



PROFESSIONALISM • PATIENT AND FAMILY-CENTERED CARE • COMPASSION • TEAMWORK • EXCELLENCE • INTEGRITY

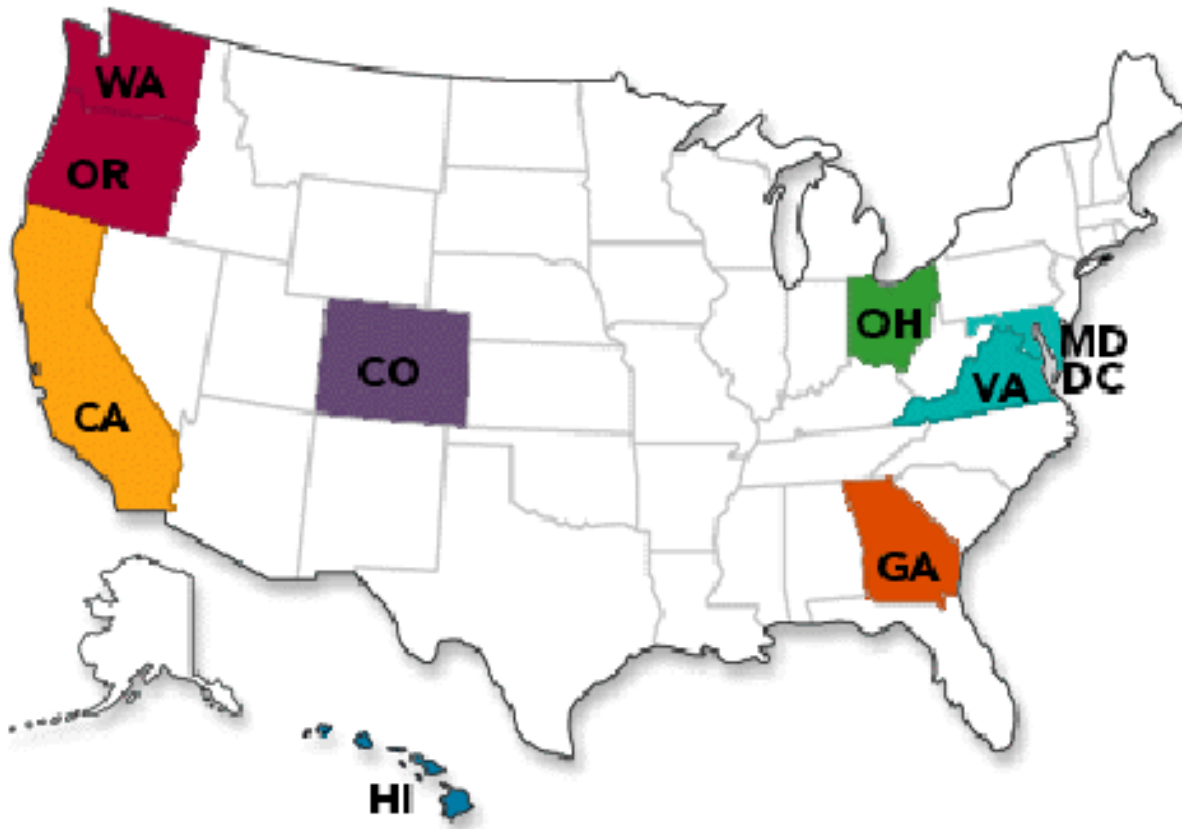
A New Reality at Kaiser Permanente

The Nursing Informatics Perspective

Ann O'Brien RN, MSN, CPHIMS

Kaiser Permanente

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- Integrated delivery system
- 8.6 million members
- 16,000+ physicians
- 46,000+ nurses
- 170,000+ employees
- 36 hospitals
- 568 medical offices
- \$42 billion annual revenues

HIMSS Analytics Stage 7 Sweeping the Stage

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US EMR Adoption Model SM			
Stage	Cumulative Capabilities	2010 Q3	2010 Final
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP	1.0%	1.0%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	2.8%	3.2%
Stage 5	Closed loop medication administration	3.7%	4.5%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	10.3%	10.5%
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	49.7%	49.0%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable	15.4%	14.6%
Stage 1	Ancillaries - Lab, Rad, Pharmacy - All Installed	6.7%	7.1%
Stage 0	All Three Ancillaries Not Installed	10.5%	10.1%

At the end of 2010 only 1% of U.S hospitals had EHRs at “Stage 7”

35 Kaiser Permanente Hospitals have achieved “Stage 7” recognition

More than any other healthcare system in the U.S

Data from HIMSS AnalyticsTM Database © 2011

N = 5,233 N = 5,281

Theme :

Improving Quality & Safety with CDS & Advanced Analytics

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- Dept Health & Human Services launched a new program (May 2011), **Partners for Patients** that will use data collection and IT systems to help prevent medical error that could potentially save up to \$ 50 billion Kathleen Sebelius HHS Secretary
- Don Berwick (CMS) “It’s about supporting clinicians by spreading knowledge of best practices and transparency... as millions get injured because of defects in the system”.
- Initial goals of the program will focus on medical errors and complications including preventing adverse drug reactions, pressure ulcers, childbirth complications and surgical site infections.
www.HealthcareITNews.com
- The \$17 Billion Problem: Annual Cost of Measurable Medical Errors
Health Affairs April 2011

