

Nursing Informatics: Integrating Evidence-based Practice as the Foundation for Care Delivery

Featured Speakers



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Integrating Evidence-based Practice as the Foundation for Care Delivery

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Objectives

Background:

- Understand the value of evidence-based practice in care delivery.
- Understand current status of evidence-based practice.

Understand factors and best practices that support evidence-based practice at the point of care.

- The content
- The technology

Articulate two ways that information technology can be used to facilitate the use of evidence-based practice.

Discuss ways to promote implementation and adoption of evidence-based practice with success.

The Joint Commission

- The care of patients, regardless of the health care setting, should be individualized, interdisciplinary, and appropriate to the assessed needs.
- Care is coordinated to promote continuity.
- An easy approach to coordinating that care is to plan for and document the planning process on an interdisciplinary patient plan of care form. By utilizing one document (a good practice), all treatments, goals and outcomes are recorded for everyone involved in the care to access. This approach facilitates the reassessment and monitoring of the patient progress to ensure appropriate care and positive outcomes.
- Communication, collaboration, and coordination are among the most important work habits

Background: Evidence-Based Practice

Definition:

“The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.”

(Sackett, 1998)

Background: Evidence-Based Nursing Practice

- Sigma Theta Tau International defines evidence based nursing as **an integration of the best evidence available, nursing expertise, and the values and preferences of the individuals, families, and communities who are served.** This assumes that optimal nursing care is provided when nurses and healthcare decision makers have **access to a synthesis of the latest research,** a consensus of expert opinion, and are thus able to exercise their judgment as they plan and provide care that takes into account cultural and personal values and preferences. (2002)

Progress Has Been Slow

- **The National Health Care Quality Report**

- Showed an average annual **improvement** of only **1.9% on** a selected set of **performance measures** between 2000 and 2004.
- By contrast, the rate of healthcare **expenditures grew 7.6%** during the same time period.

- **Entrenched overuse, misuse and underuse of services**

- These gaps in quality affect everyone, but place the greatest burden on minorities.
- Efforts to close the disparities gap have had little impact.

Progress Has Been Slow

- “Despite a consensus that the use of HIT should lead to a safer more efficient system and higher quality care, there are no reliable estimates of the prevalence of adoption of EMR in US hospitals.”

Jha, DesRoches, et al, NEJM, (2009)

The Plan of Care: A Tool to Support Evidence Based Practice

- Current Status:
 - Previous efforts for the plan of care to really support the provision of care and evidence based decision making by the care team have failed.
 - Nurses & care team members describe plans of care in the EHR as “useless, a waste of my time, a burden to initiate & update.”
 - Care planning – an academic exercise....

Clinical Decision Support

A mechanism to implement and support evidence based practice...

A mechanism that is dependent on information technology...

A Roadmap for National Action on Clinical Decision Support

Steering Committee

Jerome A. Osheroff, Thomson Micromedex

Jonathan M. Teich, Brigham & Women's Hospital, Harvard University

Blackford Middleton, Partners Healthcare, Harvard Medical School

Elaine B. Steen, American Medical Informatics Association

Adam Wright, Oregon Health & Sciences University

Don E. Detmer, American Medical Informatics Association



Clinical Decision Support

Consensus CDS Definition

“Providing clinicians, patients or individuals with knowledge and person-specific or population information, intelligently filtered or presented at appropriate times, to foster better health processes, better individual patient care, and better population health.”

Examples of CDS

- Drug Drug, etc. Interaction Checking
- Best practice alerts
- Infobutton for a information about a drug or other practice item
- Standardized, workflow embedded evidence based order sets, plans of care, and clinical documentation

The Evidence for CDS

CDS increases guideline adherence, enhances surveillance and decreases medication errors.

CDS with CPOE helps eliminate overuse, underuse, and misuse.

Guidance at the point of ordering can guide physicians toward ordering appropriate radiologic tests.

Showing charge information for lab tests can resource utilization.



Source: Chaudhry et al., 2006; Bates et al., 2003; Austin et al., 1994; Linder, Bates and Lee, 2005; Tierney et al., 2003; Bates and Gawande, 2003; Bates, 2004; McDonald et al., 2004

CDS Value: Evidence based assessments & interventions in an EHR

Value: Improve Patient Care Processes

- Plan of care utilization rates between 90 – 98% within 24 hours of admission
- Smoking cessation education improved from 82%-97%
- Pain reassessment within 2 hours of the intervention increased

Value: Improve Patient Outcomes

- Central line infections and ventilator-associated pneumonia well below the CDC recommendations
- Rate of serious falls decreased
- Rate of hospital acquired pressure ulcers reduced

Features of CDS Associated with Improved Clinical Practice*

- Automatic provision of decision support as part of clinical **workflow**.
- Provision of decision support **at time and location of decision making**.
- Provision of **recommendation** rather than just an assessment.
- **Computer based generation** of decision support.

