Clinical Content Development in CPOE

Dan Morgenstern, MD, MBA
Principal
Computer Sciences Corporation
# Agenda

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Objectives

- Describe and communicate at least two uses of clinical content development and why it is important in CPOE implementation.
- Identify at least three sources to formulate clinical content development.
- Be able to create at least 2 templates to build specific evidence based order sets to address the needs of physicians and hospitals as it relates to CPOE.
Who am I?
Who am I?

• Dan Morgenstern, MD, MBA
  – MD, Albert Einstein College of Medicine
    • 25 years of practice:
      » Private solo as well as group
      » Academic – US, Israel
      » Cardiac, thoracic, vascular, trauma and general surgery, wound care
  – “Recipient” of a failed Hospital Clinical Information System Installation - twice
  – MBA, Auburn University-Montgomery Al
    • Major course of study: Information Systems
  – Left practice in 2003 – result of the malpractice crisis
  – Health Care Consulting since September, 2003
    • Clinical Transformation
    • Workflow Process Analysis and Redesign
    • Clinical Master Plan Development
    • Medical and Clinical Staff Education
    • Clinical Issues Resolution, Implementation Support (go-live)
    • Vendor Selection Assistance
    • Clinical Content Development
    • Physician/Clinician Adoption
Who are you?

- Name
- Practice specialty
- Institution
- Role in your institution’s CPOE project
- How did a nice guy/gal like you end up in a place like this?
- Your goals for this session
**Where are you vis a vis others?**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Cumulative Capabilities</th>
<th>2007 Final</th>
<th>2008 Final</th>
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<tbody>
<tr>
<td>Stage 7</td>
<td>Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; Data warehousing in use</td>
<td>0.0%</td>
<td>0.3%</td>
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<td>Stage 6</td>
<td>Physician documentation (structured templates), full CDSS (variance &amp; compliance), full R-PACS</td>
<td>0.3%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Closed loop medication administration</td>
<td>1.9%</td>
<td>2.5%</td>
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<tr>
<td>Stage 4</td>
<td>CPOE, CDSS (clinical protocols)</td>
<td>2.2%</td>
<td>2.5%</td>
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<td>Stage 3</td>
<td>Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology</td>
<td>25.1%</td>
<td>35.7%</td>
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<td>Stage 2</td>
<td>Clinical Data Repository, Controlled Medical Vocabulary, Clinical Decision Support, may have Document Imaging</td>
<td>37.2%</td>
<td>31.4%</td>
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<tr>
<td>Stage 1</td>
<td>Ancillaries – Lab, Rad, Pharmacy – All Installed</td>
<td>14.0%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Stage 0</td>
<td>All Three Ancillaries Not Installed</td>
<td>19.3%</td>
<td>15.6%</td>
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Total Hospitals: n = 5073 n = 5166

[http://www.himssanalytics.org/stagesGraph.html](http://www.himssanalytics.org/stagesGraph.html)
Introduction

What is Clinical Content?

Why is It Important?

Special Nature of Clinical Content in CPOE

Building Clinical Content
  Basic Success Factors
  Basic Methodology

Flow-Sheets and Forms

Physician Adoption

Comments and Discussion
What is Clinical Content?

- Clinical content is the form in which rules, guidelines, and EBM [evidence based medicine] are surfaced to clinicians within an application.

- Clinical content includes but is not limited to the following elements:
  - Data entry
  - Templates and questionnaires
  - Orderable items (lab, pharmacy, radiology, etc.)
  - Selection lists
  - Libraries of diagrams for graphic documentation
  - Flow sheets and reports
  - Synonyms and preference lists
  - Health maintenance reminders
  - Automated alerts - such as drug-drug and drug-allergy alerts
  - Patient instructions and links to knowledge sources
What is Clinical Content?

- Obviously a very broad definition encompassing virtually everything used by *everyone* in any manner during the course of patient care

- Construction of all of this seems like a monumental task
  - Physician input and oversight required for
    - Templates and questionnaires
    - Selection lists
    - Flow sheets and reports
    - Health maintenance reminders
    - Synonyms and preference lists
    - Patient instructions
  - Physician “hands-on” design and crafting required for
    - Data entry
    - Orderable items
    - Libraries of diagrams
    - Automated alerts
What is Clinical Content?

