

Best Practices in CPOE Deployment Strategies

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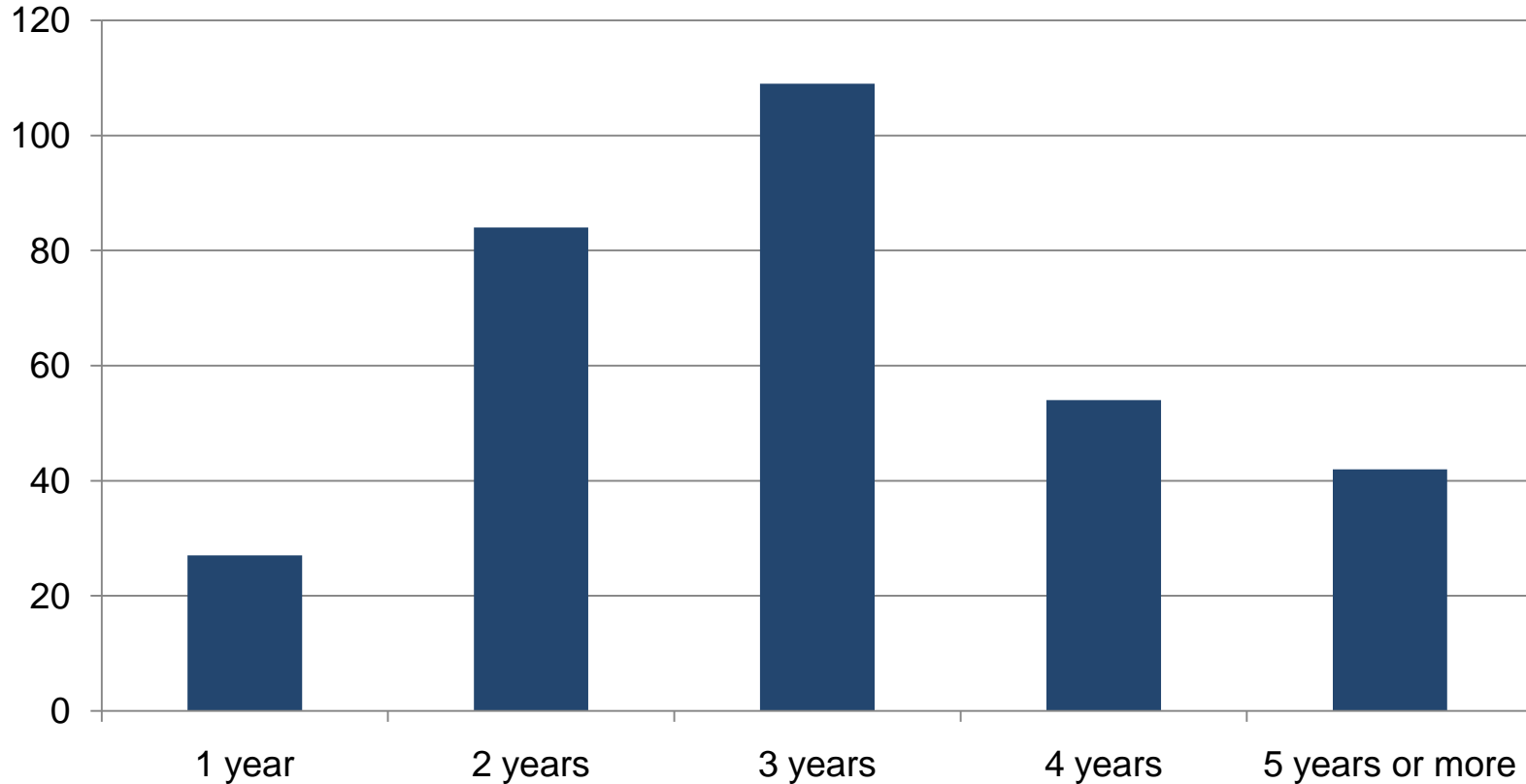
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OBJECTIVES

- ◆ Discuss critical upfront considerations (meaningful use goals, sustainability, etc.)
- ◆ Explore implementation cost reduction strategies
- ◆ Risk factors
- ◆ Value proposition
- ◆ Examine options for deployment
- ◆ Training and support models

CHIME SURVEY ON CPOE ADOPTION, 06/09

If your organization has not adopted CPOE at any level, if your organization had to begin implementing CPOE today, how many years do you think it would take to achieve 100% adoption?