*Kensaku Kawamoto, Caitlin A Houlihan, E Andrew Balas, David F Lobach, Improving clinical practice using clinical decision support systems: a systematic review of trail to identify features critical to success, BMJ, March 2005

Features of CDS Associated with Improved Clinical Practice

“A common theme of all four features is that they make it easier for clinicians to use a clinical decision support system, suggesting that an effective system must minimize the effort required by clinicians to receive and act on system recommendations.”

Effectiveness of Clinical Decision Support

Meta-analysis N=70 studies

68% effective, (n= 6,000 clinicians), (n=130,000 patients)

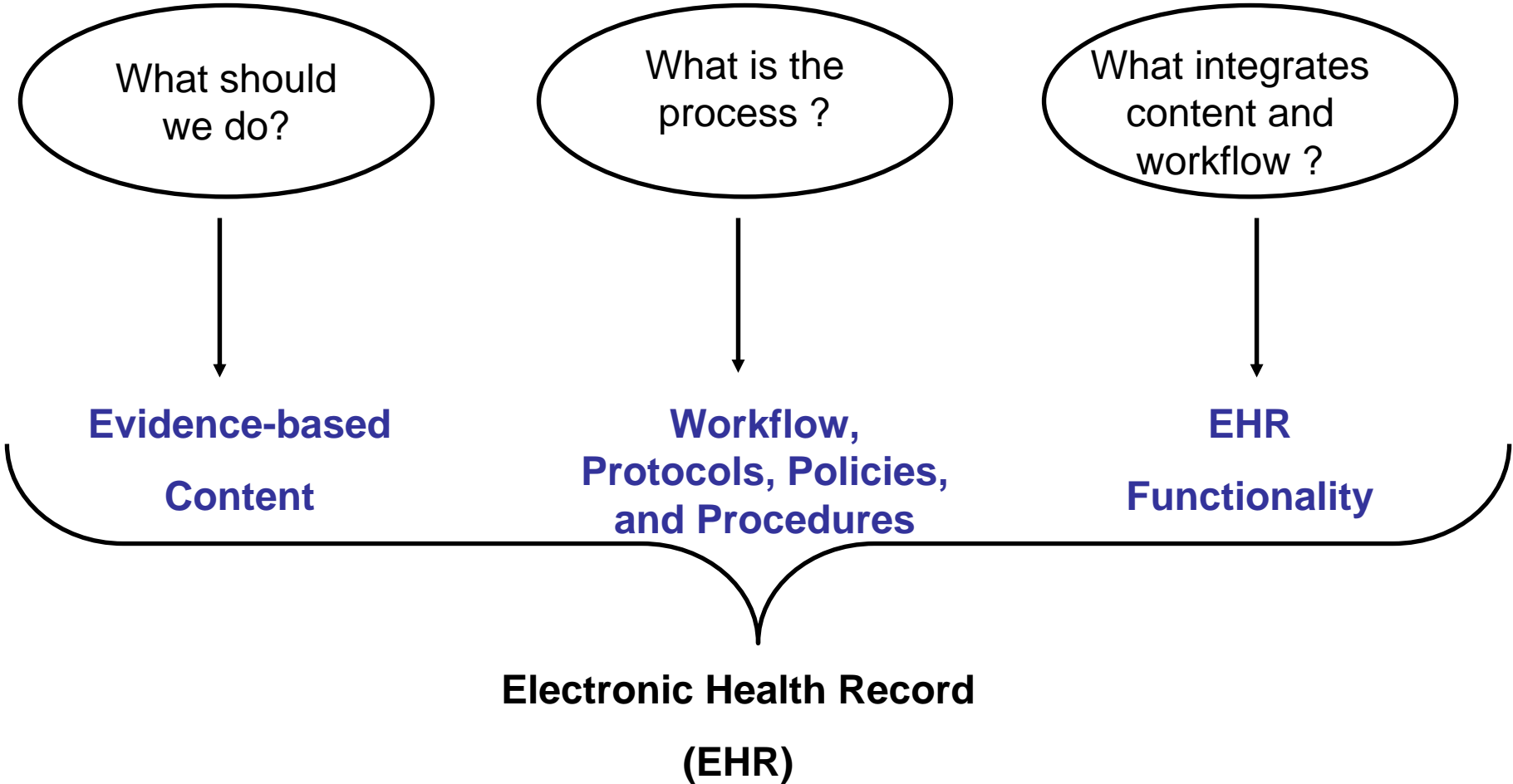
Predictors of Success	Adjusted odds ratio
Automatic provision of decision support as part of workflow	112

