

A Structure to Drive Optimization of the EHR A Nursing Approach

Presented to

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 **Northwestern Memorial[®]
Hospital**

Agenda

- Overview NMH & Electronic Health Record
- Challenges in optimizing Clinical Information System
- NMH model for clinical decision-making
- Results

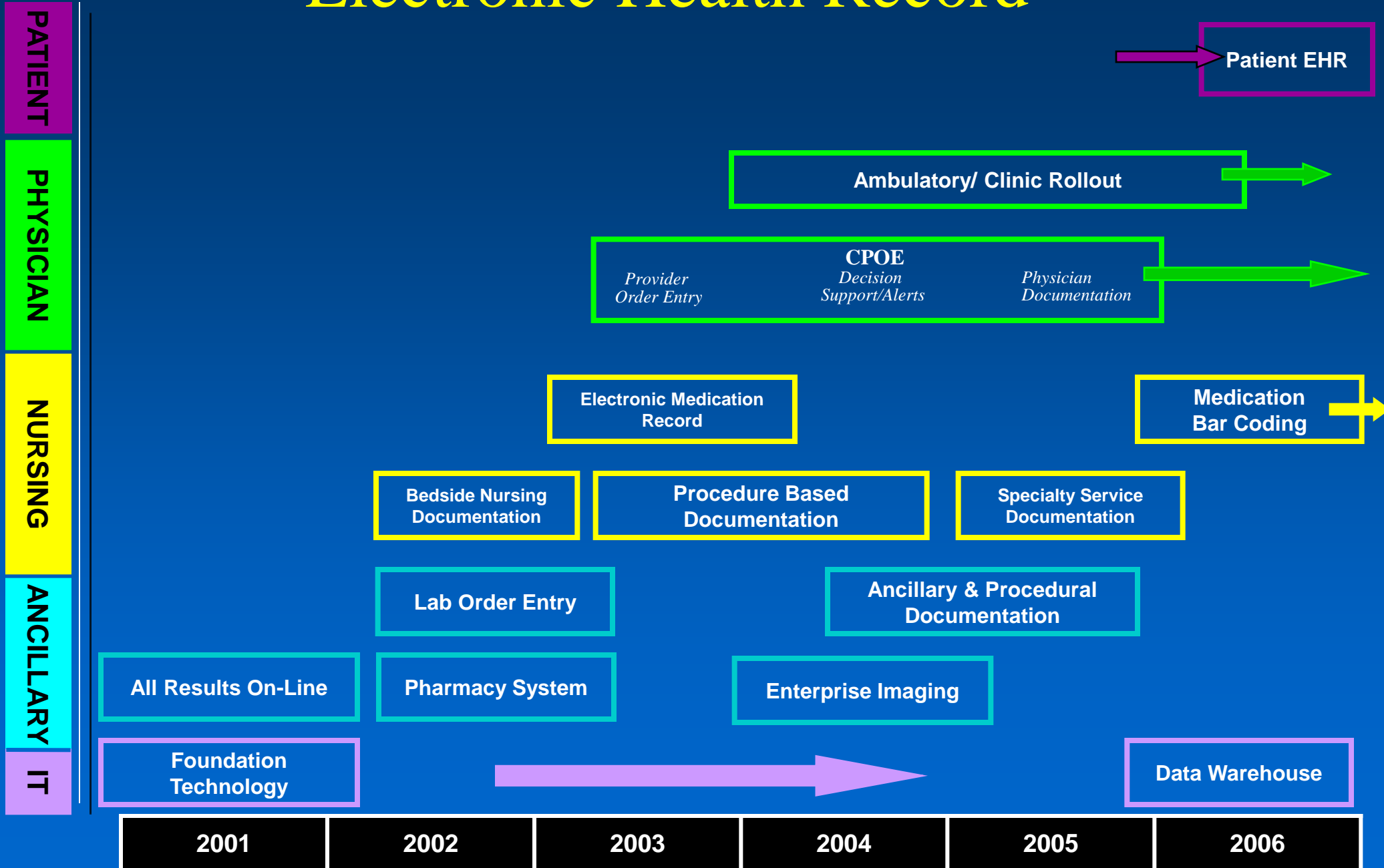
Overview NMH & Electronic Health Record

New World-Class Facility Opened in 1999



- 40,900 Admissions
- 9,800 Births
- 67,300 Emergency Department Visits
- 378,900 Outpatient Registrations
- 5,000 Full-Time Equivalent Employees
- 1,400 Affiliated Physicians