REPORTING PERIOD

- ◆ What is the reporting period for eligible hospitals participating in the Medicare and Medicaid Electronic Health Record (EHR) Incentive Program? (Updated 11/08/2010 02:12 PM | Answer ID 9962)
 - ◆ For an eligible hospital or critical access **hospital's first payment year**, the EHR reporting period is a **continuous 90-day period within a Federal fiscal year**. In subsequent years, the EHR reporting period for eligible hospitals and critical access hospitals (CAHs) is the entire Federal fiscal year.

UPFRONT CONSIDERATIONS

- ◆ Commitment from the top
- ◆ What do successful CPOE organizations have in common?
 - ◆ Visionary, strong leaders able to formulate, define and turn a vision into an action plan
- ◆ Adequate budget
 - ◆ Personnel / implementation / training / hardware / support
 - ◆ Multi-year project
 - ◆ IT budget, nursing, pharmacy
- ◆ Staffing
- ◆ Commitment of resources
 - ◆ Physician
 - ◆ Nursing
 - ◆ Pharmacy
 - ◆ Ancillaries
 - ◆ Project Management

UPFRONT CONSIDERATIONS

- ◆ Identify and prepare for cultural changes at all levels
- ◆ Establishment of committees
- ◆ Clear vision for deployment
 - ◆ Most organizations reach a pilot and remain stagnant for years afterwards
- ◆ Education
- ◆ Support
 - ◆ Clinical
 - ◆ Technical

UPFRONT CONSIDERATIONS

- ◆ Cultural assessment
- ◆ Evaluation of computer skills for providers
 - ◆ Offer testing / training of basic computer skills, such as typing
- ◆ Offer incentives to early providers
 - ◆ Engage before the roll out
 - ◆ Encourage customization
 - ◆ Medical residents are strong allies; leverage their quick learning to help other providers

ORDER SETS AND CLINICAL DECISION SUPPORT

- ◆ Experiences – what has worked and what hasn't
- ◆ Shared content
- ◆ Short and long term strategy
 - ◆ Process for development vs. maintenance, evolvment
 - ◆ Evidence based vs. existing
 - ◆ Standards: organization vs. personal
- ◆ Corporate model vs. unique to site
- ◆ Impact of order sets on an organization
- ◆ Approaches for better adoption
- ◆ Monitoring, auditing and linking to outcomes

MEANINGFUL USE VS. REALISTIC TIMELINE

- ◆ Cannot use meaningful use as starting point
 - ◆ Very low and not realistic
 - ◆ Creates unsafe, dual environments for patient
- ◆ Focus on sustaining implementation not just meeting political timelines
- ◆ Industry early “side-effects” of meaningful use rush
 - ◆ Vendors delayed software deliveries, implementations
 - ◆ Focus on getting the task done without consideration of clinical workflow
 - ◆ High competition for resources: hospitals, vendors, consulting firms
 - ◆ New hires with limited experience
 - ◆ “Rob Peter to pay Paul”

REDUCE IMPLEMENTATION COST

- ◆ Due diligence upfront
- ◆ Do it right the first time – no rework
- ◆ Think outside the box
 - ◆ Maximize existing technology
 - ◆ Focus on what matters, divide into phases
- ◆ Evidence based order sets not required for stage 1, consider including in initial deployment
- ◆ Evidence based plan of care – initially or later?
- ◆ Focus on goals and deliverables
- ◆ Vendor maturity – best practice
- ◆ Understand end goals you will be measured on, not only the path to get there

21ST CENTURY TOOLS

- ◆ For implementation
 - ◆ Virtual worksessions
 - ◆ Minimize travel expenses (17-20% of total cost)
 - ◆ Standardized tools to aid implementation teams
- ◆ Evidence based order sets and plan of care
- ◆ For education
 - ◆ Use online tools
 - ◆ Push vs. pull
 - ◆ Standardization of content: global vs. specialty specific
- ◆ For communication
 - ◆ Use SharePoint
 - ◆ Use mobile device communication

TRAINING AND SUPPORT MODELS

- ◆ Do not forget impact on nursing, pharmacy and ancillaries
- ◆ Education on process changes needs to be deep and pervasive
- ◆ Effective communication
- ◆ Engage nursing upfront for support module
 - ◆ Create super users in nursing
 - ◆ IT cannot support clinicals
 - ◆ Setup 24 hour clinical help desk
 - ◆ Special consideration to handle infrequent users