“75% of interventions succeeded when the decision support was provided to clinicians automatically, whereas none succeeded when clinicians were required to seek out the advice...”

Critical Success Factors for Effective Clinical Decision Support at the Bedside

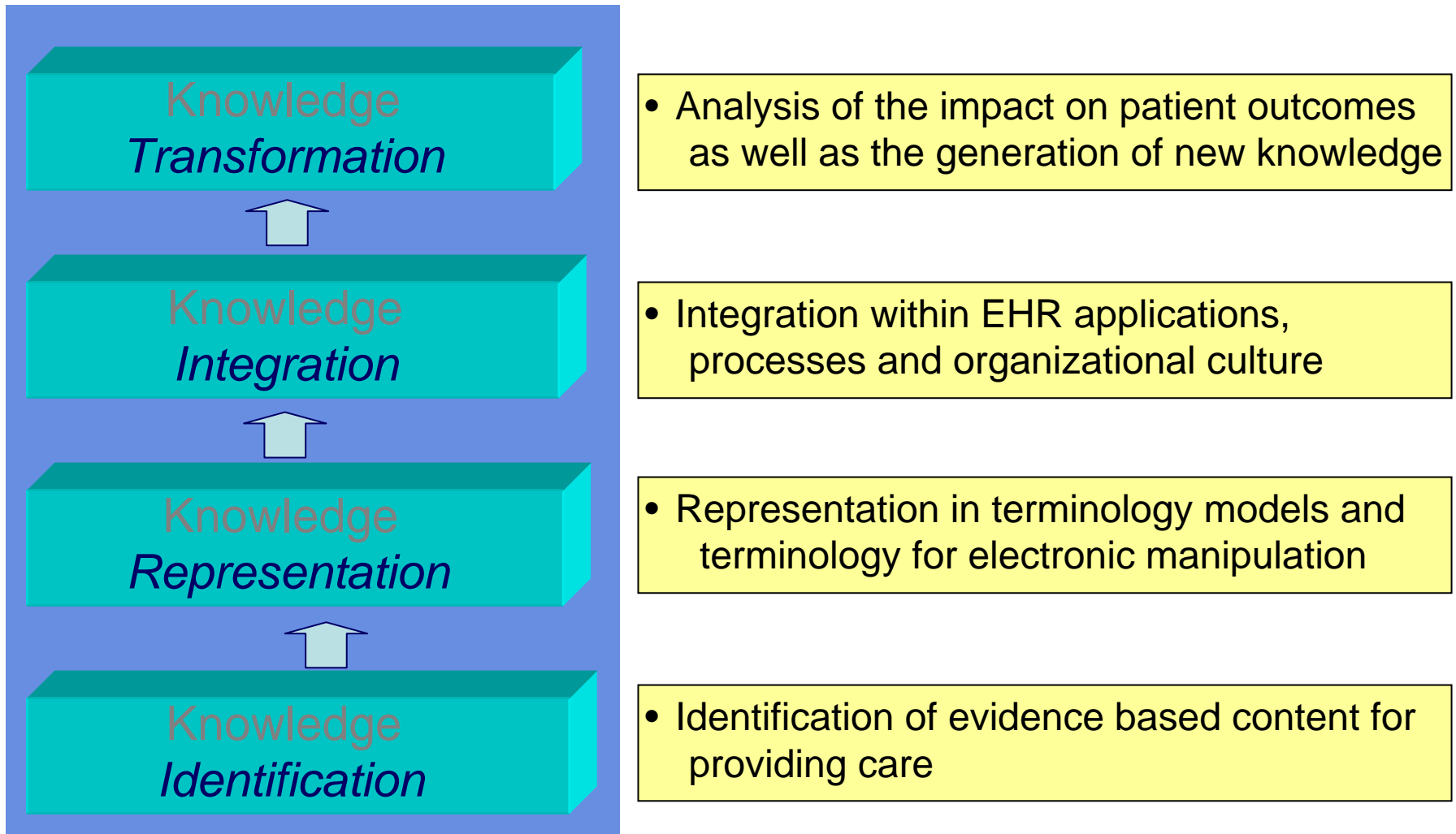
- The Content (“...recommendation”)
- The Technology (“...at time and location of decision making”)
- The Human Factor...(“ adoption”)

Making Sense of the Systems



Knowledge Management Framework

* Androwich, Button, Kennedy, 2007



The Content

Definition: Evidence-based content

- Best available, external clinical evidence from systematic research.