Electronic Health Record

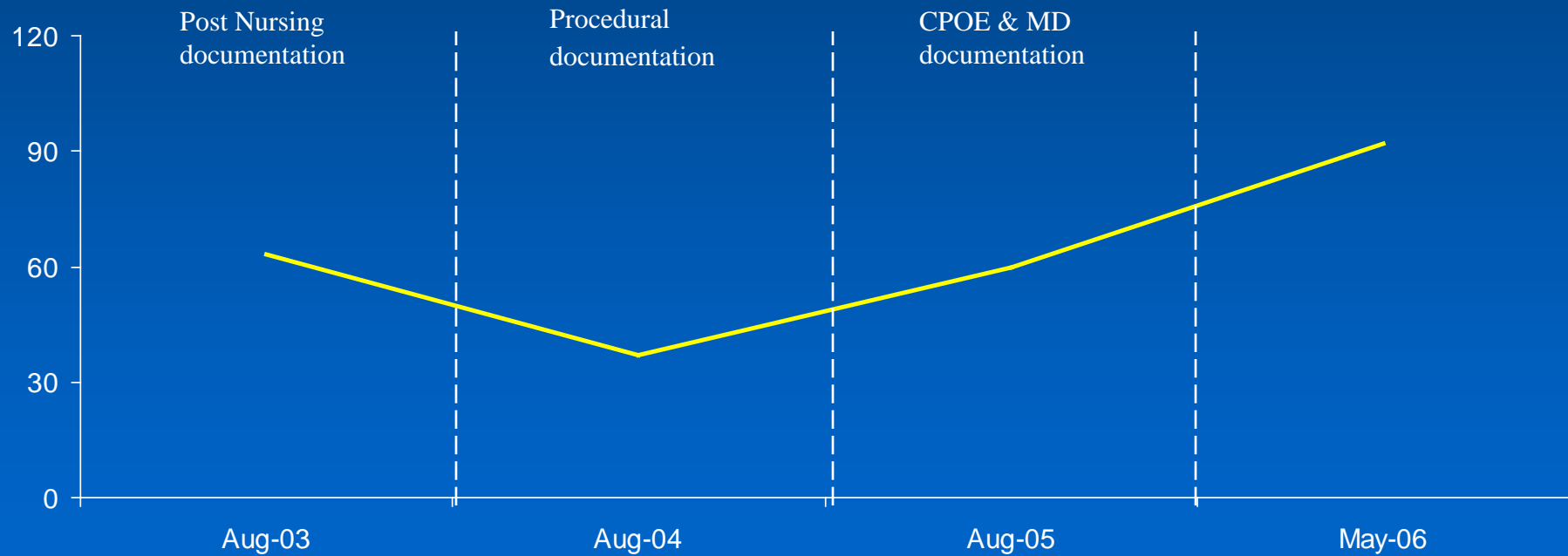


Challenges in Optimizing the Electronic Health Record

The Challenge

User Adoption Promotes Rising Volume of Requests for System Change

Clinician Requests



The Challenge

New Features

Future Orders


The screenshot shows a software interface with two main sections: 'Order details' on the left and 'Detail values' on the right. The 'Order details' section contains a list of fields: Duration, Duration Unit, Stop Date/Time, Indication for Medication, Formulary Status, Patient's Own Meds, and Future Order. The 'Future Order' field is highlighted in black and contains the value 'Yes'. The 'Detail values' section contains a list with 'No' and 'Yes', where 'Yes' is highlighted in blue. A yellow arrow points from the 'Future Order' field in the 'Order details' section to the 'Yes' option in the 'Detail values' section. A yellow oval encircles the entire interface area.

- Physician specifies “future order” in order details when placing electronic order
- Post-op orders must be placed the day of surgery
- Post-op order sets built with “future” order status defaulted in

The Challenge

New Features

Discern



Order Alert

You are ordering an anticoagulant or antiplatelet within 24 hours of a patient receiving alteplase.

Do not order anticoagulant or antiplatelet until at least 24 hours post Alteplase therapy.