• Another way to examine this is to divide content into
  – “Physician” content
  – “Nursing” content
  – “Everything else” content (= supporting content)

• Much more manageable and intuitive as far as work assignment is concerned
  – Permits division of labor
  – Facilitates prioritization
  – Allows overview of totality and inter-relationships
  – Reflects everyday practice
    • Takes into account local custom and scope of practice
What is Clinical Content?

**Figure 1. Framework for Clinical Content**

Clinical Content - The Essential Currency of Clinical Information Systems

Deloitte Consulting

What is Clinical Content?

• This is much less intimidating
  – Less “stuff” to build
  – Items physicians, nurses, techs, pharmacists understand

• Some of the content already exists – even in the most “paper driven” institutions
  – Preference cards
  – Clinical protocols
    • Heparin
    • Insulin sliding scales
    • TPN
    • DVT prophylaxis
    • PCA
  – Some reports

• Still plenty of work – and vital work – and physicians must do it
What is Clinical Content?

• **By-product of all this work**
  – Reduction in clinically *indefensible* variance in care of patients
  – Otherwise known as standardization (*shhhh!*)
    • Common terminology
    • Common care inputs
    • Common data element recording
    • Common administration times
    • Common administration frequencies

• **Better patient outcomes are the result of**
  – Clinically defensible variance
  – Reduction of clinically indefensible variance
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Comments and Discussion
Why is This Important?

- **Multiple drivers toward standardization**
  - Information needs
  - Patient safety
  - Health care quality
  - Hospital efficiency
  - Outside pressure
    - Regulators
    - “Society”
  - Pay for Performance
  - Increased stakeholder satisfaction
Why is This Important?

• **Multiple drivers toward standardization**
  – Information needs
    • Easier and faster to “order in bulk” than individually
    • Provide the “volume discount” in order entry
      » Assume 4 clicks to enter an individual order
      » An order set of 12 orders may be entered in as little as 10 clicks
      » Savings of dozens of clicks
      » Clicks are time, time is efficiency
      » Efficiency → increased physician adoption
  – Patient safety
    • Less chance to forget, omit, duplicate, or err
    • Brings gentle reminders to the physician’s attention
    • Allows physicians to practice the best medicine that is available
    • Allows patients to benefit from everything their doctor ever learned but may have momentarily forgotten
Why is This Important?

• **Multiple drivers toward standardization**
  – Health care quality
    • Standardization (=variance reduction) *where appropriate* ensures better quality of care
    • Improvement in adoption of evidence-based best practices
    • Improvement in clinical cycle time
    • Improvement in length of stay
    • Improvement in formulary compliance
    • Reduction in errors
  – Hospital efficiency
    • Operational
    • Workflow
    • Financial

From a literature review in
Computer Physician Order Entry: Benefits, Costs and Issues
Gilad Kuperman, MD, PhD, and Richard Gibson, MD, PhD.
Annals of Internal Medicine 2003; 139: 31-39
Why is This Important?

- **Multiple drivers toward standardization**
  - Result of pressure from:
    - Leapfrog indicators
    - University HealthSystem Consortium
    - AHRQ EPC (Agency for Healthcare Research and Quality Evidence-Based Practice Centers)
    - CMS
    - IHI (Institute for Healthcare Improvement) 5 Million Lives Campaign
    - “Society” at large (even if hopelessly misinformed)
  - Pay for Performance
    - Government payers
    - Private payers
  - Increased stakeholder satisfaction
    - Doing the best possible for our patients is one of the few remaining satisfactions practicing physicians and clinicians have
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  Basic Success Factors
  Basic Methodology
Flow-Sheets and Forms
Physician Adoption
Comments and Discussion
Clinical Content in an EMR