(Sackett, 2002)

- Current, relevant evidence that can inform and strengthen decision making at the point of care.

The Content

- Characteristics
 - Methodology for Development
 - Research based, rigorous, reliable, based on validated approach.
 - Includes literature citations & classification of references.
 - Include routine updating of research and content.
 - NOT opinion or consensus driven.



The Content

- Characteristics

- Structure

- A data model exists for the concepts of interest in the content, e.g. nursing problems, expected outcomes and orders/activities.
- A terminology is selected for the values of the data elements.
 - Use of standardized, precise, logically interrelated and searchable terminology (Lukoff & Dolan, 2002).
- **A presentation of the data set is designed that will support the workflow of the clinician.**

- Delivery

- Content is delivered in an environment that supports organizational vetting and customization of the content and integration into the EHR.



Knowledge
Representation

A Stepwise Process

- Apply in practice
- Define outcomes, interventions, orders based on review and updating of evidence.
- Attach/link current evidence to defined content.
- Structure/represent the evidence based content to support integration in clinical systems and workflow.

Sackett DL, Haynes BR. Evidence-Based Medicine. 1995;1:

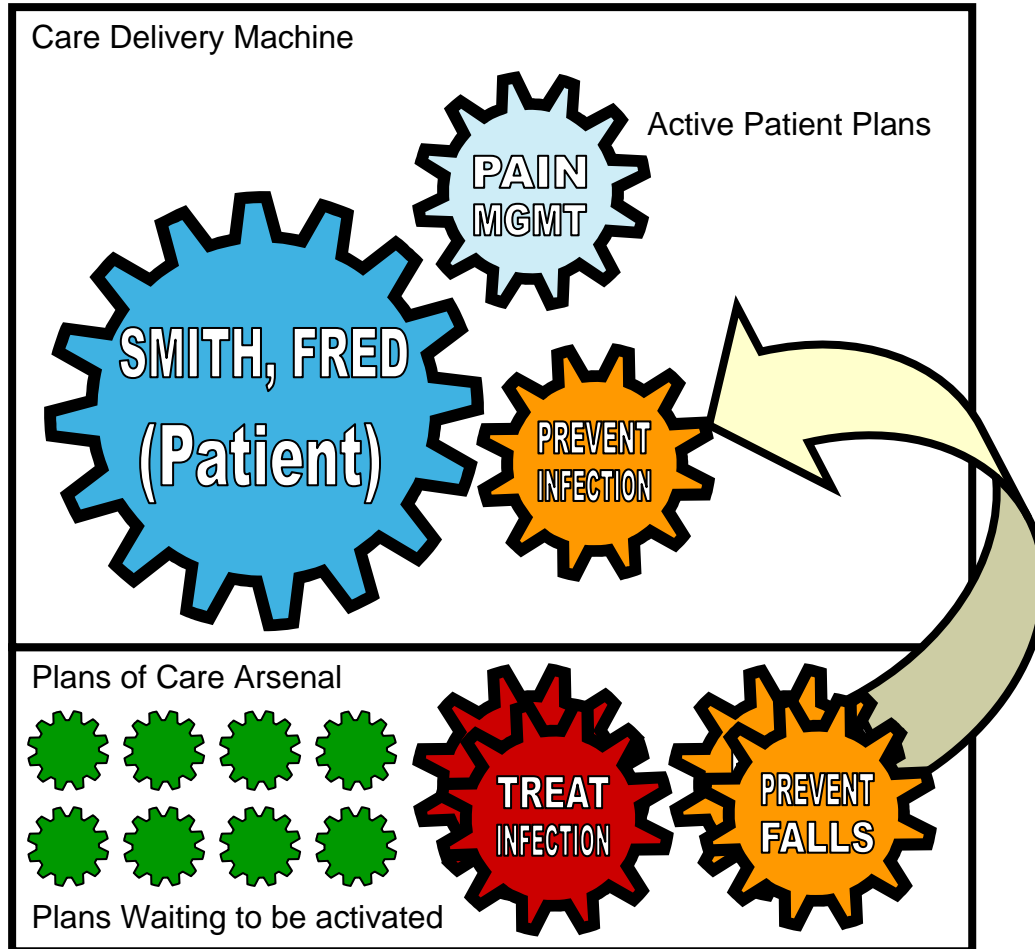
The Technology

- Requirements Definition
- Content Integration
- Usability

Plan of Care and Clinical Documentation Functional Requirements

- Plan is focused on pragmatic execution of care delivery – not an academic exercise.
- Plan does not replace clinical judgment.
- Plan has mechanism to allow incoming data (assessments) to influence the definition and execution of plan of care.
- Plan is able to “react/suggest” outcomes and interventions based on patient state (recorded in clinical documentation).
- Plan’s structure is vehicle for visually organizing the useful parts of the plan of care in a form that presents needed plan information to bedside clinician.
- Plan is a vehicle to support coordination of the interdisciplinary team.
- Plan facilitates communication of patient status to interdisciplinary team, patients, and families.
- Plan, through its use, satisfies regulatory compliance.

Plans are Problem-Based



Plans added as required by the patient's state/ assessments.

Knowledge
Integration

Plan of Care Workflow

Clinical
Documentation

Outcomes

Dynamic Workflow &

Data Flow

Plan of
Care

Knowledge
Integration

Usability: Workflow Components

- Evidence-based assessments.
- Assessment results and physician orders that drive the proposal of evidence-based plans.