SHORT TERM STRATEGIES

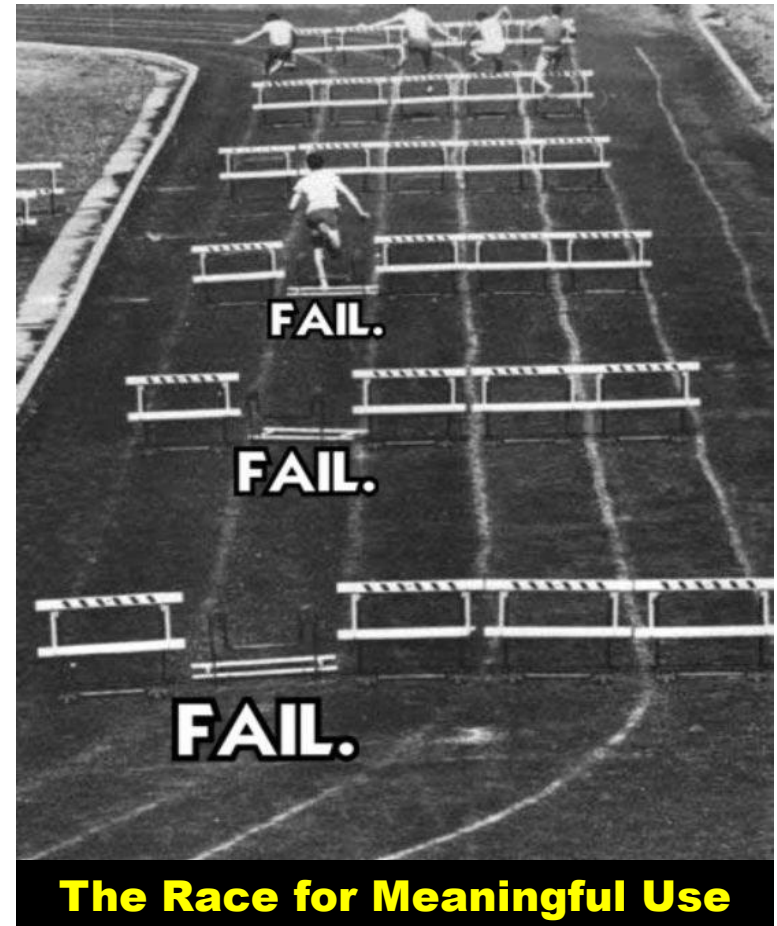
- ◆ High availability for all systems
- ◆ Ability to listen and being responsive
- ◆ Establish committee for prioritization of requests
 - ◆ Change control process: internal, process, vendor
 - ◆ Dynamic evolvement of reporting requirements
- ◆ Ensure that all stakeholders remain engaged
- ◆ Effective support
- ◆ Agile training
- ◆ Establish communication methodology
 - ◆ Multiple avenues, email does not work with physicians!

LONG TERM STRATEGIES

- ◆ Keep an eye on system performance
 - ◆ Initial decision for ASP solution vs. in-house hosted
- ◆ Appropriate reporting, analytics
 - ◆ Vendor tools
 - ◆ Internal skills
- ◆ Continue to monitor MU requirements
 - ◆ Clear ownership, executive sponsor
 - ◆ Dedicated project manager
- ◆ Staff retention
- ◆ Monitor current quality indicators to prevent adverse impacts on performance (unintended consequence)

CPOE – TOP 10 FAILURE PITFALLS

- ◆ Lack of vision/strategy
- ◆ Strategy failure in formulation and execution
- ◆ Lack of stakeholder buy-in or support
- ◆ Unrealistic budget, scope and timelines
- ◆ Poor communication – realistic expectations not defined
- ◆ Poor/lack of medical staff acceptance, value proposition
- ◆ Insufficient resource planning, lack of expertise
- ◆ Lack of understanding of clinical processes & workflow
- ◆ Undefined project success or closure criteria
- ◆ Insufficient or no risk planning



SETTING CPOE DIRECTION

- ◆ CPOE mandate (universal adoption)
 - ◆ Immediate
 - ◆ Progressive (phased)
- ◆ Deployment approach
 - ◆ Goal: Identify unit or patient population that will provide the meaningful use patient cohort
 - Note: psych and rehab patients do not count
 - ED patients count
 - ◆ Need statistical data to determine the appropriate starting point
 - Consideration needs to be given to the clinical workflows

NURSING CONCERNS WITH CPOE

- ◆ No. 1 concern of the nursing staff was timely notification of new or changed orders
- ◆ In a University of Pennsylvania study, the use of CPOE resulted in decreased collaboration between nurses and physicians
 - ◆ Thew J. 2005 Practice vs. Technology. Nursing Spectrum Online: The New England Edition.
- ◆ Communication of orders between unit secretaries and nursing
- ◆ Loss of visual clues about new or changed orders
- ◆ Explore vendor availability of notification tools, visual dashboards