• Recall from earlier
  – Clinical content includes but is not limited to the following elements:
    • Data entry
    • Templates and questionnaires
    • Orderable items (lab, pharmacy, radiology, etc.)
    • Selection lists
    • Libraries of diagrams for graphic documentation
    • Flow sheets and reports
    • Synonyms and preference lists
    • Health maintenance reminders
    • Automated alerts - such as drug-drug and drug-allergy alerts
    • Patient instructions and links to knowledge sources
Clinical Content in an EMR

• **These are common tasks in a “paper world” of medical practice**
  – Construction
  – Revision
  – Adaptation
  – Customization
  – Maintenance and updating

• **These are**
  – Relatively simple in the paper world at the individual level – for an individual patient
  – More time consuming when we want to apply changes to all patients/orders
  – Even more cumbersome and time/labor intensive at a departmental or institutional level – precisely because of the paper nature of possible multiple, independent changes
Clinical Content in an EMR

• In a computerized environment, changes (building something new) can be difficult - if not impossible ex post facto
  – Cannot create flow-sheets on the fly
  – Cannot revise with ease and without “design permission and access”
  – Cannot update and maintain without “design permission and access”
  – Cannot rip out sheet or scratch out entry with impunity
  – Cannot eliminate withdrawn drug by simply crossing out

• This is not the same as individual changes to patient care (orders) for an individual patient
  – Change of order (medication, test, intervention) is simple in a computerized environment provided that the “change” has been built
• In a building construction environment, changes (building something new) can be difficult - if not impossible *ex post facto*
  – Cannot create walls on the fly once blueprint finalized and framing underway
  – Cannot move installed light fixtures after electrical boxes in place
  – Cannot update blueprints without “design permission and access”
  – Cannot rip out walls, wires, windows with impunity
  – Cannot eliminate that extra bathtub simply by crossing out on plan

• This is *not* the same as individual changes to trim and paint for an individual room
  – Change of paint color is simple in a building environment provided that the paint/trim is on site – or will be
• So isn’t this a great argument to continue using paper?
  – Excuse me, but is anyone really satisfied with the present fragmented data model of clinical practice?

• Remember:
  – If everyone can modify per their wishes on the spur of the moment
    • Benefits of standardization and variance reduction are lost
      » Better patient outcomes are the result of
        – Clinically defensible variance
        – Reduction of clinically indefensible variance
    • Power of clinical decision support is weakened
    • Power of common enterprise data repository weakened as disparate data in a variety of unsearchable formats enters the system
    • Information ceases to flow smoothly and seamlessly
Clinical Content in an EMR

- Clearly clinical content in an EMR has to be
  - Clinically accurate
  - All-encompassing
  - Flexible
  - Customizable (within policies and guidelines)
  - Searchable (synonym dictionary)
  - Maintained and updated
    - In a timely manner
    - By appropriate people
    - Based on clinically correct and properly vetted information
• **What does all this mean?**
  – Careful attention to design
    • Follows workflow, does not force it
    • Consistent “look and feel”
    • Planning for future
      » Amendment and editing
      » Elimination or consolidation
      » Maintenance and updating
    • Efficient linking and embedding
  – Thoughtful incorporation of alerts
    • Immediate
    • Future
      » Known *and* unknown
      » Agreement on “best practices”
    • Source
    • Evidence
• **Remember**
  – Prime motivators for physician adoption and usage of CPOE
    - Economy of “bulk rate” for orders in order sets
    - Enhanced quality of care possible through CDS

• **Getting clinical content “right” is the best means to ensure physician adoption and a successful implementation**

• **Order sets combined with Clinical Decision Support constitute the carrots that will bring physicians to the CPOE salad**
• **Basic Success Factors**
  – Governance
  – Overall strategy for clinical content
    • What content is needed?
    • Content parameters
      » Sources - what and where?
      » Customization
      » Maintenance and updating
    • Adequate content-building tools
    • Metrics
    • Physician adoption strategy
Building Clinical Content