Ten Most Costly Medical Errors in 2008 and Associated Annual Cost

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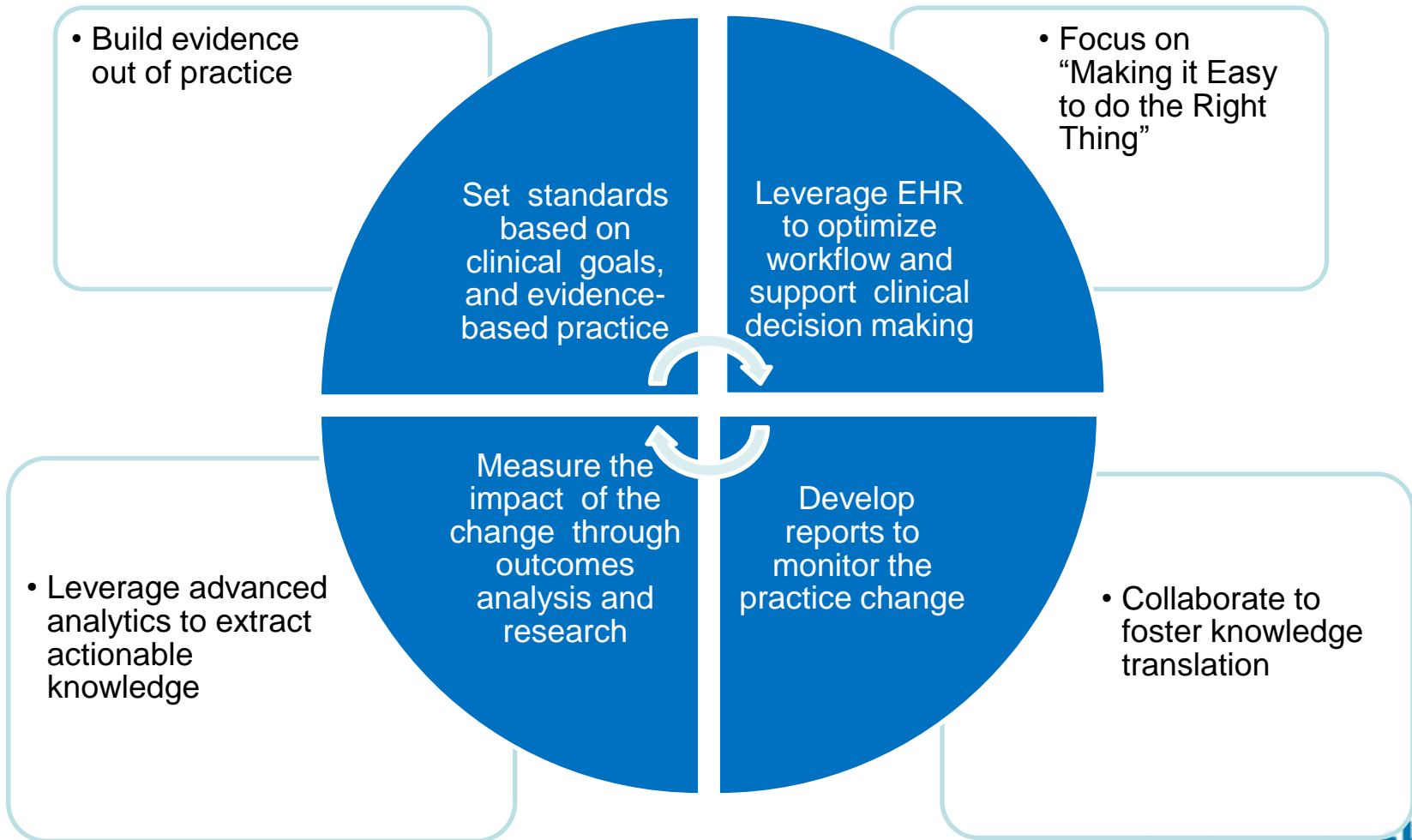
Pressure Ulcers were the most FREQUENT Medical Error identified

1.	Postoperative infections	\$3.3 billion
2.	Pressure ulcers	\$3.2 billion
3.	Mechanical device or implant complications (non-cardiac)	\$1.0 billion
4.	Postlaminectomy syndrome	\$995 million
5.	Hemorrhage complicating a procedure	\$678 million
6.	Infection due to central venous catheter	\$589 million
7.	Pneumothorax	\$569 million
8.	Infection from injection, infusion, transfusion, vaccination	\$566 million
9.	Other complications of device, implant and graft	\$398 million
10.	Abdominal hernia	\$342 million

The \$17.1 Billion Problem: The Annual Cost of Measurable Medical Errors
Van Den Bos, J, Rustagi, K, Gray, T., Halford, M., Ziemkiewicz E., Shreve, J
Health Affairs 30, No 4 April 2011