CPOE ACHILLES' HEEL: PHARMACY

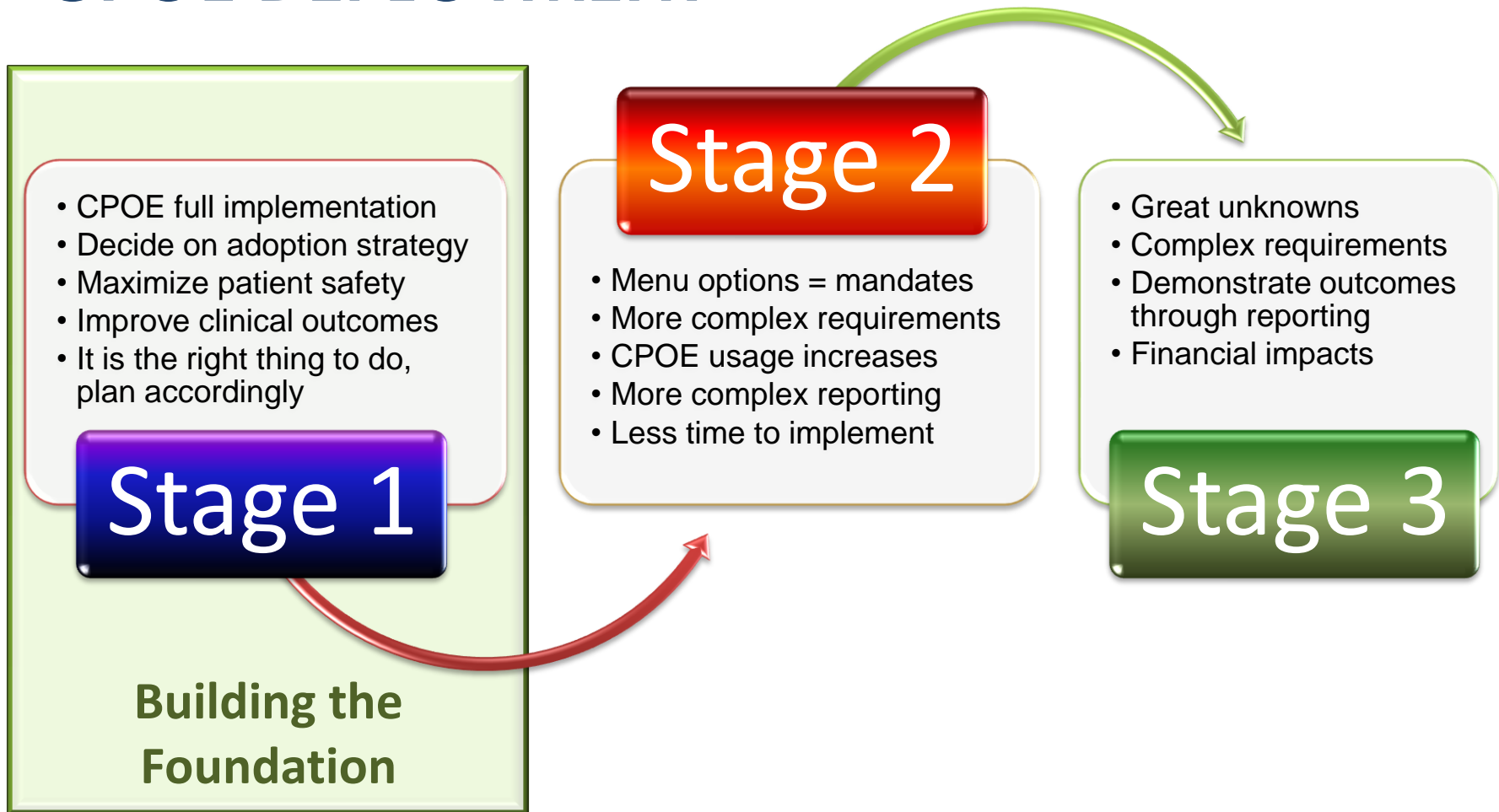
- ◆ Pharmacy should take a proactive leadership role in the CPOE process from the beginning
- ◆ Pharmacists have the most experience with order entry and electronic clinical decision support systems
- ◆ Medication part of a CPOE system is by far the most complex
- ◆ Pharmacy directors need to be involved in preparing for CPOE and should plan on spending as much as 40% of their time on CPOE-related activities before and after system conversion
- ◆ Involve the pharmacy and therapeutics (P&T) committee, where appropriate. It may be desirable to establish a subcommittee to focus on CPOE
- ◆ Medication reconciliation is about process not technology

CPOE FOR MEANINGFUL USE = SHAKY FOUNDATION

◆ Meaningful use requirement:

- ◆ “CPOE (CPOE) for medication errors - More than 30% of patients with at least one medication in their medication list have at least one medication ordered through CPOE”
 - Unrealistic goal – will not ensure and sustain long term physician adoption
 - Very disruptive to clinical workflow if this is the foundation for planning and execution
 - Costly proposition for partial ROI
 - Unsafe due to the holistic approach required for patient care

CPOE DEPLOYMENT



CPOE DEPLOYMENT

- ◆ Create a deployment plan at the time you start the project. Avoid, "Let's get it to work in one unit, then we will see what we do from there."
 - ◆ Pilot is used for validation not temporary solution
 - ◆ Deployment strategy is defined upfront
 - ◆ Most organizations select a pilot unit(s), in many cases a "safe" location where there is buy-in, minimal impact on staff and processes, reduced patient traffic, project impact can be controlled
 - ◆ Define your deployment criteria at the time you plan the roll-out
 - ◆ Know if there are competing initiatives

DEPLOYMENT – PLANNING AHEAD

- ◆ How do we know where to begin our pilot?
 - ◆ Understand your organization, existing challenges in certain areas, relationship between staff and physicians, staff and receiving departments (i.e., rx)
 - ◆ There are different models and they can all be successful. It depends on your knowledge to clearly identify success criteria, expectations and having a well trained team to quickly respond to clinical support needs, technical and process changes required
 - Think outside the box, example: Pilot is NICU!
 - » **Nontechnical considerations:** Closed unit, no patient traffic in/out, well defined medical and nursing staff, users are typically receptive to new technology, computer literate, clinical pharmacists on staff, standards defined lends to easier automation
 - » **Technical:** Very complex to develop, forces the issue to consider upfront weight-based dosing, evaluation of min/max dosing alerts, IV drips
 - » **General:** If NICU is live, pediatric units can follow with limited pathway builds (mostly order sets)

DEPLOYMENT OPTIONS

Deployment Strategy	Physician Consideration	Nursing Considerations	IT Considerations
Unit (or unit clusters based on patient transfer flow)	<ol style="list-style-type: none"> 1. + All orders are in one location 2. + Know where system is implemented 3. + Support from nursing staff <hr/> <ol style="list-style-type: none"> 1. – Transferred patients have orders in dual systems (CPOE and paper) 2. – All physicians carrying for patients need to understand processes associated with dual systems (writing orders in CPOE on one unit and paper on other, communication impacts) 3. – Not all specialties may be represented in CPOE during the early stages of deployment 4. – Not all processes are defined since might have not yet been discovered 	<ol style="list-style-type: none"> 1. + All orders are in one location, legible, eliminates time deciphering 2. + Consistent processes for patients on the unit 3. + Access to additional tools, standardizes the communication process <hr/> <ol style="list-style-type: none"> 1. – Dual systems during implementation (patient transfer) 2. – Decreased efficiency if CPOE physician adoption is not mandated 3. – Maintaining data in one location results in backloading efforts 	<ol style="list-style-type: none"> 1. + Controlled, manageable support 2. + Targeted content development 3. + More known and predictable impact on processes <hr/> <ol style="list-style-type: none"> 1. – Creates dual processes for clinicians, unanticipated system changes 2. – Limited lesson learned during deployment (Peds will be different than ICU) 3. – Able to support user demands if roll-out not realistically planned

DEPLOYMENT OPTIONS

Deployment Strategy	Physician Consideration	Nursing Considerations	IT Considerations
Specialty (physician) Assumes clerical order entry for orders written on paper	<ol style="list-style-type: none"> 1. + Can use system regardless of location 2. + Achieve efficiency faster <hr/> <ol style="list-style-type: none"> 1. – Not all orders viewed in the system are physician entered (potential transcription errors) 2. – All location will have dual processes until all specialties are live 3. – Inconsistencies in communicating orders to the staff 	<ol style="list-style-type: none"> 1. + Some of the orders are more legible <hr/> <ol style="list-style-type: none"> 1. – Dual processes 2. – Increased paper generation (single source of information is the paper chart) 3. – Potential errors related to loss of printouts 4. – Not be able to support physicians with CPOE functions 	<ol style="list-style-type: none"> 1. + Targeted content development 2. + Targeted audience for training <hr/> <ol style="list-style-type: none"> 1. – Difficulty for support as physicians can enter orders on any unit 2. – Focus of implementation is limited to physicians 3. – Impact on many processes throughout the hospital with limited staff to support resolution