• Basic Success Factors
  – Governance
    • Need for formal, clear structure of
      » Scope of work
      » Responsibility of teams, members
      » Resources (number and mix)
        – Physicians
        – Nursing, pharmacy
        – Advisory personnel (IT, others)
      » Reporting structure
    » Policies concerning
      – Research
      – “Table of authorities”
      – Sign-off
      – Issues resolution
      – Maintenance
      – Standardization
• **Basic Success Factors**
  – Overall strategy for clinical content
    • What content is needed?
      » Service lines
      » Specialty units and practices
      » Standardization
      » Prioritization
    • Content sources: what and where?
      » Buy?
      » Build?
      » Borrow?
      » Who can we trust?
    • Content customization
      » How much?   » Who?
      » How?        » Where?
      » When?
Building Clinical Content

• **Basic Success Factors**
  – Overall strategy for clinical content
    • Maintenance and updating of content
      » Who will do it?
        – Standardized content
        – Customized content
      » How often?
      » What will trigger updating?
        – Dates
        – Events
        – Outside entities
  • Adequate content-building tools
    » Initial building
    » Version control and tracking
    » Dashboard/reports
Building Clinical Content

• Basic Success Factors
  – Overall strategy for clinical content
    • Metrics
      » How will we define success?
      » How will we measure it?
      » What information do we need NOW as a baseline to enable future comparison?
    • Physician adoption strategy
      » Detailed discussion later today
Time for a Break
Agenda

Introduction
What is Clinical Content?
Why is It Important?
Special Nature of Clinical Content in CPOE

Building Clinical Content
  Basic Success Factors
  **Basic Methodology**

Flow-Sheets and Forms
Physician Adoption
Comments and Discussion
Building Clinical Content

- **Basic Methodology**
  - Overall methodology for clinical content build
    - Most complex and important for order set development
    - Less so for forms, flow sheets, preference cards etc
  - We will follow the path for order set development
    - Most complex
    - Most important
    - Most visible
    - Most on your minds
    - Once you grasp this, the rest is easy

Adapted from Judi Binderman, MD
Principal, CSC Western US

**Diagram:**
- Define Order Set
- Gather Best Practices
- Build Order Set and Catalog
- Approve Order Set
- Utilize Order Set
- Maintain Order Set
• **Definition of Order Set**
  – Based on patient-care event
    • Admission
    • Transfer
    • Discharge
    • Pre-op
    • Post-op
  – Based on disease/service
    • Pediatrics
    • OB-GYN
    • Orthopedics
  – Based on Condition
    • Chest pain
    • Congestive heart failure
    • Risk of DVT (DVT prophylaxis)
    • Wound Care
    • Insulin sliding scale
• **Definition of Order Set**
  - Draw up complete list of all major patient events, conditions and services prevalent at your institution
  - Prioritize based on
    • Patient safety
    • Complexity
    • Patient volume
    • Number of physicians involved
    • Number of units involved
  - Questions of order set characterization (individual, departmental, etc) are irrelevant for the moment
• Definition of Order Set
  – Remember:
    • You can never be too rich or too thin
    • You can never have too many order sets
  – Every order set buys physician efficiency and system adoption
**Building Clinical Content**

- **Best Practices**
  - Definite hierarchy based on evidence
  - Tends to fall between two opposite extremes
    - Randomized, prospective, double-blind study/clinical trial validated several times
    - Obviously this is the right thing to do
      » I always do it this way and look at my “excellent” results
• **Best Practices**
  – Who can you trust?
    • Is the experience of the world famous ******** hospital germane to your
      » Institution?
      » Patient population?
      » Doctors?
    • No outside – or inside - expert has all the answers
  – How to proceed?
• **Best Practices**
  – Two basic methods
  • Do it yourself
    » Gather information from
      – Textbooks, journals, meetings
      – Peers, personal experience
      – Online research
    » Collate and synthesize information
    » Determine best practices
      – For your institution
      – NOT necessarily for you (the two are not always the same)
• **Best Practices**
  – Two basic methods
    • Have it done for you
      » Content vendor
      » Professional association
    • They follow same steps
      » Gather information
      » Collate and synthesize information
      » Determine best practices
      » Build/publish templates, sets, recommendations
Building Clinical Content

• Best Practices
  – Comparisons

• You do it:
  – Very time consuming
  – Never comprehensive
  – Overwhelming amount of data
  – Limited data base and resources
  – Starting point is personal / institutional bias
  – Maintenance is always difficult, incomplete
  – Cost is less up front
  – You feel “in control” of the process