KP Model for Clinical Transformation

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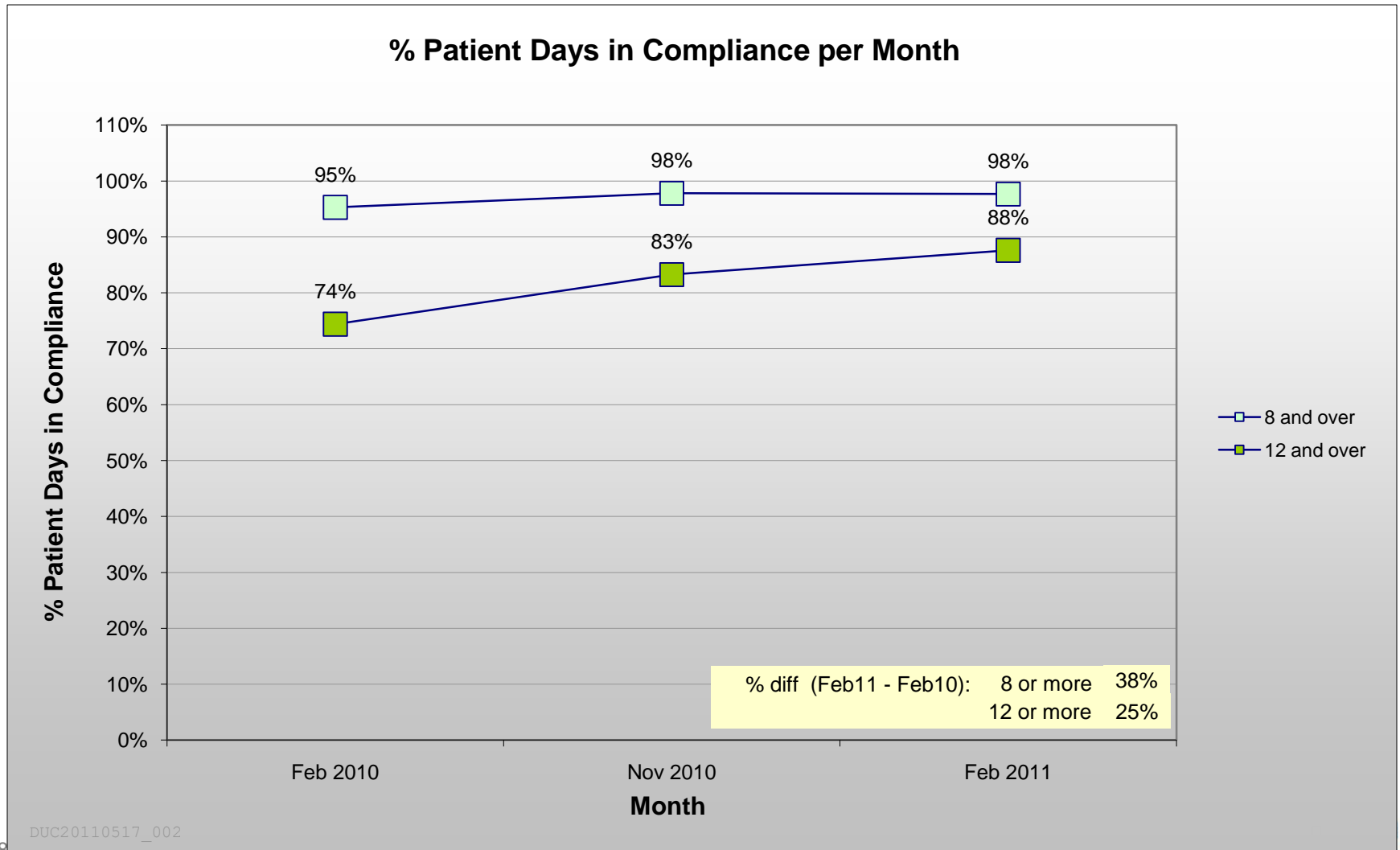
Goals of the INGG Pressure Ulcer Prevention Workgroup

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- To ensure alignment of patient care operational goals for the prevention of pressure ulcers and the KPHC documentation
- To organize, consolidate and standardize the input and recommendations from all regions related to pressure ulcer prevention
- To incorporate regional policies and best practices into the KPHC documentation
- To establish documentation standards related to prevention interventions to improve consistency for monitoring, reporting and outcomes measurement
- To develop an inter-regional training program to ensure consistent education across all medical centers