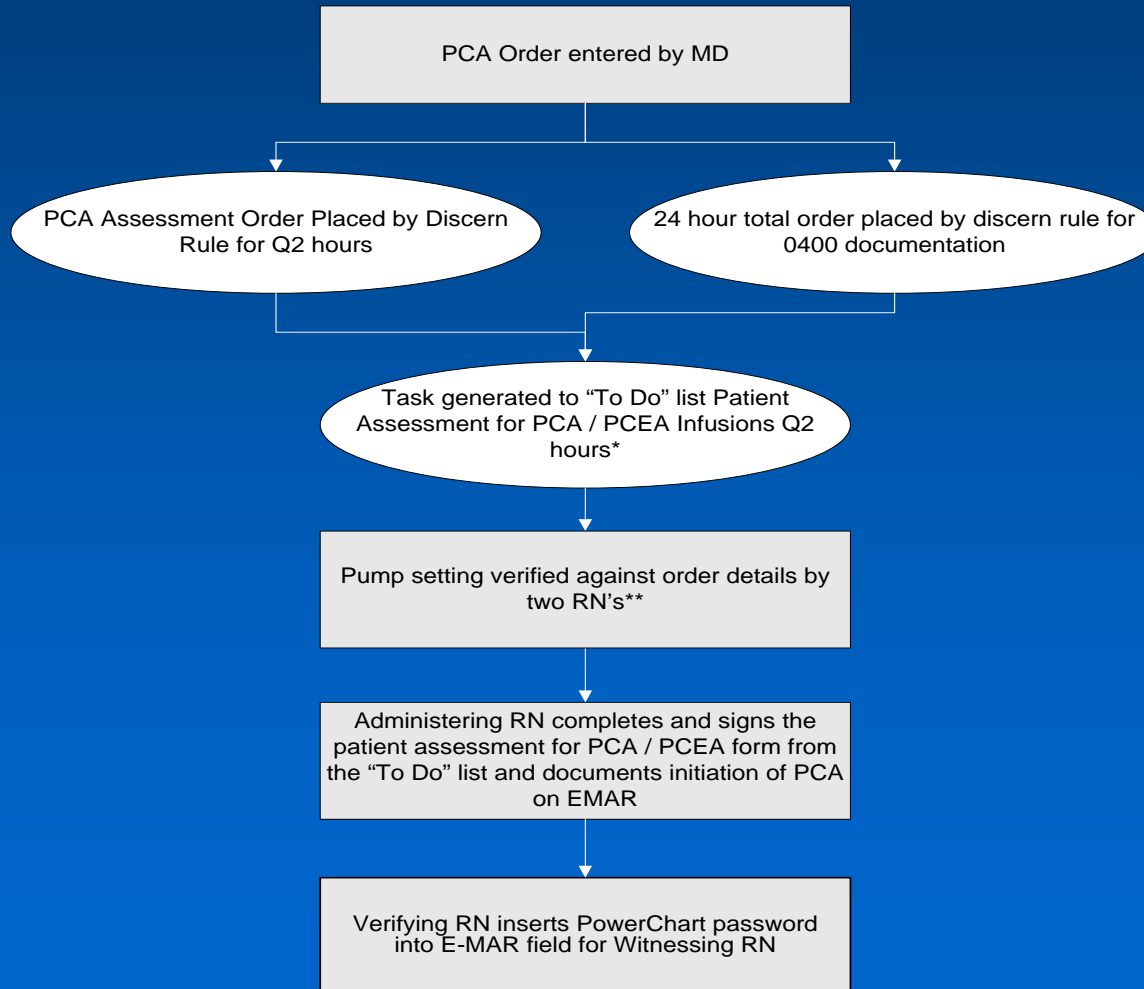
Alert Action

- Do not continue with this order
- Override and document reason

OK

The Challenge

New Processes/Workflow/Redesign



On Any Given Day...

Robust Utilization of the Electronic System & Broad Spectrum of User Identified Opportunities for Improvement

- Approximately **1500** concurrent active users on-line
- Clinicians access patient records approximately **62,000** times
- Physicians document over **1600** clinical notes on-line
- Process **140,000** total order events
- There are **13,000** Medication events processed on-line