• Someone else does it:
  – Time neutral to you and your institution
  – Comprehensive
  – Extensive data base and resources
  – Starting point is neutral
  – Maintenance is complete and automatic
  – Cost is more up front – and probably more in general
  – Loss of “control” of the process
• Build Order Set and Catalogue (Construction of actual order set - clinical construction, not electronic at this point)
  – Existing sets
    • Compare your current sets with gathered information (yours, vendor’s, etc)
      » Evidence basis
      » Required or recognized performance indicators
    • If there are multiple sets (different groups and providers)
      » Determine relevance and concordance
      » Analyze differences between sets
      » Address items not in common
Building Clinical Content

• Build Order Set and Catalogue (Construction of actual order set - clinical construction, not electronic at this point)
  – Existing sets
    • Need to reconcile the following
      » Items on current order sets not supported by evidence
      » Items supported by evidence or best practices not currently on order sets
      » Items not in common between multiple physician/physician group order sets
      » Items requiring tracking by local PI initiatives
    • Reconciliation is not the same as elimination, addition
Building Clinical Content

• Build Order Set and Catalogue (Construction of actual order set - clinical construction, not electronic at this point)
  – Sets that do not exist
    • Starting point is evidence-generated template
      » Vendor
      » Professional society
      » Internal
  • Add
    » Federal regulatory/quality items
    » Any local standards or PI initiatives
    » Any local protocols already in place
Building Clinical Content

• Build Order Set and Catalogue (Construction of actual order set - clinical construction, not electronic at this point)
  – Sets that do not exist
    • Keep the following in mind
      » In-house medication formulary
      » Outpatient medication formulary(ies)
      » Non-formulary medications
    • Try to predefine as many orders as possible
      » Set standard
        – Dosage amounts
        – Administration routes
Building Clinical Content

• Build Order Set and Catalogue (Construction of actual order set - clinical construction, not electronic at this point)
  – The Catalogue
    • Serves as a quick reference guide to your order set development activities
    • Maintained by Physician Champion/Sponsor with input from sub committees, SME’s
    • Is a perpetual document, much as CPOE projects are perpetual
    • Is the “institutional order set development knowledge repository” – for process and content
Building Clinical Content

• **Build Order Set and Catalogue** (Construction of actual order set - clinical construction, not electronic at this point)
  – The Catalogue
    • Should contain
      » Latest updates, approval dates and approval groups
      » Archived best practices
      » Physician utilization statistics
    • Should use bar code/item type/reference numbers to facilitate search (IT can help set this up)
    • Should map to vendor catalogue
    • Paper document layout specifications to facilitate scanning

Diagram:
- Define Order Set
- Gather Best Practices
- **Build Order Set and Catalog**
- Approve Order Set
- Utilize Order Set
- Maintain Order Set
Building Clinical Content

• Approve Order Set
  – Traditional hospital process involves some variant of the following steps
    • Forms/Medical Records Committee
    • Department/section approval
    • QA/QI/Risk Management Committee
    • P & T Committee
    • Medical Exec Committee
    • Nursing Quality of Care Committee
  – For order set development in CPOE, this will not work
  – Need streamlined process to complete before “third coming”
Approve Order Set

- Fast Track Process is *sine qua non* of success
  - Authority rests with physician champion and PAC as formally delegated by Medical Executive Committee
  - Identify critical committees for review/input
    » Forms/Medical Records usually is voted off the island
  - PAC identifies and empowers several members to constitute the Order Set Committee (OSC)
    » These are the electronic “signers” that can be empowered to sign off on order sets
• Approve Order Set
  – Fast Track Process is *sine qua non* of success
  • OSC assigns construction of sets to recognized SME’s within medical staff
    » OSC has authority to “pull” anyone necessary from “traditional” approval process to participate in OSC work
      – Nursing and other ancillary departments
      – Pharmacy – usually has a “semi-permanent” presence on OSC
Building Clinical Content