Pressure Ulcer Prevention SCAL Hospital A

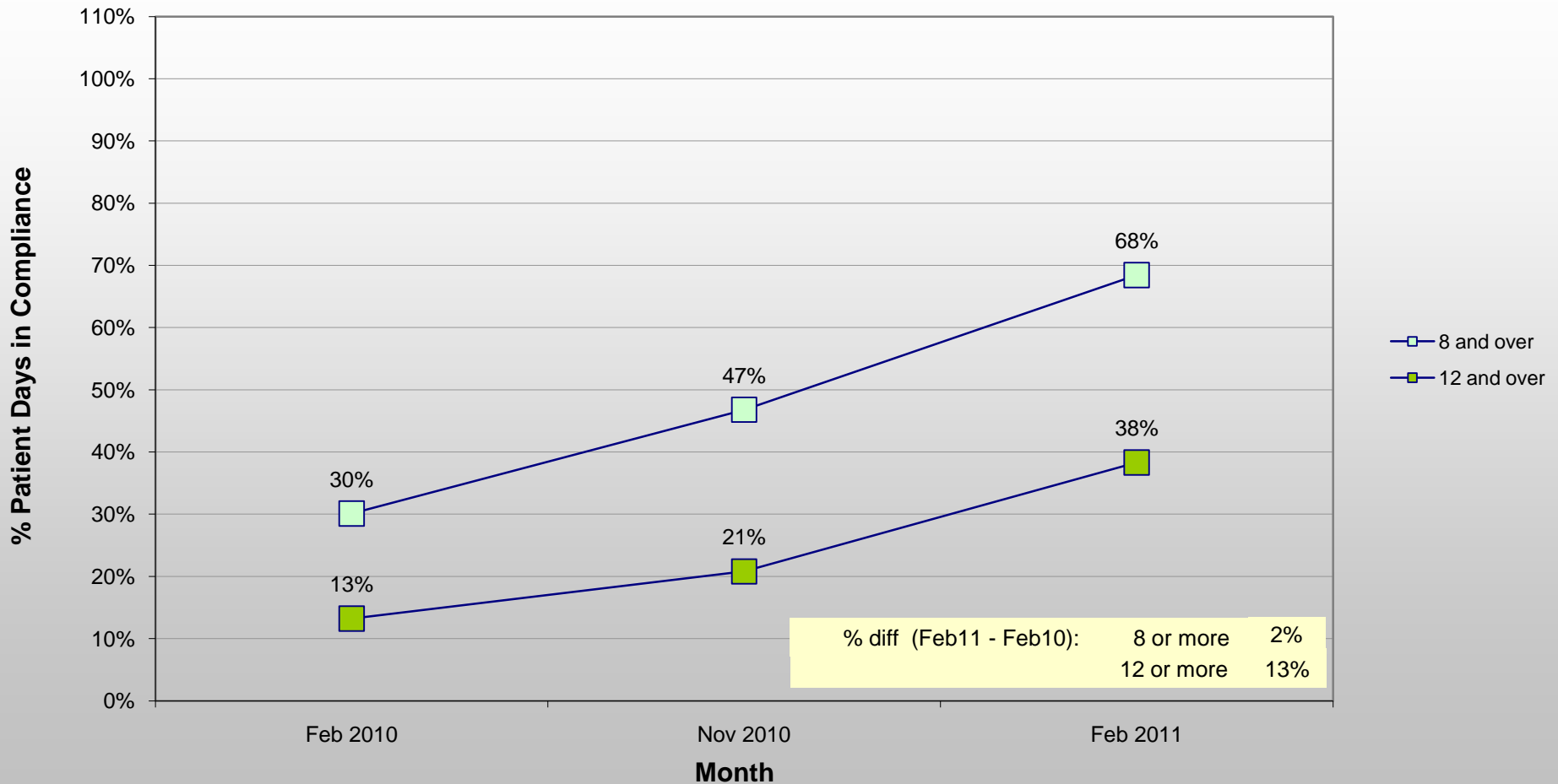
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Pressure Ulcer Prevention SCAL Hospital B

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% Patient Days in Compliance per Month



Clinical Decision Support

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Doc Flowsheets

File | Add Row | Add Group | Add LDA | Cascade | Add Col | Insert Col | Device | Compact | Last Filed | Graph | Details | Gg to Date | Refresh

Flowsheet: Shift Optimized | Meds order entry | Worklist Tasks | Shift MS Opt | Shift Optimized

Shift Optimized

BestPractice Advisory - Xttestbox,Oscar

ADVISORY: Braden Scale is less than or equal to 18. ACTION: Turn patient q2 hours and document in the Shift Assessment flowsheet.

[Jump to Shift Assessment](#)

Accept | Cancel

mNIHSS (Modified National...

What are the problems we are trying to solve?

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- Documentation is burdensome and overwhelming
- Nurses carry multiple communication devices but care gaps, interruptions and lack of knowledge are pervasive
- Nurses are the ‘information integrators’
- There is huge memory load on the nurse; need for real time contextual information at the point of care
- The environment does not support efficiency
- Technology is not fully integrated
- Documentation tools do not support documentation at the point of care or documentation as an automatic product of care

Technology & Nursing

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We have to stop **ADDING** work
and start

Organizing and **Simplifying** the
workflow of the nurse

Make it **EASY** to do the **RIGHT**
THING

Theme : Usability: Make it Intuitive

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- Usability “extent to which a product can be used in a specific context to achieve specific goals with effectiveness, efficiency and satisfaction”.
- Usability has a strong, often direct relationship with clinical productivity, error rate, user fatigue and user satisfaction – critical to the EHR