Without Structure for Improvement Advocacy Model Prevails



**Doing the right thing
is as important as
doing things right!**

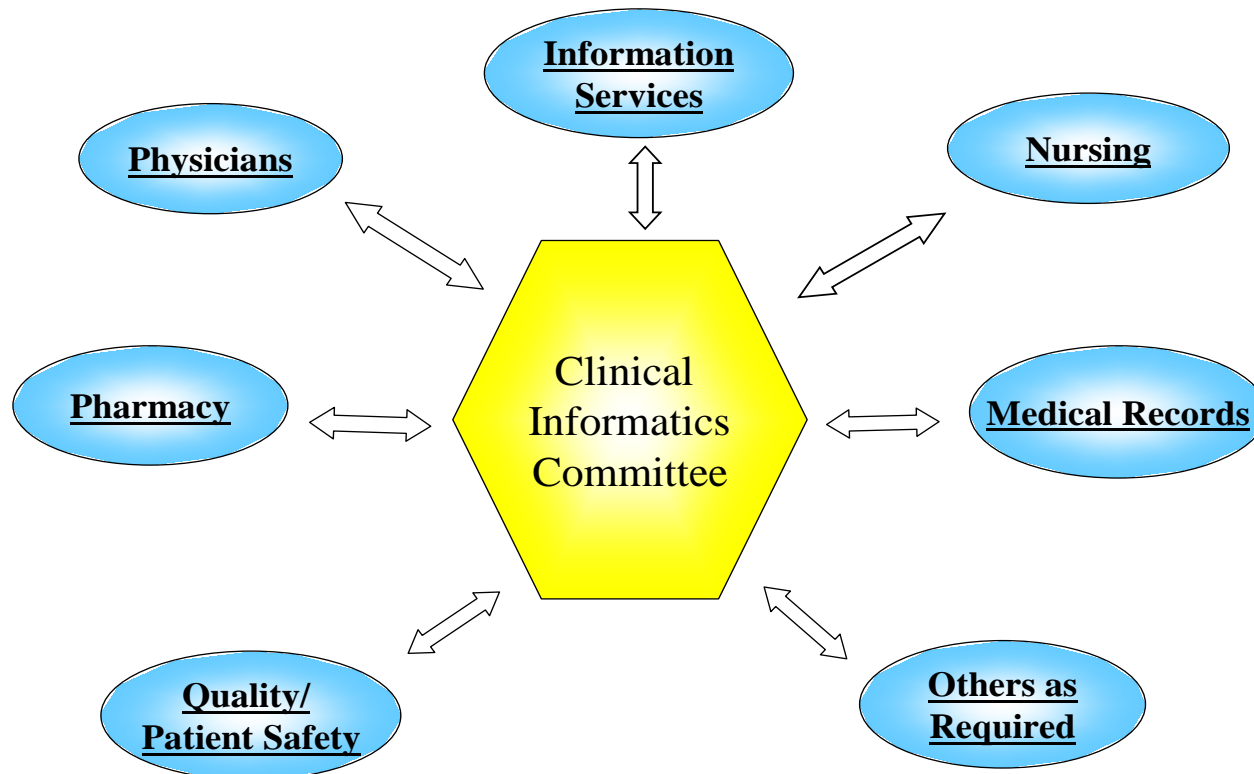


Model for Informatics Clinical Decisions

Clinical Informatics Committee

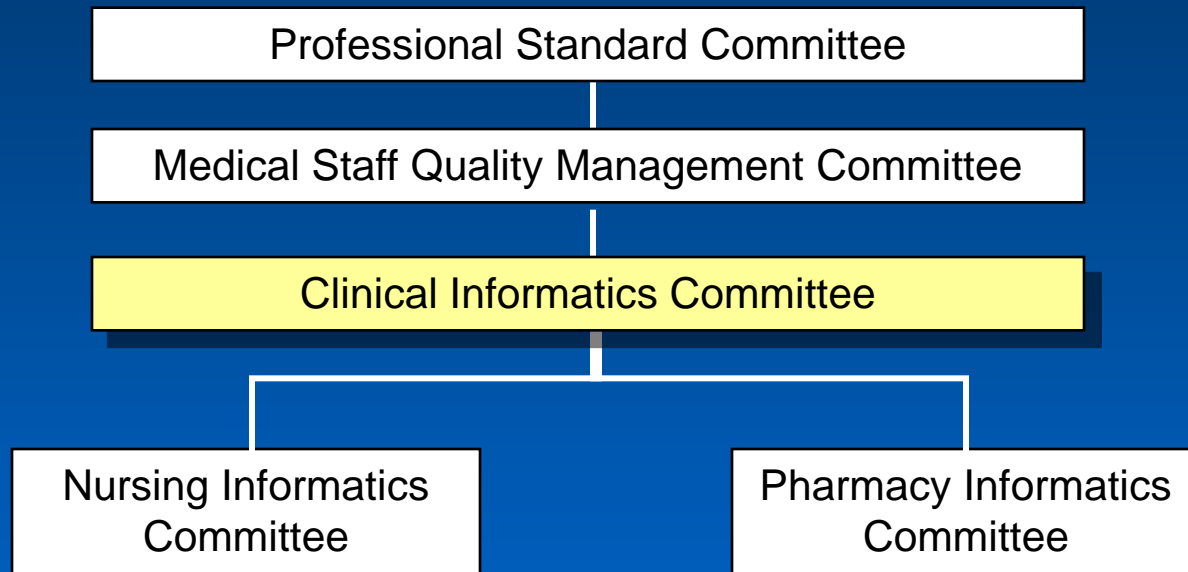
Multidisciplinary Membership; Nursing Informatics Co-Chairs Represent Nursing