- Approve Order Set
  - Fast Track Process is *sine qua non* of success
  - Tools and methods
    » Email with 2 week turnaround for each step
    » Online collaboration tools for appointed reviewers
      - All sets are built/reviewed by SME’s
      - SME’s make changes, additions, etc
  - Signers (OSC) review and vote
    - Agree → order sets are approved in draft form
    - Disagree → order sets presented to full PAC for final decision
Building Clinical Content

• Approve Order Set
  – Fast Track Process is *sine qua non* of success
  • Final draft sets presented to OSC for
    » Final review for accuracy and usability
    » Adherence to agreed-upon “look and feel” (template)
    » Normalization with any associated ancillary content
      – Nursing, dietary, respiratory etc. orders and protocols
      – Pharmacy protocols
      – Forms, flow-sheets etc
      – Regulatory mandates
    » Resolution of any disagreements
• **Approve Order Set**
  – Fast Track Process is *sine qua non* of success
  • Described process is but an example
  • Authority and steps may be modified to better fit your institution/situation:
    » OSC approved sets are final, need not be reviewed by PAC
    » OSC and “committee of SME’s” are one and the same
    » Normalization handled by another sub-committee of PAC working with nursing, pharmacy etc
    » OSC may be MD’s outside PAC (assumes lots of worker docs)
Building Clinical Content

- **From Paper to Electronic (Note return to “Order set Build”)**
  - Approved and signed-off order set sent to analysts for electronic build
  - Designated MD champion (of that order set) reviews draft order set in vendor screen
    - May be reviewed by SME, OSC, or delegate therefrom
  - Make needed corrections/revision to electronic order set
  - Obtain final sign-off for order set by responsible champion (see above)
• **Utilize Order Set**
  - Paper “translated” into electronic form
    - Do not overlook benefit of using paper order sets pending electronic environment
  - Question of mandatory versus facultative use
    - “Beyond the scope of this course”
    - Decisions will affect speed and amount of benefits accrued from order sets, standardization, CPOE
  - Internal, “automatic” standardization amongst like specialists tends to occur, albeit slowly and with some lag time
• **Utilize Order Set**
  – Issues, corrections, errata, suggestions, unintended consequences etc
    • Physician champion/PAC keeps cross-referenced log
      » Similar parameters to catalogue
  – “Bug repair” by clinical IT personnel, based on MD prioritization (champion or PAC, this means you)
  – Maintenance from clinical standpoint is different question
    • Function of “home made” versus “store bought” sets, tools
    • Must be addressed carefully and explicitly
    • Failure to do so will erode all benefits rather quickly
Building Clinical Content

- **Maintain Order Sets**
  - Establish rigorous, written, accountable process
  - Even if have “content vendor” subscription in place
    - You practice, vendor does not
    - They are your patients, not content vendor’s
  - Codify
    - People
    - Scope of responsibility and specialty
    - Timing and frequency of review
    - Process, individuals charged with sign off
      - Avoid total back slide to pre CPOE committee circus
Building Clinical Content

• **Maintain Order Sets**
  – Tools and methods
    • Check for updates
      » Content vendor – if you have one
      » Regulatory agencies
      » National organization guidelines
    • Identify
      » Required changes
      » Affected order sets
      » Affected physicians, departments, sections
**Building Clinical Content**

- **Maintain Order Sets**
  - Tools and methods
    - Utilize some form of streamlined change validation process
    - Mandatory review annually or bi-annually even if no intermediary changes
    - Communicate to individuals, sections, departments individually through email, memos, phone calls, personal visits
    - Communicate to medical staff as a whole at meetings and gatherings
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<th>Some Sources of Content and Technology</th>
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<td><strong>Healthgate, Thomson, UptoDate, Wolters Kluwer, Zynx Health, OSOS</strong></td>
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<td><strong>AAFP, ACM, ACS, ACOG</strong></td>
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<tr>
<td><strong>National Guideline Clearinghouse, US Preventive Services Task Force, AHRQ</strong></td>
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<td><strong>The Cleveland Clinic, Vanderbilt SOM, Duke Health System</strong></td>
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Time for Lunch
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Comments and Discussion
Flow-Sheets and Forms