Nancy Stagers PhD, RN, FAAN

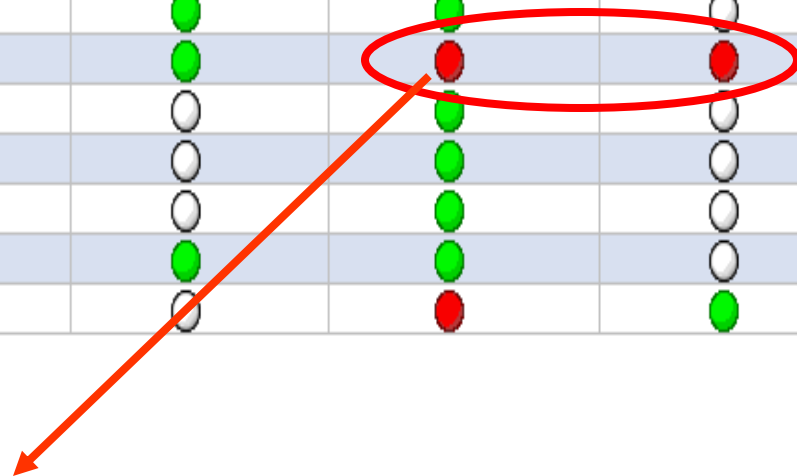
Assessments WDL	CARDIOVASCULAR WDL** Regular Heart sounds; Perfusion-Pink nail beds; 2+ Pedal pulses; No Edema
Assessments WDL Procedures	RESPIRATORY WDL** Regular rate, depth and pattern; Breath sounds clear and equal bilaterally; Chest Expansion/Excursion equal/symmetrical; No shortness of Breath; No cough or productive sputum; No Tubes/Drains
Assessments WDL	GASTROINTESTINAL WDL** Abdomen soft, non-tender; Normoactive bowel sounds; Continent of stool; No Tubes, Drains or Ostomies
Assessments WDL	GENITOURINARY WDL** Voids without difficulty; Clear, yellow urine; Continent of urine; Bladder non-distended; No Tubes, Drains or Ostomy
Assessments WDL	MUSCULOSKELETAL WDL** Full active movement of all extremities with no joint pain, swelling or tenderness

Theme: Clinical Intelligence

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- Clinical Intelligence combines business intelligence and clinical data
- We need to extract the intelligence hidden in reams of data in order to analyze gaps in care quality, safety & efficiency
- Top performing hospitals have been those with a data-driven culture using data to identify opportunities
- Goal is to move toward real time data analysis

Bed/\u2606	Patient Name/Age/Sex	SCHMID	Wrist Band Check	BRADEN	Patient Turning	Restraint Order
314A	(93 year old M)	●	<input type="radio"/>	●	●	
314B	, A (71 year old M)	●	●	●	<input type="radio"/>	
316B	D (56 year old M)	●	<input type="radio"/>	●	<input type="radio"/>	
318A	H (85 year old F)	●	<input type="radio"/>	●	●	
318B	n, M (69 year old F)	●	<input type="radio"/>	●	<input type="radio"/>	
319	, D (57 year old M)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
320A	(74 year old F)	●	<input type="radio"/>	●	<input type="radio"/>	
320B	L (77 year old F)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
321	W (51 year old M)	●	●	<input type="radio"/>	<input type="radio"/>	
322A	i, Y (84 year old F)	●	●	●	<input type="radio"/>	
323	(77 year old M)	●	●	●	●	
324A	3 (46 year old M)	●	<input type="radio"/>	●	<input type="radio"/>	
324B	R (75 year old M)	●	<input type="radio"/>	●	<input type="radio"/>	
325	N (66 year old F)	●	<input type="radio"/>	●	<input type="radio"/>	
329	P (74 year old M)	●	●	●	<input type="radio"/>	
333	C (56 year old M)	●	<input type="radio"/>	●	●	

