Transforming Health & Care with the Power of Actionable Information

Ann O’Brien RN, MSN FHIMSS
Objectives

- Articulate current trends in clinical informatics.
- Describe the challenges and opportunities related to EHRs and enabling technologies.
- Discuss opportunities for elevating the contributions and value proposition of Nursing Informatics leadership.
Health & Healthcare Trends

• Health of the U.S. and implications for Healthcare
• Quadruple Aim and EHR Documentation
• Big Data / Analytics / AI
• High Reliability / Systemness
• Inter-Professional Teaming
Many Factors Shape Health

...of which medical care is one component.

Source: McGinnis et al, Health Affairs, 2002
What about chronic disease?

Chart 1: The Number of People with Chronic Conditions is Rapidly Increasing

July 2017. RAND
60% of American Adults now live with least 1 chronic condition and 42% have more than one.
What about Alzheimer’s Disease?

AD increased 50% from 1999 to 2014. It is the 6th leading cause of death.

Projected Number of People Aged 65 or Older With Alzheimer’s Disease, by Age Group, United States, 2010-2050

The Quadruple Aim

- The **Triple** Aim – Enhancing patient experience, improving population health and reducing costs is widely accepted as a compass to optimize health system performance.
- However **Burnout** among the health care team threatens clinical outcomes.
- Examples: **workload** may cause a nurse to miss changes in patient condition, MD burnout associated with lower patient satisfaction, reduced adherence to treatment plans or physicians leaving practice.
- The 4th aim – Improving the work life, satisfaction & efficiency of MD, RNs & caregivers.
AMIA  EHR 2020 Taskforce

Key Recommendations:
1. Simplify & Speed documentation
2. Reduce data entry and focus on Patient Outcomes
3. Refocus Regulation: Simplify certification, improve interoperability
4. Increase transparency and streamline certification of EHRs.
5. Foster innovation; Use public standards to support research
6. Support person-centered care delivery- Support the integration of social context of care including home care, long term care, patient generated data, social, emotional contexts of care

JAMIA Vol 22, Sept. 2015
Medical Virtualists: Creating Capability

• The current model of disease management relies on isolated data points from periodic patient interactions at times when they are the sickest or at greatest risk.

• How will healthcare meet the demands of digitally empowered patients?

• Will clinicians require specific training in the best approaches for managing the care of patients using virtual tools; directly monitoring, managing, promoting and restoring the health of patients?

• Defining actionable intelligence from continuous data streams will require interpretation based on an understanding of the patient’s unique social, environmental and genetic background.

• “Interpretation and application of population-driven, individually relevant, predictive algorithms will be the defining province of clinical virtualists.”

Beyond The Medical Virtualists: Creating Capability in the Health Care Team” Health Affairs. Kevin Fickenscher, Joseph Kvendar, Joseph Nichols. 3/22/2018
ONC / CMS Reducing Clinician Burden 2018

ONC/CMS Reducing Clinician Burden
Public Meeting

Thursday, February 22, 2018
10:00 am – 4:30 pm ET
Hubert H. Humphrey Building Auditorium
ONC/CMS Reducing Clinician Burden

Our top priority at CMS is putting patients first
CMS is committed to reducing unnecessary burden, increasing efficiencies, and improving the beneficiary experience.

Burden Reduction Initiatives

Centers for Medicare & Medicaid Services
Dr. Kate Goodrich
Melanie Combs-Dyer

Care-Centered Clinical Documentation in the Digital Environment: Solutions to Alleviate Burnout

Alexander K. Ommaya, DSc, MA, Association of American Medical Colleges; Pamela F. Cipriano, PhD, RN, NEA-BC, FAAN, American Nurses Association; David B. Hoyt, MD, FACS, American College of Surgeons; Keith A Horvath, MD, Association of American Medical Colleges; Paul Tang, MD, MS, IBM Watson Health; Harold L. Paz, MD, MS, Aetna; Mark S. DeFrancesco, MD, MBA, FACOG, American College of Obstetricians and Gynecologists; Susan T. Hingle, MD, American College of Physicians; Sam Butler, MD, Epic; Christine A. Sinsky, MD, American Medical Association

January 29, 2018
Box 1 | Recommendations

- Clinicians should be responsible only for essential primary data entry that is required to support the care of a patient.
- EHR developers should increase the development of capabilities that allow clinicians to understand the previous medical, health, and social history of the patient.
- CMS should deemphasize documentation requirements as a condition of payment for health care services.
- CMS should clarify that elements of the HPI drafted by an assistant, and confirmed with the patient by the provider, should count for reimbursement.
- An authoritative body, such as the NAM, should initiate a study focused on redesigning clinical documentation suited to the modern digital age, with a primary focus on informing clinical management and improving patient outcomes and health.