- Proposed plans of care that can be individualized based on assessments.
- Documentation of execution of plan and patient response.
- Automatic update of plan, outcome status, and proposal of changes/additions to plan based on documentation, assessments, flowsheets, etc., that incorporate evidence based content:
 - Pain assessment; fall risk assessment.
 - Plan of care for patients at risk of surgical site infection.
 - Education checklists: tobacco cessation.

Adoption: Use at the Bedside

- Key Success Factors – based on the literature and experience at over 500 hospitals:
 - Leadership
 - Governance
 - Bedside clinician involvement
 - Patient and Family Focus
 - Clinical, Informatics, IT, content and EHR vendor partnership
 - ***USABLE WORKFLOW POPULATED WITH EVIDENCE-BASED CONTENT THAT DRIVES ASSESSMENT AND CARE PLANNING...***

Leadership: A Critical Success Factor in Implementing Evidence Based Practice

- Transformational Leadership & Evidence Based Management:
 - Ongoing vigilance in balancing efficiency & patient safety.
 - Demonstrate & promote trust in nursing staff.
 - Actively manage the process of change.
 - Engage nursing staff in nonhierarchical decision making & work design.
 - Establish the organization as “learning organization” – support the acquisition, management, & dissemination of the knowledge needed to support clinical decision making & actions.
- “Keeping Patients Safe: Transforming the Work Environment of Nurses”, Institute of Medicine

What factors promotes evidence based practice in an organization?

Organizational Requirements & Their Effectiveness

- Cultivation of support:
 - Governance structure*
 - EBP Education*
 - EBP- Focused Clinical Ladder*
- Facilitation of Practice Standards:
 - Tailored Education Plans**
 - Evidence-Based Documentation**
 - Evidence-Based Monitoring Protocols**
 - Automatic Practice Alerts***
- Overcoming Resistance:
 - Physician Partnerships**
 - Unit EBP Ambassadors**

***** Strong positive effect.**

The Advisory Board, 2005.

****Moderate positive effect.**

***Slight positive effect.**

Deployment at the Bedside

It is possible!!!!

Knowledge-driven EHR Documentation

SIEMENS Rachel M. Allred, RN 4 West

Voss, Edward F.
 Male PT# 012382T63X MR# 012382T63X 4 West 424-B
 Diagnosis: Congestive Heart Failure, Renal Insufficiency
 Allergies

Patient Record Charting Treatment Plan Visit

WNL: Skin color within patient's norm. Skin is warm, dry and intact. Good skin turgor. Mucose Membranes are moist. No abrasions, blisters, bruises, burns, incisions, lacerations, lesions, pressure ulcers, rashes, scares.

Assessment findings normal except where noted below.