• Usually accomplished in conjunction with nursing
  – Involves less physician work and input *BUT*
  – Coordination is just as – if not more - important
    • Information doctors need will be contained within these items
    • Need to be user-friendly to nurses who enter data and information-friendly to doctors who seek the data
• Replacement of present state
  » I/O sheet
  » bedside flow sheet
  » chart vital signs flow sheet
  » paper towel chart, etc
• with electronic equivalent
  • poorly conceived multiple screens
  *is a recipe for disaster*
Flow-Sheets and Forms

- Compile list of Forms and Flow Sheets
  - Ensure completeness to avoid later chaos
    - A missing item cannot simply be constructed on the fly in an electronic environment
  - Cross-reference and eliminate duplicates
    - Think clinically rather than bureaucratically
    - Goal is
      » Streamlining of data collection and availability
      » Entry of data element only once, on only one form/flow-sheet
- Different from display of data element in multiple venues
  » Nursing
  » Physician
  » Specialty, etc
Flow-Sheets and Forms

• Sample areas to compile
  – Nursing
  – Blood Bank
  – Cardiology
  – EEG
  – EKG
  – Case Management
  – Dietary
  – Radiology
  – Lab
  – PT/OT/ST
  – Consults
  – Dialysis
  – Pharmacy
  – Radiation Oncology
  – Rehab Medicine & EMG
  – Respiratory Therapy
  – Specialty Center
  – Vascular Lab
Flow-Sheets and Forms

- **Identify MD “champion” for each form/flow-sheet**
  - OSC member, SME or delegate
  - Responsible for all physician input and sign-off of the form/flow-sheet

- **Draft Order Forms**
  - Usually done by nursing or other ancillary service
    - Input from “owners” (nursing, respiratory, dietary etc)
    - Input from MD champion
      - For forms that doctors need, use
      - For others as well – to ensure overall clinical integrity and appropriateness
Flow-Sheets and Forms

- **MD champion review with IT analyst**
  - How does it look, feel, flow on the screen?
  - How does it fit into physician and other clinical workflow?

- **PAC as final reviewer**
  - Represents final sign-off on forms/flow-sheets
  - Important for credibility vis a vis wider medical staff

- **Note:**
  - PAC sets policies re individual physician display forms
    - Should be as liberal as possible
      » Within reason, each doctor should be able to have a personal display of data elements per his specialty and individual requirements
      » Vendor rigidity should be politely but firmly rejected
Agenda

Introduction
What is Clinical Content?
Why is It Important?
Special Nature of Clinical Content in CPOE
Building Clinical Content
  Basic Success Factors
  Basic Methodology
Flow-Sheets and Forms
Physician Adoption
Comments and Discussion
Physician Adoption Strategy

• Order set is of little value without physician adoption
  – Points made in earlier discussion of “Utilize Order Set” are null and void without adoption
  – Ability to refine, improve and polish paper order sets in anticipation of electronic ones depends on significant physician adoption
  – Minimal utilization (number of doctors, number of orders) will negatively impact
    • Design and build
    • Conclusions
    • Benefits
Physician Adoption Strategy

- **Principles are quite similar to**
  - Content building strategy
  - Overall CPOE adoption strategy

- **Overall themes are**
  - Credibility of builders and data
  - Communication to wider end-user audience
  - Process integrity
  - Education of physician community
  - Advocacy of the product
Physician Adoption Strategy

• **Obtain initial buy-in from builders**
  – Start small with a generally confined group of practitioners
    • OSC as a subset of PAC, for example
  – Insist on unbiased research
    • Must avoid actuality or appearance of “personal agendas” in order set construction
    • Impartiality and unassailability will be crucial to wider buy-in and adoption - start now

• **Full cross-reference of existing order sets**
  – Avoidance of duplicative work – there is enough already
  – Doctors with “personal” order sets are brought into the process
    • Helps alleviate the ruffled feather syndrome and promotes early ownership – even if only a “small piece of the rock”
Physician Adoption Strategy

• **Craft a robust communication strategy**
  – Keep PAC members in the loop
  – Keep medical staff apprised of process, progress