DEPLOYMENT OPTIONS

Deployment Strategy	Physician Consideration	Nursing Considerations	IT Considerations
Patient Flow (Based on admission)	<ol style="list-style-type: none"> 1. + Rapid use house wide 2. + System available everywhere 3. + All orders in one location 4. + Reduced transition time (based on average LOS) <hr/> <ol style="list-style-type: none"> 1. – Not all content may be available up-front 2. – Not all processes may be well outlined 3. – During transition, understand e-patients vs. paper patients 	<ol style="list-style-type: none"> 1. + Short transition from paper to electronic 2. + Progressive transition, improved adaptability to accept the system 3. + Orders in one location: system or paper chart <hr/> <ol style="list-style-type: none"> 1. – Transition time creates communication difficulties (remembering what to do with paper vs., electronic orders) 2. – Non-refined processes need rapid resolution and communication house wide 3. – Bridging the gap between paper to electronic (between physicians and ancillaries) result in additional effort 	<ol style="list-style-type: none"> 1. + Short transition from paper to electronic 2. + Faster discovery of process issues and their resolution 3. + Decreased roll-out time <hr/> <ol style="list-style-type: none"> 1. – Support may be difficult based on hospital size 2. – Increased up-front implementation time as all specialties need to be represented 3. – Increased number of users to be trained at once 4. – May not be able to do just in time training 5. – Post live support for system enhancements – delays in addressing user needs

DEPLOYMENT OPTIONS

Deployment Strategy	Physician Consideration	Nursing Considerations	IT Considerations
“Big bang” House wide	<ol style="list-style-type: none"> 1. + All orders available in CPOE 2. + Consistent processes 3. + Increased efficiency <hr/> <ol style="list-style-type: none"> 1. – Not all Order Sets may be available at live 2. – More “a la carte” ordering in early months post deployment 3. 	<ol style="list-style-type: none"> 1. + All orders available in CPOE 2. + Consistent processes 3. + Increased efficiency <hr/> <ol style="list-style-type: none"> 1. – Non-refined processes need rapid resolution and communication house wide 	<ol style="list-style-type: none"> 2. + Short transition from paper to electronic 3. + Faster discovery of process issues and their resolution 4. + Decreased roll-out time <hr/> <ol style="list-style-type: none"> 1. – Support may be difficult based on hospital size 2. – Increased up-front implementation time as all specialties need to be represented 3. – Increased number of users to be trained at once 4. – May not be able to do just in time training 5. Post live support for system enhancements – delays in addressing user needs

WHAT ARE THE MOST DIFFICULT CPOE UNITS OR AREAS TO IMPLEMENT?

- ◆ Hematology/Oncology
- ◆ NICU
- ◆ Pediatrics
- ◆ OR and PACU
- ◆ Dialysis
- ◆ ICU
- ◆ ED
- ◆ TPN Orders (especially NICU and Pediatrics)
- ◆ The first unit(s) to bring live
- ◆ Ancillary areas: Interventional radiology and endoscopy
- ◆ Blood bank
- ◆ Small group specialties (i.e., anesthesia, pain management)
- ◆ Burn
- ◆ Psych
- ◆ Integrating medication reconciliation with CPOE
- ◆ Research patients