WHERE



WHAT

- Abrasion
- Blister
- Bruise
- Burn
- Incision
- Laceration
- Lesion
- Pressure Ulcer
- Rash
- Redness
- Scar
- Other

Alerts - patient at risk for adverse events

SCORE

Braden Scale

Friction and Shear: Problem

Mobility: Very Limited

Moisture: Consistently

Activity: Limited Ambulation

Nutrition: Very poor

Problem list based on assessment

Complete

Evidence at the Point of Care

SIEMENS Summer Valdez, RT CICU Census ED Tracking Board Service Providers Search Links Print Help Log Off

Ackley, Ruth DOB: 01/03/1972 (36y) ♀ ED-EX13 Attending: Miller, Joan Nurses:

Allergies: (1 ⚠) Diagnoses: ... MR#: 909 Cardiology Admit Date: 07/11/2008 (34) EOP 2

Adv Dir Patient Record Clinical Summary **Charting** **Plan of Care** Orders Visit

Last Reviewed 00/00/0000 00:00 Summer Valdez, RH Mark Reviewed View Standards Add Plan Add Note

Problems

Show All Statuses Active For All Visits

Name	Note	Status	Rank	Assigned Date
▶ Acute Pain	+	Active		8/14/2008 13:07
▶ Gas Exchange Impairment	+	Active		8/14/2008 13:07
▶ Tobacco Use	+	Active		8/14/2008 13:07
▶ Fall Risk	+	Active		8/14/2008 13:07
▶ Fluid Volume Imbalance Risk	+	Active	2	8/14/2007 00:00
▶ Cardiac Output Alteration	+	Active	2	8/14/2007 00:00

Expected Outcomes

Expected Outcome	Note	Charting Status	Last Charted
▶ No hypoxia	+	Assigned	UUUUUUUU UU:UU
▶ No signs or symptoms of cyanosis	+	Assigned	00/00/0000 00:00
▶ Pulse oximetry within normal limits	+	Assigned	00/00/0000 00:00
▶ Respiratory rate within normal limits	+	Assigned	00/00/0000 00:00
▶ Enhanced knowledge regarding tobacco use risks	+	Assigned	00/00/0000 00:00

Orders

- Active Orders Sort Options
- Assessments
- Education
 - Pain management education
 - Educate on optimal breathing technique
 - Educate on position changes
 - Determine cessation approach
 - Provide tobacco use cessation information
 - Educate on fall prevention
 - Educate on assistive devices
 - Educate on fluid overload signs and symptoms
- Medications
 - Consider management of ischemic pain with an opioid analgesic
 - Perform medication reconciliation
- Treatments and Procedures
 - Encourage evaluation and reporting of effectiveness of pain-relief strategies
 - Monitor response to pain-control strategies
 - Monitor for appropriate fall prevention activities

Pinnacle Health System



Plan of Care went live June 2008.

- Implemented about 25 Plans of Care.
- Embedding evidence (Zynx) into the dialog at the point of care.
- Driving interventions to Soarian worklist.
- Enabled transformation of change of shift reporting.
- Suggests problems based on patient specific findings.

PinnacleHealth, a four hospital health system with Magnet* designation located in Harrisburg, Pa., strives to advance its leadership in patient care with clinical and technological innovation. Using Siemens clinical solutions, PinnacleHealth evaluated the care process and then introduced technology components that provided tools for meeting its objectives.

Greenwood LeFlore Hospital

- **Pre-project situation:**

- “Prior to our project, our care plans were very basic and compliance was an issue. The process was disjointed and varied unit to unit. It was not an Interdisciplinary Team approach. ... the nursing department was using one general care plan that attempted to pull in ancillary departments as needed.”

Greenwood LeFlore Hospital

- **Project Goals:**

- To bring all disciplines together for a true Interdisciplinary Plan of Care.
- To standardize the care planning process.
- To put into the INVISION system a well developed plan of care and a process to insure proper updates to the plan of care.

- **Process:**

- Used evidence-based plan of care and clinical documentation content product.
- Formed Nursing Care Plan Committee, including representatives from every nursing unit and from each ancillary department.
- Customized plan of care and clinical documentation content to create Greenwood LeFlore standardized plans.
- Deployed in Siemens Invision.
- Bedside care team individualizes based on individual patient assessments.
- Updates based on ongoing assessments.

Baptist Health South Florida Clinical Transformation Project

Our nurses are leading this dual Clinical-IT project aimed at:

- Standardizing the best practices across BHSF
- Utilizing evidence-based process
- Providing safe, competent, and compassionate care for all BHSF patients.