Clinical Informatics Committee Membership



Clinical Informatics Committee

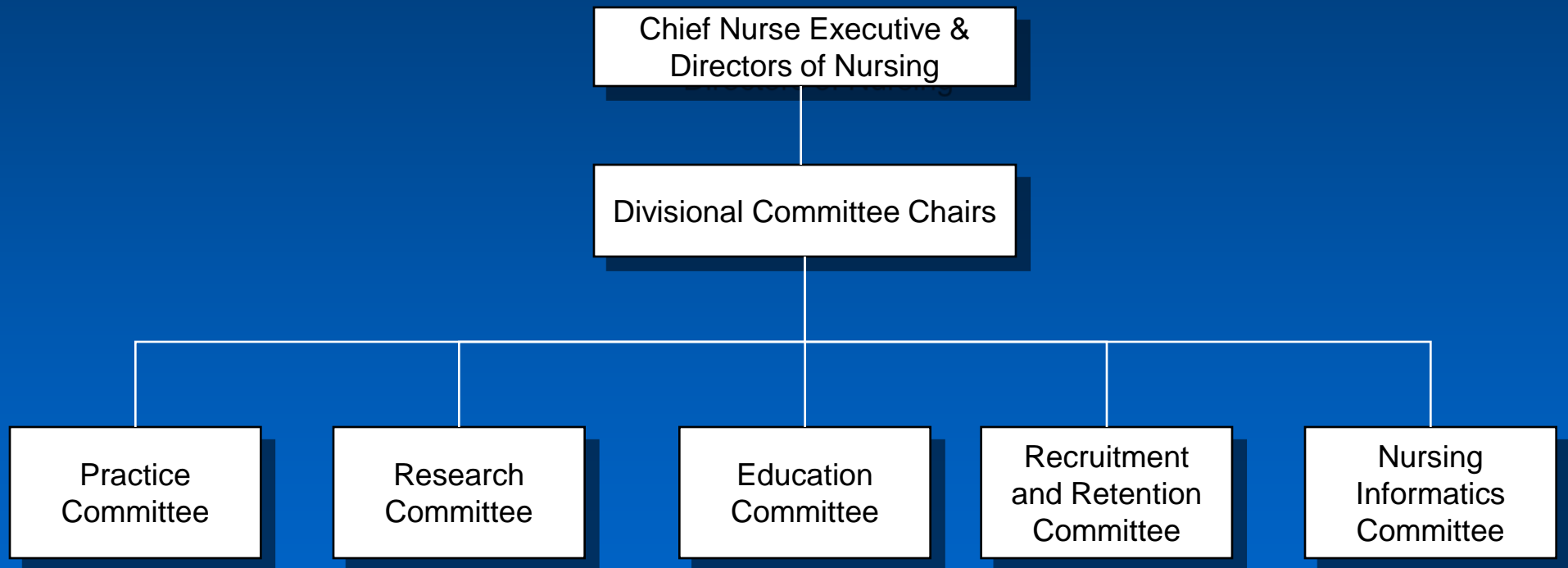
CIC Organized Within Hospital Quality Structure



- Oversight of electronic clinical documentation, evidence based order sets, and the prioritization of automated rules and alerts for clinical decision support
- Review recommendations for the electronic medical record to facilitate documentation and electronic communication and assure adherence to national standards
- Select and report system-wide quality measures to assess the benefits of the electronic medical record, utilization of evidence-based electronic tools, and the impact of decision support on clinical practice.

Nursing Committee Structure

Nursing Informatics is 1 of 5 Nursing Committees with Representation from all Specialties



Nursing Informatics Committee

Purpose is to plan, evaluate, and optimize the use of technology to enable the delivery of safe and effective patient care

- Membership

- Co-Chaired by Staff Nurses
- Staff: Ortho/Neuro, Surgical, Medicine, Oncology, Women's Health, Psychiatry, Surgical Services, Ambulatory Care, Radiology, Cardiology/Pulmonary/Vascular Procedural areas, Emergency Services
- Information Technology Analysts
- Nursing Director

- Structure

- Co-chaired by staff nurses
- Monthly meetings (90 minutes)

Nursing Informatics Committee

Purpose is to plan, evaluate, and optimize the use of technology to enable the delivery of safe and effective patient care

- FY 06 objectives

- Contribute to hospital-wide Clinical Informatics Committee
- Prioritize and facilitate modifications in electronic documentation
- Prioritize and facilitate development and implementation of nursing forms and electronic rules
- Review and recommend reports to measure impact of nursing interventions on patient outcomes

- Benefits

- Nurses making decisions for nurses
- Opportunities to standardize and simplify
- System changes can occur rapidly with IT analyst on committee
- Recognized expertise; commonly consulted to validate CIS designs to resolve care issues