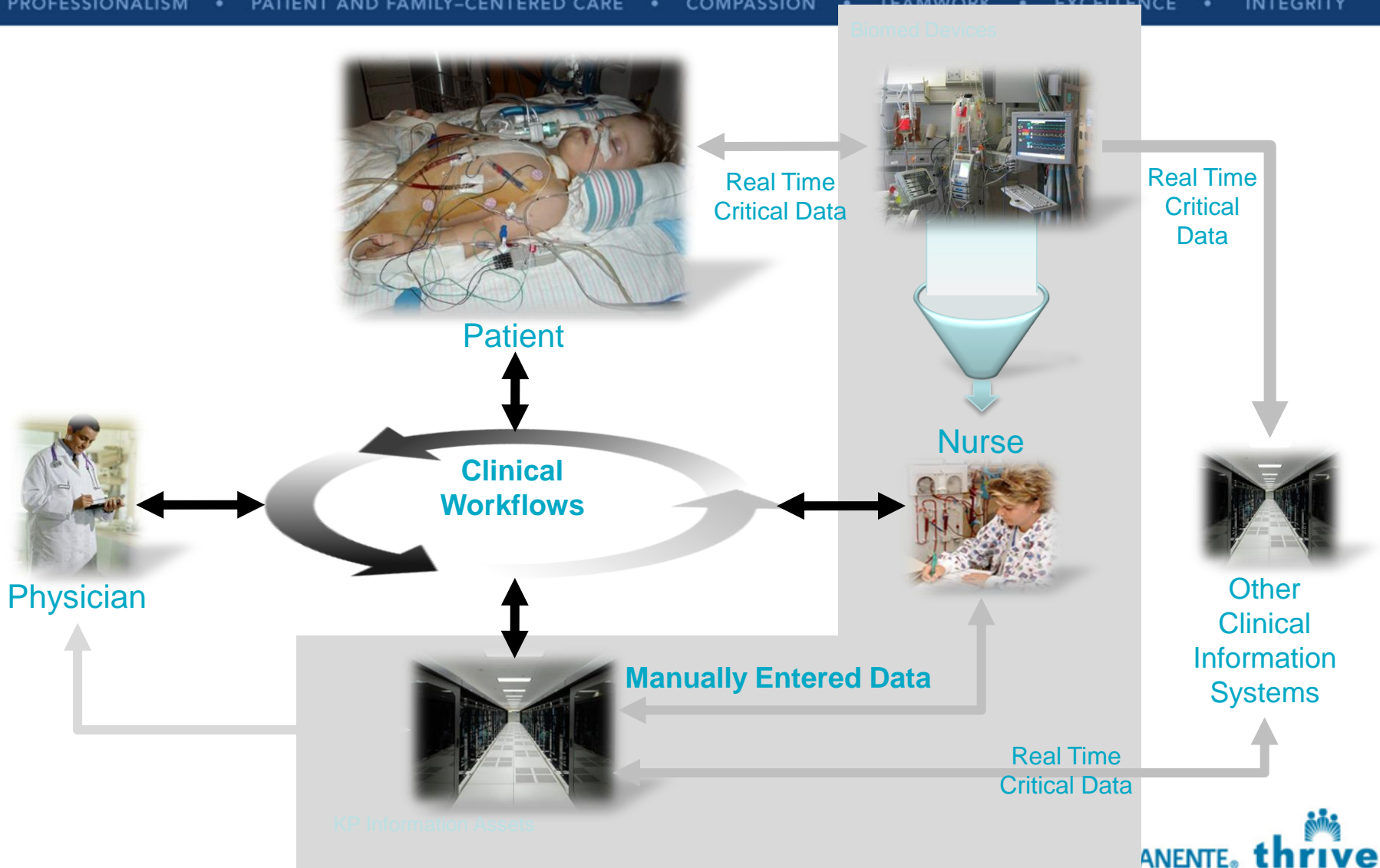


Red Ball under Braden indicates Patient is at risk

Red Ball under Turning indicates there is no documentation that patient has been turned or out of bed in the last 2 hours.

Theme: BioMedical Device Integration

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The Business Case: BioMedical Device Integration

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Quality of care



Patient

It's not a good use of nurse's time



Nurse

4%*

of Patient Stays Associated with Adverse Events

Only

20%

on Patient Care Activities

35%

on Documentation

Manual Entry Bottleneck causes:

- Information Delays
- Data Errors

Sources:

- Hendrich A, Chow M, Skierczynski B, Lu Z. *A 36-Hospital Time and Motion Study*
- Brennan TA, Leape LL, Laird NM, et. al. *Incidence of Adverse Events and Negligence in Hospitalized Patients*

Mobile Vital Signs: Value Proposition

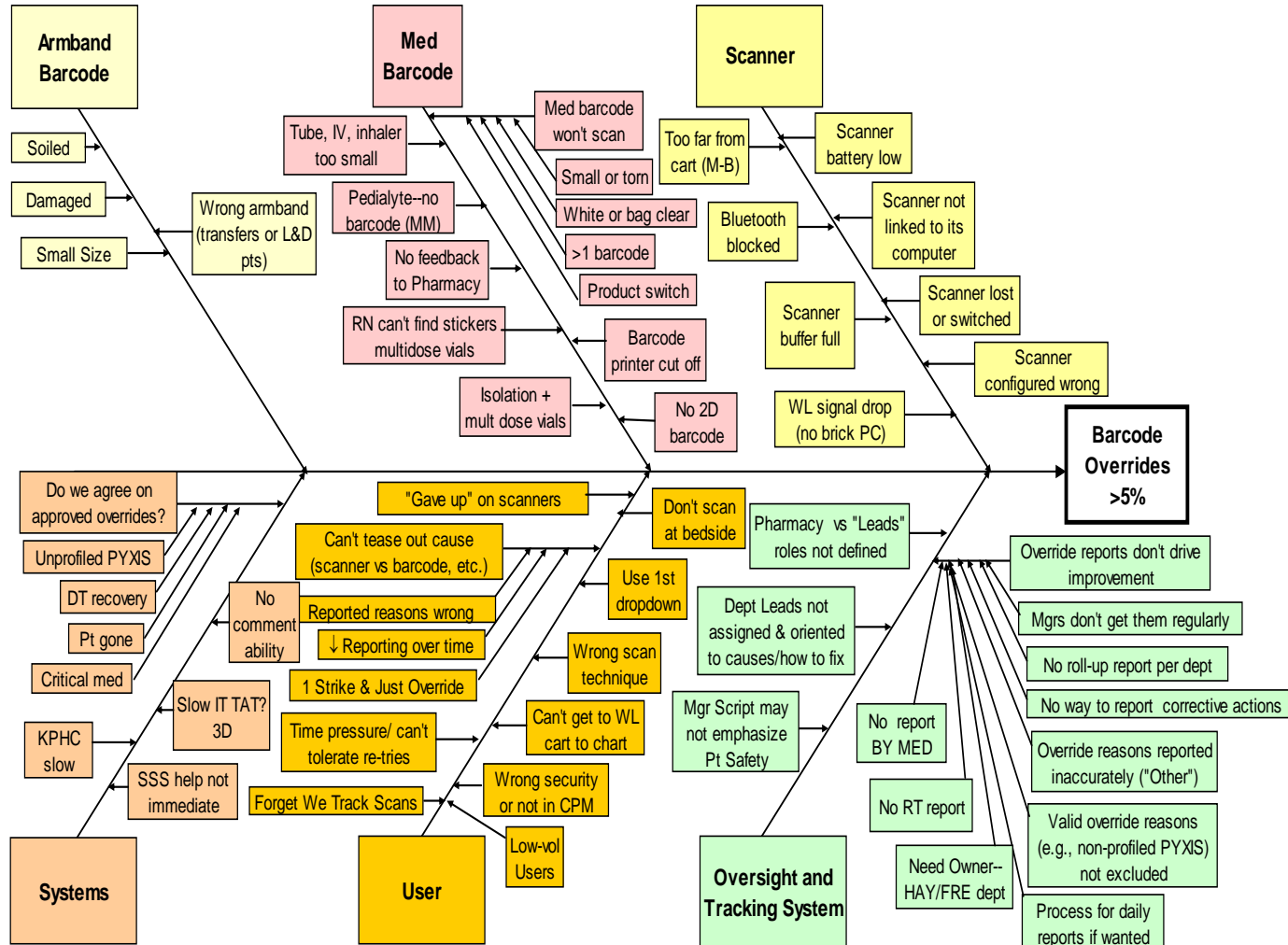
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- **Eliminates the critical delay (lag time) from vitals captured to documentation**
- **Improves vital sign accuracy**
- **Increases nursing time to be spent with patients and families**
- **Allows vital sign documentation to simply be a by-product of care**