SUPPORT

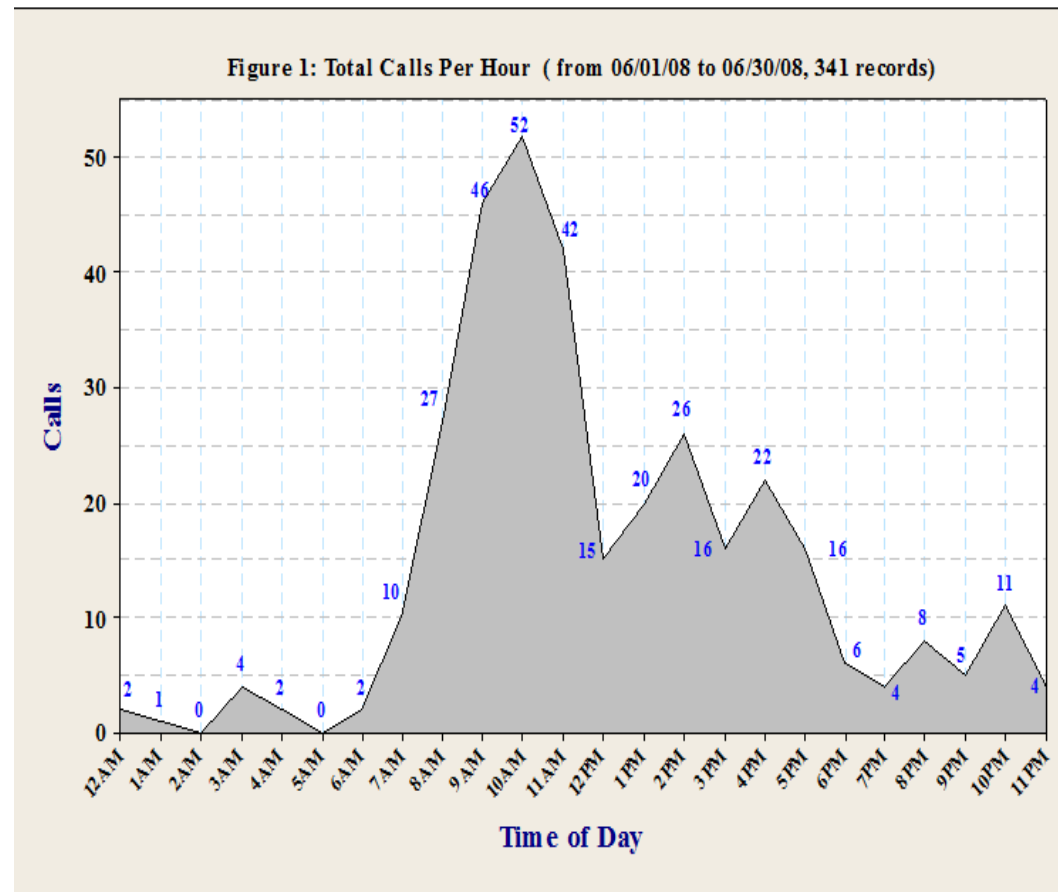


CPOE SUPPORT STAFF

- ◆ Support strategy – impacted by deployment approach
 - ◆ During deployment
 - ◆ Long term
- ◆ Rely on best practice to have a predictable support process, resource numbers and cost
- ◆ Process needs to be established to properly track the calls from users
 - ◆ Provide an issue/call tracking database for the clinical support staff
 - ◆ Monitor the calls/logs to extract data so you can:
 - Identify most optimum schedule for support staff
 - User and call types – can use for further user training opportunities

SUPPORT INFORMATION

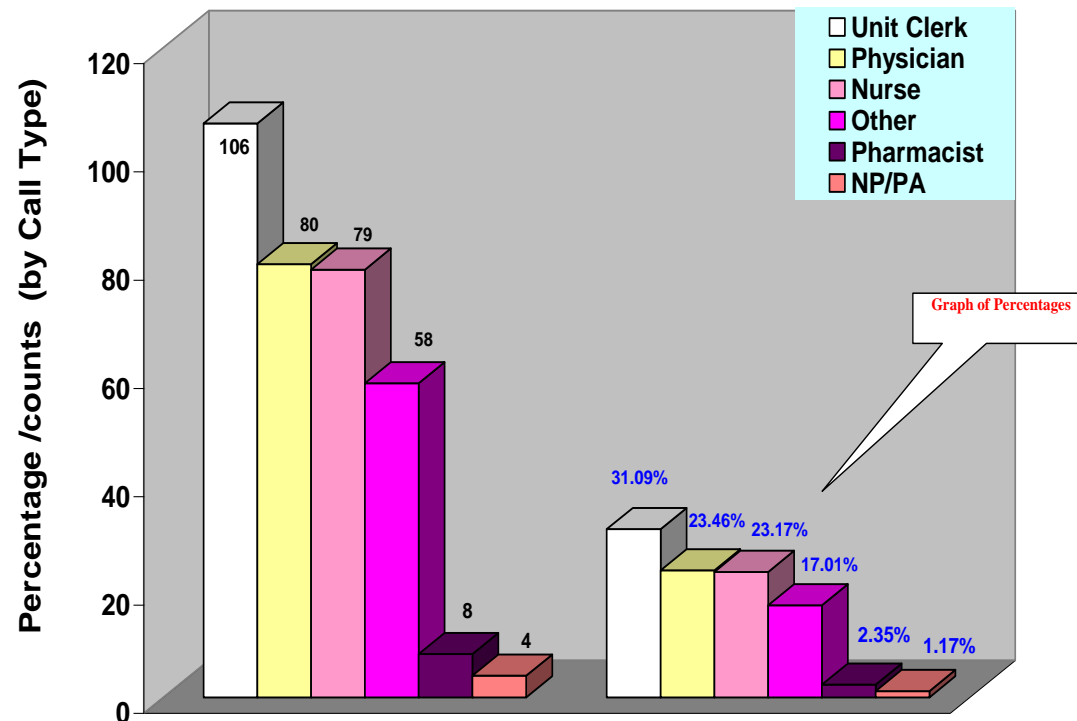
- ◆ Call tracking example
 - ◆ CPOE deployed based on specialties
 - ◆ At the time of this graph, CPOE was in process of being rolled-out to additional specialties
 - ◆ Graph shows the peak physician utilization times
 - Data used for scheduling of support techs
 - No support techs scheduled between 7p to 7a