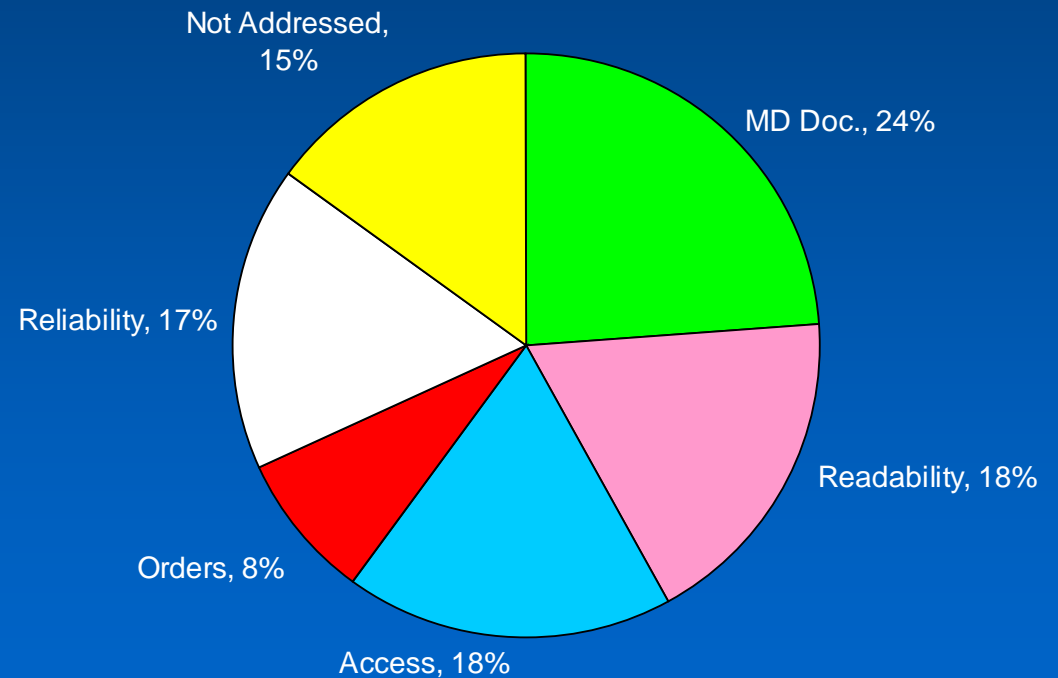
What Have We Been Able to Achieve?

Identifying Stakeholder Issues

Three Month Plan will Address 85% of High Priority Clinician Issues

1. Eliminate key issues associated with Physician documentation
2. Improve readability of the patient's healthcare story
3. Limit number of "access to information" issues across care sites
4. Address key ordering issues to reduce system generated medication and lab order errors
5. Improve system performance and reliability