Theme: Performance Improvement & Decreasing Waste

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Where is Waste in Healthcare?

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- Searching for things
- Searching for information
- Traveling
- Transporting
- Errors
- Rework
- Variation
- Interruptions
- Repetition
- Unshared Knowledge
- Inadequate information
- Collecting data that never gets used

Theme: Patient & Family Engagement

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- Meaningful Use criteria incent providers toward patient engagement
- It is expected that consumer demands for accurate, timely, and complete health-related information and partnership with healthcare professionals will only increase
- Patient portals, patient data entry and interactive patient care technology mark 2011 as a tipping point year for patient engagement
- Quality Chasm Report, IOM outlined dimensions of patient-centered care including: respect for patient's values, preferences and needs, coordination of care, physical comfort and emotional support, involvement of family and friends, information, communication and education. The goal is to “customize care to the individual”.

Theme: Data Portability

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“If nursing data is organized in a standard way, it can also be shared and compared across regional or national databases to identify trends, report outcomes, and research new opportunities to improve nursing practice.”

- TIGER Initiative

KP-VA Health IT Prototype

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- Common information models and reference terminology facilitate data to support:
 - Quality
 - Safety
 - Efficiency
 - Clinical decisions
- Define a Common Information Model for:
 - Data capture
 - Data re-use
 - Data sharing within and outside organizations

A Replicable Process

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- 1. Evaluate the Evidence**
- 2. Leverage Clinical Expertise**
- 3. Develop Optimum Data Sets from**
- 4. Harmonize the data**
- 5. Map to Reference Terminologies**
- 6. Created mind maps and formalize them in Unified Modeling Language (UML)**
- 7. Common model informs the HL7 Standard**
- 8. Validate the Model**

Ethnographic Field Research

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Guiding principles for the Patient Room of the future (nurse's perspective)

Simplify my paths

"Give me the shortest path with the fewest obstacles."

Shorter, quicker paths:

- to medications and supporting supplies
- to ADL (activities of daily living) supplies for patients i.e. chapstick, socks, water, etc
- to find back-up/functioning equipment when something fails
- to people who can provide help when I need it
- to places/ways to chart when I don't want to disturb the patient or I need privacy
- to disseminating information throughout the unit. ("_ is broken...")

Easier access to:

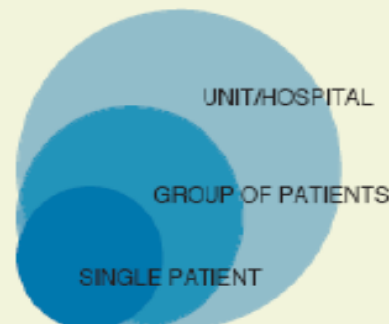
- Medication rooms
- Medication drawers
- Computer systems
- Emergency alert systems
- Clicking in/clocking out

Support me with Knowledge

"Support me with more information. Let me pull it easily and efficiently when I want it. Push relevant information out to me sensitively because I've got a lot going on. Keep me from feeling 'in the dark'."

Knowledge I need on three levels:

- 1) About my specific patient
 - Background/history/preferences
 - recent/current clinical data
 - how the patient is "feeling"
- 2) About my other patients while I'm with this one.
- 3) About the unit/system information
 - Locations of stuff (where's the poop bucket?)
 - Codes, passwords, protocols
 - unit processes (e.g. this is how we do shift change on this unit)



Reduce my "gatekeeping" tasks

"Take some of the non-nursing stuff off my plate. Allow self-service for others."