Nursing Knowledge Big Data Science

2018 Nursing Knowledge: Big Data Science Conference

Recommendations

2015

- Spread best practices for EHR documentation, decision support & data visualization
- Provide knowledge at the point of care to support evidence based practice
- Design clinical content with dynamic links that update with new evidence
- Demonstrate patient’s condition in real time using all data collected
- Address care gaps across the continuum
- Build care plans that are patient centered, inter-disciplinary, dynamic & transparent
- Utilize predictive analytics tools to present changes in patient status
- Provide links to knowledge sources, calculators, libraries, protocols in real time
- Display information across disciplines, encounters of care to show trends, risks, progress toward goals
- Eliminate duplicate documentation
- Personalize care based on evidence based practice, patient needs, preferences and shared decision making
- Make information actionable to improve efficiency / usability

EHR Documentation

The Hype and the Hope for Improving Nursing Satisfaction and Quality Outcomes

June 13, 2018
June 14-15, 2018
Challenges in the Current Inpatient Ecosystem

- Clinical communication is not coordinated.
- Environment is noisy with multiple sources of audible alarms.
- 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.
- There is a lack of actionable information.
- Technology is not fully integrated.
- EHRs do not support inter-professional collaboration
- Lack of appropriate infrastructure to support unified clinical communication.
Nurses are the Error Detector System

• 1999 IOM released To Err is Human: Building a Safer Health System. It estimated 98,000 deaths from medical errors.
• 2011 Health Affairs estimated that the annual cost of measurable medical errors $17.1 billion in 2018 with pressure ulcers most common.
• 2016 BMJ: Medical error is not included in death certificates or in rankings of cause of death. Estimate ~ 400,000 deaths a year more than 4 times the IOM estimate.
The sensitivity of PEWS is 85.5%.

One study shows 73% of patients with critical PEWS score just before RRT or code event².

Median time interval between PEWS and RRT/code is 30 minutes².
Use Cases for Machine Learning

**Patient Flow**
Streamline operations

**Engaged patients**
Power of the community

**Happy Physicians**
real-time guidance and recommendations

**Genomics**
large datasets reevaluated with new info
High Reliability Organizations (HRO)

- Have nearly error-free operations in contexts that are extremely
  - Complex
  - Dynamic
  - Interdependent
  - Time-pressured
What Produces High Reliability?

• Safety culture (Bierly & Spender, 1995; Roberts, et al., 1993; Schulman, 2004; Weick, 1987)

• A “safety culture is the product of the shared values, attitudes, and patterns of behavior that determine the observable degree of effort with which all organizational members direct their attention and actions towards minimizing patient harm that may result from the process of care delivery.”

Tim Vogus  Vanderbilt University School of Management
Principles of High Reliability?

- Preoccupation with failure
  - Chronic wariness of the unexpected
- Reluctance to simplify interpretations
  - Questioning assumptions
- Sensitivity to operations
  - Up-to-date knowledge of where expertise resides
- Deference to expertise
  - Migrating decision-making to person with most expertise, **not** most authority

Tim Vogus Vanderbilt University School of Management
Systemness: The Next Frontier

• The desired state of complex healthcare delivery systems delivering patient-focused, seamless and high quality care; a single integrated organization and operating model across the patients’ life cycle.

• Many organizations are still making the shift hospital and ambulatory to an integrated continuum of care, virtual care and community health while maximizing the effectiveness of clinical operations.

• Reducing variation and eliminating waste are key themes.

• Creating an integrated delivery system, alignment of leadership and physicians, IT infrastructure and synergistic care delivery model that maximizes customer value and addresses the health of populations.

• Repeatable, reliable services that are consistent across facilities provide a seamless patient experience and safety benefits.
Nursing Informatics Leadership

- CNE – CNIO Partnership Article 2014
  However the role and impact of the CNIO and Nursing Informatics Value & Impact remain ‘inconsistent’.
- How might we demonstrate the Impact?
  - Nursing Executive Team
  - Integration of People, Process & Technology
  - Clinical Transformation Initiatives
  - High Reliability Initiatives
  - Quality, Safety, Efficiency & Cost
CNIO: Strategic Partner

• Advocates for the largest group of health care workers and provides strategic direction, knowledge & skills for successful clinical and operational outcomes.

• Partners with CNE and CMIO to drive evidence-based improvements through optimization of the EHR, business processes and integration of research.

• Utilizes the knowledge and skills of clinical practice; aligns people, process and technology to enable the delivery of efficient nursing care across the organization.

• Educates executives on informatics concepts and value proposition.

• Evaluates organizational infrastructure and makes recommendations to support system improvement and care coordination.

• Manages complexities of data, analytics and outcomes improvements.

• Advises C-suite on clinical mobile, remote and emerging technologies.