Goals and % of Issues Addressed

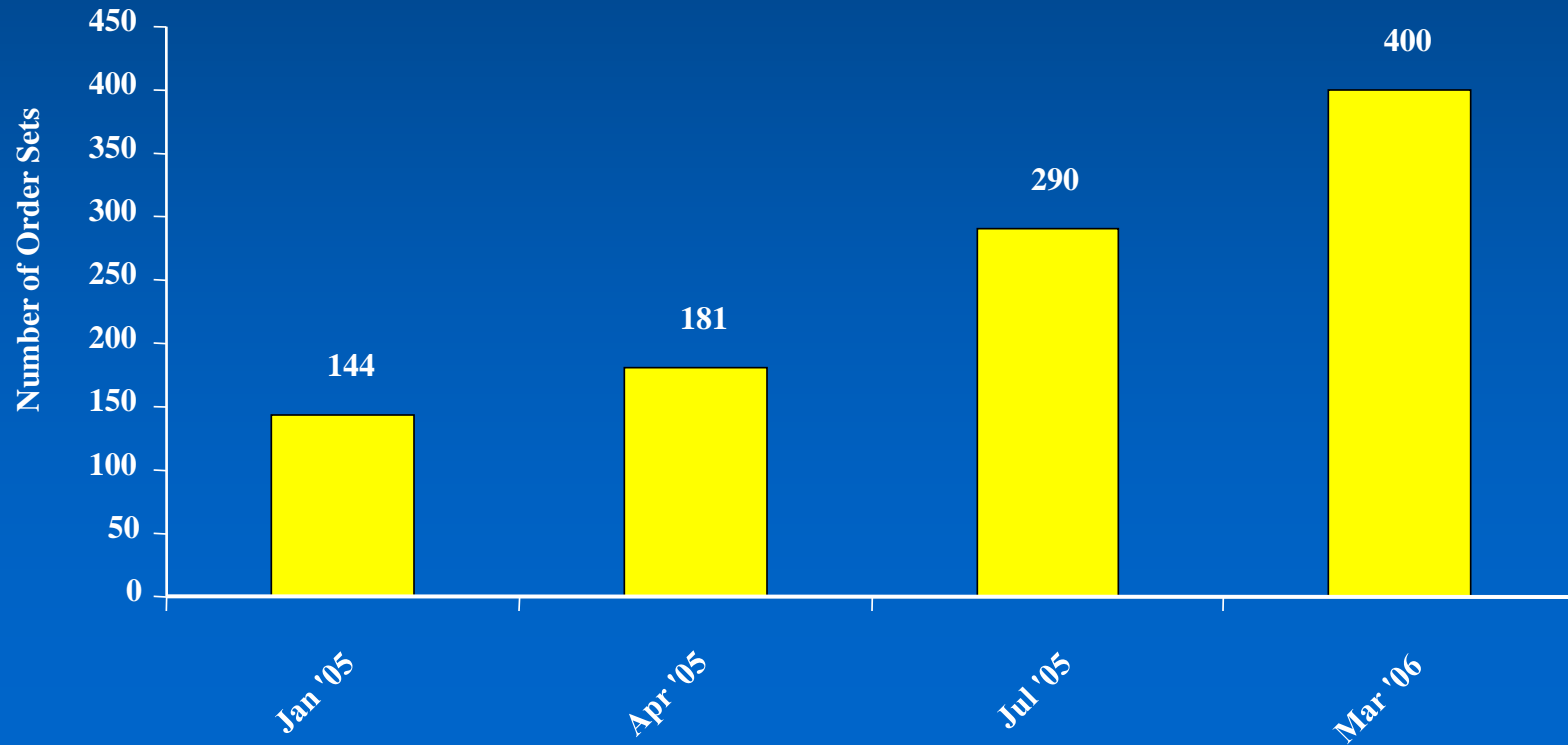


Outcomes

Growth in volume of standardized order sets

CPOE Order Set Metrics

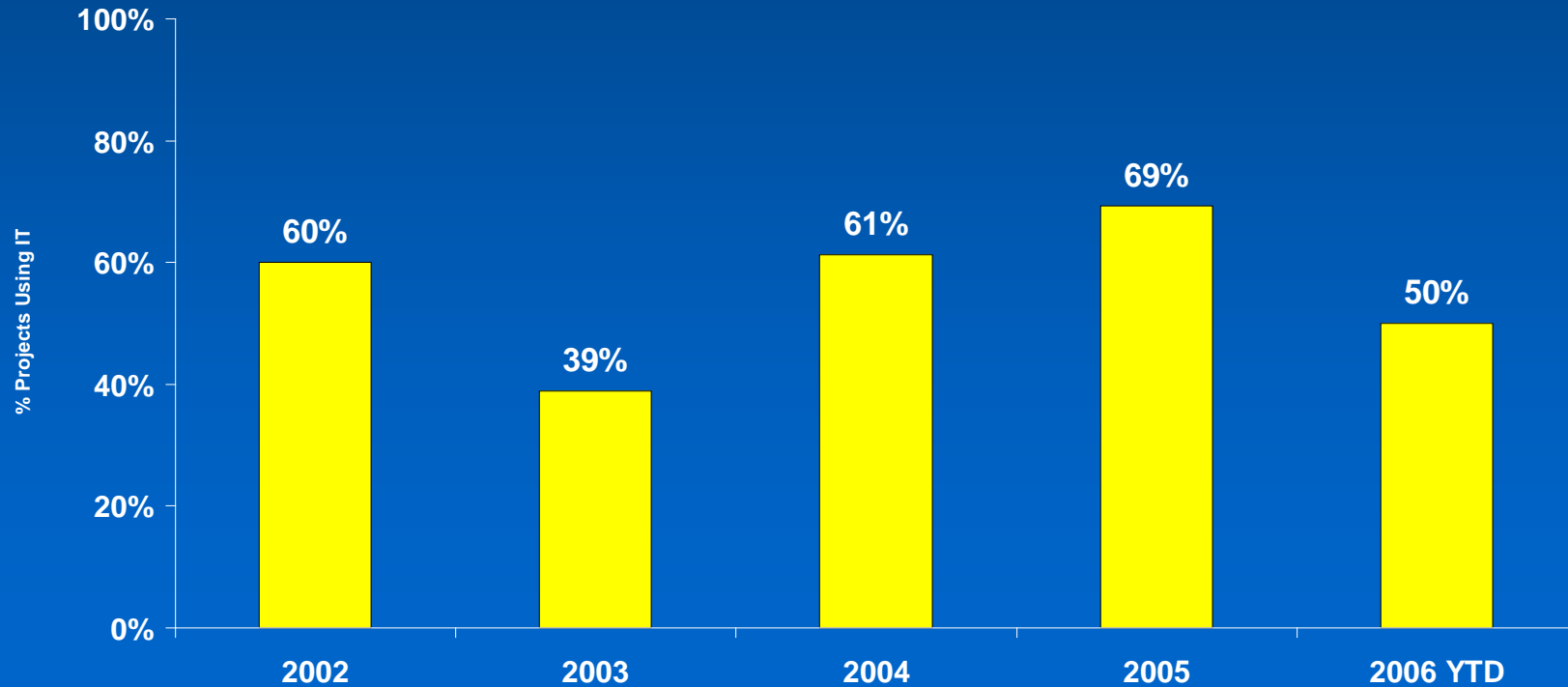
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Use of Technical Capabilities to Improve Care

Fifty-five percent of hospital improvement projects (DMAIC) use the EHR to enhance care or solve problems

Process Improvement Projects Utilizing IT



Technical Capabilities to Improve Care

Sensory, Activity
 Friction and Shear
 Nutrition Screen
 Moisture Screen
 Braden Scale Scoring