Coordinating caregivers

- Tests/Procedures/Discharges involving clinicians, transport, family, patients, coordinators

Timing, schedules, reminders

- For patients and visitors:
- "When is the doctor coming?"
 - "What happens next?"
 - "How many more times do I need to do ___? How many have I done already?"

Patient training and education

- Clinical "how-to's", home instructions
- How the hospital works, what to expect.

"Concierge services"

- Food, water, ice for patients and visitors
- ADL (activities of daily living) supplies for patients i.e. chapstick, socks, toothpaste, etc.
- Wayfinding for visitors

Opportunity to transform the care environment

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- Intuitive to our care teams
- Interoperable with our systems
- Integrated into our processes
- Intelligent use of our data
- Proactive, real-time, relevant information at the point of care
- Waste decreased
- Clinical decision support tools
- Single sign on
- Simplified workflows
- “Hunting and gathering” of supplies eliminated

Theme: Develop a Strategic Roadmap

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- Accelerate the adoption of smart, standards-based, interoperable, patient centered technology that will make healthcare delivery safer, more, timely, accessible and efficient.
- Collaborate with Stakeholders and inter-professional care teams to prioritize technology that is integrated, intelligent, intuitive and supports the workflow of the clinician.
- Evaluate innovation and technology trends to identify those that will have the greatest impact on strategy & structure

Biosensors, Telemedicine, Social Media, Patient Self Service Solutions, Virtual agents, Predictive Analytics, Preference Management, Business Intelligence, Genomics, Context & Location Awareness, Virtualization, Personalization....

Operating Principles

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- Facilitate patient-centered design and family engagement in the transformation of hospital work environments
- Promote a seamless workplace environment by leveraging technology to enhance care delivery and clinician workflows
- Maintain awareness of technological advancements to solve clinical challenges incorporating evidence-based research to inform decision making.
- Support collaborative relationships with organizational and vendor partners to ensure technology is intuitive, interoperable and supports optimal care practices
- Facilitate the transformation of care processes to reduce variation and improve clinical outcomes
- Drive towards standardization where it makes sense

A Proclamation for Change: Transforming the Hospital Care Environment
Hendrich, A, Chow, M. Goshert, W JONA Vol 39, No 6 June 2009

Theme: Building Clinical Informatics Teams

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- ANA defines nursing informatics as “a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, knowledge and wisdom in nursing practice”.
- Technology will continue to be a fundamental enabler to future care delivery models and nursing informatics leaders will be essential to transforming nursing practice through technology
- New roles emerging Chief Nursing Informatics Officer (CNIO) and VP’s of Clinical Informatics to lead transformational efforts.
- There is growing demand for nursing informatics leaders to partner with CMIOs, Pharmacists, Administrators, Information Technology and Innovation to execute the necessary transformation activities and bridge the new care delivery models into clinical practice with the right technology solutions.

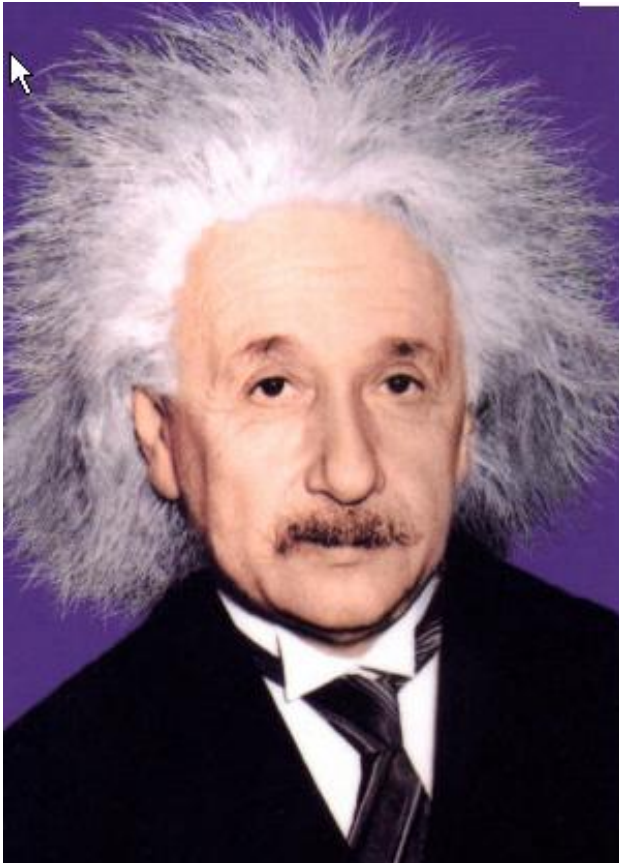
Lessons Learned -- Creating a Culture of Clinical Transformation

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- Evidence Based Care
- Clinical Decision Support
- Advanced Analytics
- Usability
- Clinical Intelligence
- BioMedical Device Integration
- Mobility
- Performance Improvement & Removing Waste
- Patient & Family Engagement
- Data Portability, Data Exchange & Data Reuse
- Strategic Prioritization for Innovation & Technology Adoption
- Clinical Informatics Teams

Conclusion

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“We can't solve problems by using the same kind of thinking we used when we created them.”

Albert Einstein

Questions?