SUPPORT INFORMATION

- ◆ Call tracking example
 - ◆ CPOE deployed based on specialties
 - ◆ At the time of this graph, CPOE was in process of being rolled-out to additional specialties
 - ◆ Graph shows the user types who made support calls to the support techs and IS educators

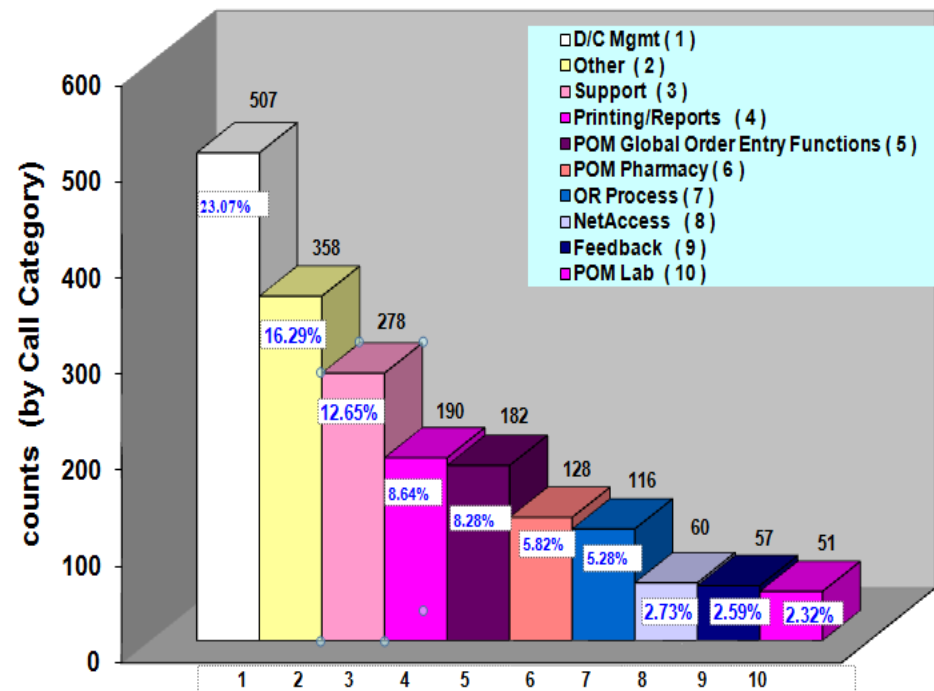
Figure 3: Data categorized by Call Type
6/1/08- 6/30/08 (341 records)



SUPPORT INFORMATION

- ◆ Example of call types received from users
 - ◆ CPOE up and running for over two years
 - ◆ Nursing documentation not within the responsibility of support techs, handled exclusively by nursing
 - ◆ Graph reflects mostly applications used by physicians

Data categorized by Call Category
 (09/01/09 to 02/28/10 - 6 months, Total: 2,198 records, Top 10)



LESSONS LEARNED

- ◆ Ownership and governance must be clinical
- ◆ A major step to ensuring clinical ownership is early engagement and strategic involvement
- ◆ Operations needs to define and invest in a super user strategy
- ◆ Strong super user program will greatly reduce your support costs
- ◆ Avoid recreating current processes electronically, implement CPOE to improve, not maintain

LESSONS LEARNED

- ◆ Implementation plans are tied to a reasonable timeline, define realistic date and stick with it
- ◆ Extending the timeline increases project costs even if the scope or amount of work does not change
- ◆ Delayed go-lives hamper staff motivation and slow project momentum
- ◆ The sooner you go live, the sooner you can begin achieving your ROI's
- ◆ After successful pilot, deployment process and staff confidence improves with repetition

LESSONS LEARNED

- ◆ Budget to do pre-and post-implementation measurements!
 - ◆ Linking measurements to better care is important
 - ◆ Linking to end-user efficiency may be more important to get over the hurdles
- ◆ Aim for some “big wins” for end users
 - ◆ Nursing documentation – please the nurses to motivate the physicians

LESSONS LEARNED

- ◆ Need a solid, system-wide process for clinical guideline development
- ◆ Goal → Policy → Process → Design
 - ◆ Often end-users will jump right to design
- ◆ Go with initial design for awhile – minimize “gut reaction” changes
- ◆ Best to have external burning issues to drive change (ARRA)
- ◆ Find the value proposition to physicians

QUESTIONS, COMMENTS, FEEDBACK...