Braden Scale Scoring and Interventions

****For more detailed information on the available responses to the question, do a right click on the question and select Reference Text****

Degree to which skin is exposed to moisture

Moisture: Constantly Moist = 1 Very Moist = 2 Occasionally Moist = 3 Rarely Moist = 4

Source of Moisture: Incontinent Perspiration/Edema/Wound Drainage

Perspiration/Edema/Wound Drainage

Desired Intervention: Evaluate patient for moisture each shift None currently

Incontinent

Incontinent of Stool	Stool Consistency	Incontinent of Urine	Skin Condition
<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Liquid Stool <input type="radio"/> Semiformed Stool	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Skin Breakdown <input type="radio"/> Skin intact

Desired Intervention for Liquid Stool	Desired Intervention for Semiformed Stool	Desired Intervention for Skin Intact
<input type="checkbox"/> Apply sensicare, zinc based ointment <input type="checkbox"/> Clean area with Aloe Vesta foam cleanser <input type="checkbox"/> Apply fecal incontinence collector <input type="checkbox"/> Apply nasal trumpet <input type="checkbox"/> Use bowel management system <input type="checkbox"/> None currently	<input type="checkbox"/> Apply sensicare, zinc based ointment <input type="checkbox"/> Clean area with Aloe Vesta foam cleanser <input type="checkbox"/> None currently	<input type="checkbox"/> Apply Aloe Vesta protective barrier ointment after each incontinent episode <input type="checkbox"/> Clean area with Aloe Vesta foam cleanser <input type="checkbox"/> None currently

Issues around documenting skin moisture :

NIC recommendations:

- Change the timing for Braden assessments to 10a on general units and 12MN in the ICUs
- Fire Braden-related tasks for PCTs
- Move tasks to Continuous to-do list
- Add Foley/condom catheter/bowel management system selections to automatically generate incontinence-related interventions

Improved Access to Information

Identifying Information Needed for Care Monitoring

Plan Orders 24 Hrs

Flowsheet Reports and Summaries Form Browser Patient Information Orders Task List Intake and Output Chart Summary Reference Text Browser MAR Med Profile

Flowsheet: **PCA/PCEA Administration Flowsheet** Level: PCA/PCEA Administration Flowsheet Table Group List

23 February 2006 10:35 - 03 March 2006 10:35 (Clinical Range)

Navigator

- Medications
- PCA Infusion
- Vital Signs

PCA/PCEA Administration Flowsheet	3/2/2006 12:55	3/2/2006 12:53
Medications		
hydromorphone	* 1 PCA IV PCA	
PCA Infusion		
<input type="checkbox"/> Pain Scale		2
Sedation Scale		0 None (alert,...
<input type="checkbox"/> Cumulative Dose		30.2
<input type="checkbox"/> 24 Hour Total		19
Vital Signs		
<input type="checkbox"/> Respiration		20

Fail Safes and Forcing Functions

PCA/PCEA RN Verification

hydromorphone: TEST, ACCT

hydromorphone (hydromorphone PCA)
1, PCA Dose (mg)= 0.5, IV PCA, Lockout Interval Q 15 Minutes, 4-Hour Limit (mg): 0, Continuous Basal(mg/HR): 0, PRN Pain, Start: 03/02/06 11:36:00

*Performed date / time 03/02/2006 1137

*Performed by BOBB, ANNE

*Witnessed by Kitt, Stephanie

Enter name of witnessing nurse field.

Verify user

CERNE

User Name:
40905948

Password:
[Redacted]

Domain:
GOLD

OK Cancel

Witness RN enters password and both RNs names documented

Center for Clinical Informatics

Organizational department within Quality staffed by MD, RN, RPh, Clinical Coaches, IT

Goal to optimize design, workflow, implementation and integration across care sites by:

- Defining priorities for IT build by consolidating and prioritizing clinician requests
- Assuring appropriate specialty and leadership approval prior to system implementations and changes
- Providing staff support for clinician discernment of appropriate approaches for order set and decision support as well as system and process enhancements
- Providing staff support for clinical informatics committees as well as providing data to support decision making.
- Providing coach support to clinicians for adoption of new functionality and optimizing current functionality

Summary

Leveraging the Electronic Health Record to Improve Care Doesn't Occur Automatically

- Transition from project implementation to system optimization
 - Imbed technology into fabric of practice
 - Support structure for new decisions and work
 - Design to achieve maximal benefit by aligning with organizational goals
- Design organizational structures to facilitate clinician driven changes that promote value-added optimization

Summary

CIS Work Demands Multidisciplinary Integration

Whenever two or more databases get together, it's like people... it's only a matter of time before they start to disagree".

Charles E. Phillips
President ,Oracle

Democracy is the worst form of Government except all those other forms that have been tried from time to time.

WINSTON CHURCHILL
House of Commons
November 11, 1947