Dissecting Evidence-Based Content

Zynx Health Welcome Search [Home](#) [AuthorSpace](#) [Help](#) [Log out](#)

ZynxEvidence™ Critical Care Management – Adult > Infection – Risk of, Central Venous Catheter-Associated Bloodstream Infection > Planning/Implementation > Central Venous Catheter Management

Product
Module
Group
Content Type
Current Module

Include Evidence Tables

Reminder

For patients with CVCs:

- Aseptic technique should be maintained for insertion, care, and each access.
- Appropriate dressings should be chosen and replaced as specified.
- Dressings should be replaced if the dressing becomes visibly soiled, loosened, or damp.
- Daily review of line necessity with prompt removal of unnecessary lines should be done.

Rationale

- General Information
- Dressing Type and Dressing Change
- Ongoing Monitoring
- Skin Antisepsis

Abbreviations: CVC, central venous catheter. ICU, intensive care unit.

References Sort by: Year then by: Class

1. Timsit JF, Schwebel C, Bouadma L, Geffroy A, Garroutte-Orgeas M, Pease S, et al. Chlorhexidine-impregnated sponges and less frequent dressing changes for prevention of catheter-related infections in critically ill adults: a randomized controlled trial. *JAMA*. 2009;301:1231-41. [PubMed](#)
2. National Quality Forum. Safe Practices for Better Healthcare—2009 Update: A Consensus Report. 2009. [Web](#)
3. Vallés J, Fernández I, Alcaraz D, Chacón E, Cazorla A, Canals M, et al. Prospective randomized trial of 3 antiseptic solutions for prevention of catheter colonization in an intensive care unit for adult patients. *Infect Control Hosp Epidemiol*. 2008;29:847-53. [PubMed](#)
4. O'Grady NP, Barie PS, Bartlett JG, Bleck T, Carroll K, Kalil AC, et al. Guidelines for evaluation of new fever in critically ill adult patients: 2008 update from the American College of Critical Care Medicine and the Infectious Diseases Society of America. *Crit Care Med*. 2008;36:1330-49. [PubMed](#)
5. Registered Nurses' Association of Ontario. Care and Maintenance to Reduce Vascular Access Complications (A review of the 2005 guideline. *Nursing Best Practice Guidelines*. 2005. [PubMed](#)

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Evidenced-Based Content is moved into Problem, Goal and Intervention Format

Problem	RISK FOR CENTRAL VENOUS CATHETER ASSOCIATED BLOOD INFECTION		
	Goal	PREVENT CENTRAL VENOUS CATHETER ASSOCIATED BLOOD INFECTION	
		Int	Assess daily for catheter removal
		Int	Ensure optimal catheter site selection
		Int	Maintain sterile technique during dressing change
		Int	Perform hand hygiene before and after contact with catheter
		Int	Use chloraprep disc for dressing change and insertion
		Int	Use Chlorhexidine skin antiseptis for catheter insertion
		Int	Use maximal barrier technique upon insertion

Implementation Process

- In collaboration with BHSF I.T. Department, content was built in Siemens PCDS as the Interdisciplinary Plan Of Care (IPOC) pathway
- Project was piloted at Doctors Hospital (2 West) with great success!
- Clinicians from the following disciplines began documenting on IPOC
 - Care Coordination
 - Dietary
 - Nursing
 - Palliative Care
 - Pastoral Care
 - PT, OT, Speech Therapy
 - Respiratory
 - Social Work Services

Project Outcomes

- The patient's story is being told in one place
- Staff acceptance level, extremely high
- Successful roll-out hospital-wide completed November 2009
- Feedback sessions with end-users to evaluate outcomes



Reality Check – IPOC in Action

Baptist Health Information Technology [Patient Index] - Windows Internet Explorer

http://netaccess-test.smshealthconx.net/b0xh-NTAT-BIN/webcptun.exe/TST/1?KEY=WD-INVISION7LP-INV-5-5-2W:O:1640

File Edit View Favorites Tools Help

★ ☆ Home Page Tools ?

