair recurrent dedicated CIT meeting** at each facility.

• Serves as a **point person** in the facility for physician CPOE/CIT concerns.

• **“Physician Health Informatics Liaison”** is selected with input/approval of facility leaders and resources to pay for **8 hours of work/month on CIT issues** (usually < 4).

• Serves as a local physician leader to **complement the activities and influence of HI leaders**.
7 - Recruitment of a Facility Clinical Leader to Serve as "Physician Health Informatics Liaison"

- Acts as a two way vehicle for communication of physician CPOE/CIT issues to and from HI
- Advocates for CPOE/CIT adoption among physician peers in their facility
- Physician HI Liaisons augment HI's surveillance for CPOE/CIT adoption problems, obstacles and areas of needed service improvement
- Each has become a critical ally of Health Informatics
- An individual seeking to “be part of the solution, not part of the problem,” and willing to “light a candle rather than curse the darkness”
The **right person** must be selected for this important role:

- Professionally, the physician must be a strong adopter of CPOE (preferably with an 80-85%+ personal use rate)
- Specialty is not a consideration in any one facility, but we seek **diverse specialty representation** across the region
- Current cadre of Liaisons includes a **general surgeon**, a **family medicine physician**, and a **hospitalist**, each serving a 1 year (renewable) term - this constellation of important specialties for successful CPOE adoption was deliberate (another desired specialty - ED physician)
7 - Recruitment of a Facility Clinical Leader to Serve as "Physician Health Informatics Liaison"

Personality factors weigh equally in selecting the right Physician HI Liaison:

• Individual must be **senior enough** (and respected clinically) to command attention from colleagues, and to add value to HI efforts to secure physician engagement and compliance

• But the HI Liaison should be **young enough** (in mind if not chronology) to possess the **energy** to make an HI contribution to the hospital beyond their clinical one, and evidencing a **well informed interest** in CIT

• Interestingly, all 4 Physician HI Liaisons serving thus far are **ages 30-45**
7 - Recruitment of a Facility Clinical Leader to Serve as "Physician Health Informatics Liaison"

• A gregarious, inclusive and easy to collaborate with personality desirable

• Fully committed to genuine partnership with HI leaders and facility CI – one of trust and candor

• Appropriate attitude toward CIT is paramount -- this physician must recognize the transformative value of clinical information technology to improving clinical outcomes and patient safety yet also appreciate the early state of EHR/CPOE technology evolution – that we are on a journey of technology advancement and optimization
Table 2  Seven strategic and operational contributors to successful implementation of clinical information technology

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Conclusions

• These 7 key practices are **not an exhaustive or comprehensive checklist of** recommended, valuable strategies for successful implementation.

• Hospital facilities/health systems have reported **other success factors**, including pre-implementation usability testing with end users, advanced CPOE training and support, and effective deployment of super users -- we utilized these as well but assumed they are ubiquitous.

• Our focus today has been on success factors which **may be less common** and could have value elsewhere.
Conclusions

• It would be arbitrary to rank these practices against each other in terms of relative importance for successful CIT implementation.

• Each has distinct and significant value; many are additive and mutually reinforcing.

• We have found these best practices generalize well to other kinds of HI implementations (e.g., digital documentation).

• Hospitals have diverse physician communities, institutional contexts, financial resources and management processes, so these 7 practices are not intended to be prescriptive, or purported to be applicable everywhere.
Conclusions

• We believe these factors are fungible and can generalize to many other hospitals and care delivery settings, with adaptation as needed and appropriate.

• In our experience, the processes were as integral to achieving HI implementation success as the selection of the right technology vendor or software.

• While time and resource consuming, the return on investment in these processes was substantial, and even pivotal, in achieving successful implementation.
Conclusions

The 7 factors have enabled:

• The **delivery of maximum value** by our HI department

• Achievement of **high levels of CPOE adoption** (84-88% current facility use rate levels month over month) that can be **replicated in future CIT implementations**

• Positioning of the facilities to achieve overall **CPOE use rates at the 90%+ level** over the next 6-9 months

• Partial **reduction** of substantial initial **physician dissatisfaction** with CIT -- reported dissatisfaction has decreased but remains too high
Conclusions

The 7 factors have enabled:

• Creation of a clinical end user customer-centric service process, a favorable customer experience and impact highly regarded and valued by clinicians, and a competitive differentiator in our market

• Cultivation of regional and facility leaders’ perception of HI as a highly effective and valuable department

• Fostering a satisfying and gratifying work environment for HI associates

• Most critically, a maximizing of HI’s contribution to the best possible evidence-based care/safety of our patients – the customer who matters most
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http://www.himss.org/ValueSuite
Questions

Thank you for your attention!

Contact for questions: ggellert33@gmail.com