• **Encourage – even demand - end-user participation in all phases**
  – Medical staff members MUST act as SME’s
  – Incentives must be in place
  – Avoid turning to same few people all the time
    • Assumes you have more than a few people on staff

• **Ensure that go-live training plan incorporates order set usage**
  – Ability to access order set index in vendor system
  – Ability to properly use and choose order sets
  – Ability to save favorites within order sets
Physician Adoption Strategy

- Activation support plan
  - Mandatory for electronic versions
  - Highly recommended for paper versions
    - Establish guidelines and goals for order set use
      » Should mesh with guidelines and goals for CPOE use
    - Policies and support for withdrawal of “blank order sheets” from general use

- Ongoing support and maintenance
  - Establish and communicate plan for maintenance of sets as discussed earlier
Physician Adoption Strategy

Overarching Strategies
- Targeted physician communication plan
- Training Plan
- Activation Support
- Ongoing Support

Late Adopters
- Connector Strategy
  - Local System Events
  - Connector Strategy

Middle Adopters
- Design Core Team
- Design Specialist Participation
- Local Physician Engagement Team

Early Adopters
- Health System Leadership
- Physician Design Team
- Local Physician Engagement Team

Leaders

Targeted Strategies

Sample Content Governance

PHYSICIAN STEERING COMMITTEE
Oversees CIS physician-oriented workflow, content and adoption.
Integrates with multi-disciplinary teams

Order Set Team A
Generalist Team
CAP, CHF, etc
With specialty and multi-disciplinary support
6-9 members

Order Set Team B
Cardiology Team
Atrial Fibrillation, STEMI
With specialty and multi-disciplinary support
6-9 members

Order Set Team X
Surgery Team
Post-operative; Lap Choly
With specialty and multi-disciplinary support
6-9 members

Time for an Exercise
# MTC Clinical Content Course for Physicians

<table>
<thead>
<tr>
<th>Team Structure</th>
<th></th>
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<tbody>
<tr>
<td><strong>Members</strong></td>
<td></td>
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<tr>
<td><strong>Responsibilities</strong></td>
<td></td>
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<tr>
<td><strong>Time Requirements</strong></td>
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<tr>
<td><strong>Reporting Structure</strong></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Resources</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>People (librarians, analysts, etc)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Money (software, work areas, support personnel etc)</strong></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Deliverable Structure</th>
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<tbody>
<tr>
<td><strong>Look/feel standards</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Paper life</strong></td>
<td>Yes / No? Where? How long?</td>
</tr>
<tr>
<td><strong>Electronic</strong></td>
<td></td>
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<tr>
<td><strong>Nested sets</strong></td>
<td>Presence, policies</td>
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<table>
<thead>
<tr>
<th>Policies</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Order set types</strong> (Institutional, departmental, individual)</td>
<td>Where, when, for how long?</td>
</tr>
<tr>
<td><strong>Favorites</strong></td>
<td>Who, how, for how long?</td>
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<tr>
<td>Policies</td>
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<tr>
<td>Approval Process</td>
<td></td>
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<tr>
<td>Maintenance process (structure, timing, resources etc)</td>
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<tr>
<td>Standards of evidence</td>
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<tr>
<td>Order Set Life Cycle</td>
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<tr>
<td>Authorship definition (write, edit, review, approve)</td>
<td></td>
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<tr>
<td>Updating, new order set review, coordination and approval</td>
<td></td>
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<tr>
<td>Release control</td>
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<tr>
<td>Evidence base updating (general, institutional, individual)</td>
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</tr>
<tr>
<td>Archiving and library preservation</td>
<td></td>
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</tbody>
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Objectives

- Describe and communicate at least two uses of clinical content development and why it is important in CPOE implementation.
- Identify at least three sources to formulate clinical content development.
- Be able to create at least 2 templates to build specific evidence based order sets to address the needs of physicians and hospitals as it relates to CPOE.
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Comments and Discussion
Next Steps

• Contact information
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  – dmorgenstern@csc.com
  – http://www.masstech.org/cpoe.html
Discussion