Patient: **Makfive ,Dh** User: **RNEV04** ★ [Log Off](#)

Directives
Revise Adv
Directives
Care Planning

Chart IPOC
Revise IPOC Notes
Chart IPER
Revise IPER
Chart Vitals - Adult
Revise Vitals - Adult
Chart I/O
Revise I/O
Chart Routines
Revise Routines
Pt Notes
Critical Results Note
Revise Critical Results Note
Ancillary
Display
Net Access
eCharting
Historical eCharting
Clinical Data Viewer
Surgical eCharting Summary
Perinatal eCharting

MAKFIVE ,DH 43 M 4/25/1965
MR#: 000000430749 Attn: ABELLO, ROBERT 039941
Pt#: 302015524 Allergies: No Known Allergies

Patient Plan of Care Last Reviewed: 5/10/2010, 18:18 by ERIKA VIQUEZ, RN

Active Add Problems Add Outcomes/Goals & Interventions Prioritize Problems Cumulative

Write IPOC Note
Review
Change Status
IPER
Customize

Priority	Description	Status	Freq
1	DECREASED CARDIAC OUTPUT	ACTIVE	
	HEMODYNAMIC STABILITY	ACTIVE	
	MONITOR VITAL SIGNS, SKIN COLOR, JUGULAR VEIN DISTENTION	REVIEWED	QSHIF
	EVALUATE EFFECTIVENESS OF CARDIAC MEDICATIONS	REVIEWED	QSHIF
	TOLERATES ACTIVITY WITHOUT DYSPNEA,SYNCOPE OR CHEST PAIN	ACTIVE	
2	ACTIVITY INTOLERANCE	ACTIVE	
	DEMONSTRATES GRADUAL INCREASE IN ACTIVITY	ACTIVE	
	PROVIDE ASSISTANCE/EQUIPMENT FOR ADLS	REVIEWED	QSHIF
	TOLERATES PHYSICAL ACTIVITY WITHOUT ADVERSE SYMPTOMS	ACTIVE	
	MONITOR PATIENT DURING PHYSICAL ACTIVITY	REVIEWED	QSHIF
3	FEAR/ANXIETY	ACTIVE	
	DEMONSTRATE IMPROVED ACCURACY OF THOUGHTS	ACTIVE	
	OBSERVE CONGRUENCE BETWEEN VERBAL AND NONVERBAL BEHAVIOR	REVIEWED	QSHIF

LEGEND
Problems
Outcomes/Goals
Interventions

OVR GWMDSPC01:P 05/10/2010 18:26

Trusted sites 100%

Impact on Patient Care – The Patient Story



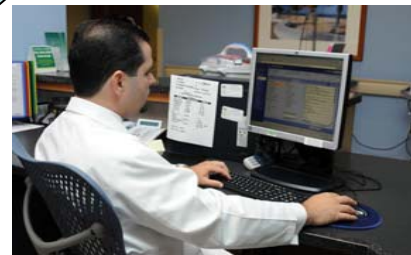
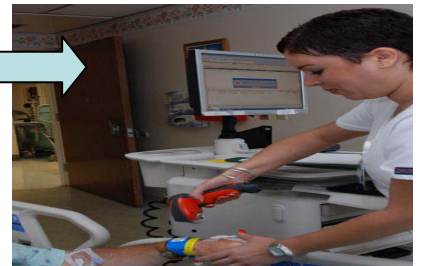
Microsoft Internet Explorer
 Patient: Testady, SM
 User: RNEV4

11:44:18 AM 11/18/2010
 303025309
 ACHA, ABCLA, S 003814
 No Known Drug Allergies

Last Reviewed: 4/23/2010, 17:31 by ERPA VIOLEZ, RN

Active	Add Problems	Add Outcomes/Goals & Interventions	Priority Problems	Cumulative
Write I/OC Note				
Review				
Change Status				
IFER				
Customize				
Problems				
Outcomes/Goals				
Interventions				

11:44:18 AM PATIENT REVISION COMPLETED



March 2010 The Joint Commission Survey at Doctor's Hospital

“...it is one of the best care plans I've seen...It truly tells the patient's story”



The Journey to Evidence-Based Healthcare

Requires a shift from knowing a static body of information to **knowing how to access** the evolving knowledge base to support the needs of those whose care is managed.

Haase-Herrick, *Modern Healthcare*, 4-19-2004

... **and a shift to the real adoption of technology based and evidence populated plans of care & clinical documentation.**”

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- Complete the evaluation form by click on the evaluation link located on the left-side of your viewing console. Or you can access the survey directly at:
https://www.smed.com/nurse2010_survey/default.asp?wid=8
- Once completed, print out your certificate for Continuing Nursing Education Credits of 1.0 contact hour offered by Corexcel.
 - *please be sure to check the box located on the evaluation form to enable the print function*

Upcoming Siemens Webcast Topics

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For More Information

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