Patty Sengstack DNP, RN  Chief Nursing Informatics Officer: Strategic Partner for Health Care Organizations

Voice of Nursing Leadership. November 2014
NI: Diverse skill set for providing value

• Partner with CNE, CMIO, CIO on strategic priorities for transformation
• Design systems to meet clinical needs and decrease non-value added tasks
• Transform care delivery processes with workflow redesign
• Provide enterprise level clinical and technical expertise
• Integrate evidence into practice
• Optimize the EHR to improve outcomes and clinical efficiency
• Utilize performance improvement methods to analyze clinical data
• Support evidence based practice with real time actionable information
• Collaborate with inter-professional teams on intelligent standardization
• Implement data to knowledge translation for safer care
• Optimize IT assessment, design, implementation, metrics evaluation
What is Delirium? How Big is the Problem?

Delirium is an **acute confusional state**.

More than **7 million** Americans suffer from delirium each year.

Delirium affects up to **50%** of elderly people in the hospital and costs more than **$164 billion** per year in the U.S.

Sources:
American Delirium Society; https://www.americandeliriumsociety.org/about-delirium/healthcare-professionals
Inouye SK, Westendorp RGJ, Saczynski JS. Delirium in Elderly People. www.thelancet.com Published online August 28, 2013 http://dx.doi.org/10.1016/S0140-6736(13)60688-1
Delirium Risk Score

Rule: Is patient at risk for delirium?
- Check for age 75 and over
- Check history of Delirium
- Check diagnosis of Dementia
- Check for surgery in current admission and age 65 and over

Rule: Does the patient have a Positive CAM?
- Check documentation of CAM

Rule: Has a specific type of delirigenic med been administered?
- ALL Med Groupers

<table>
<thead>
<tr>
<th>Patient Name/Age/Sex</th>
<th>Delirium Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dashboard, R (41 year old F)</td>
<td>4</td>
</tr>
<tr>
<td>DSSC, J (68 year old M)</td>
<td>3</td>
</tr>
<tr>
<td>Dssc, W (80 year old F)</td>
<td>2</td>
</tr>
<tr>
<td>Dashboard, C (77 year old F)</td>
<td>2</td>
</tr>
<tr>
<td>Test, B (73 year old U)</td>
<td>1</td>
</tr>
</tbody>
</table>
Proposing Alternative Medications

(Includes Benzodiazepines, Opioids, and Anticholinergics)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline</td>
<td>Doxylamine</td>
<td>Oxazepam</td>
</tr>
<tr>
<td>Amoxapine</td>
<td>Famotidine</td>
<td>Oxybutynin</td>
</tr>
<tr>
<td>Atropine</td>
<td>Fentanyl patch</td>
<td>Oxycodone</td>
</tr>
<tr>
<td>Benztropine</td>
<td>Flavoxate</td>
<td>Pentazocine</td>
</tr>
<tr>
<td>Brompheniramine</td>
<td>Flurazepam</td>
<td>Perphenazine</td>
</tr>
<tr>
<td>Carboxamine</td>
<td>Hydrocortisone</td>
<td>Prednisone</td>
</tr>
<tr>
<td>Carisoprodol</td>
<td>Hydroxazine</td>
<td>Propantheline</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Hyoscynamine</td>
<td>Propiverine</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Imipramine</td>
<td>Ranitidine</td>
</tr>
<tr>
<td>Cimetidine</td>
<td>Levofoxacin</td>
<td>Scopolamine</td>
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<tr>
<td>Ciprofloxacin</td>
<td>Lorazepam</td>
<td>Solfenacin</td>
</tr>
<tr>
<td>Clemastine</td>
<td>Meclizine</td>
<td>Temazepam</td>
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<tr>
<td>Cloniprime</td>
<td>Meperidine</td>
<td>Thiocodine</td>
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<tr>
<td>Clonazepam</td>
<td>Metaxalone</td>
<td>Tizanidine</td>
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<tr>
<td>Darifenacin</td>
<td>Methahcarbamol</td>
<td>Tolterodine</td>
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<tr>
<td>Desipramine</td>
<td>Methylprednisolone</td>
<td>Trifluoperazine</td>
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<td>Dicyclomine</td>
<td>Metoclopramide</td>
<td>Trihexyphenidyl</td>
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<td>Dimenhydrinate</td>
<td>Morphine</td>
<td>Trimipramine</td>
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<tr>
<td>Diphenhydramine</td>
<td>Nortripryline</td>
<td>Tropium</td>
</tr>
<tr>
<td>Doxepin</td>
<td>Orphenadrine</td>
<td>Zolpidem</td>
</tr>
</tbody>
</table>

Description
The American Geriatrics Society (AGS) released its second updated and expanded Beers Criteria - lists of potentially inappropriate medications for older adults - and one of the most frequently cited reference tools in the field of geriatrics. The Society also unveiled a suite of new companion resources - including a list of alternative therapies for potentially inappropriate medications and more detailed guidance on best practices for implementing AGS recommendations - all published FREE on http://geriatricscareonline.org/
Delirium Prevention

Goal: Reduce delirium risk through pharmacy, nursing, and physician intervention and partnership.

- No risk, CAM negative, no meds** given
  - No Action

- At risk/no meds given or not at risk/meds given
  - Pharmacist reviews Meds
  - Positive CAM/Meds given
    - Positive CAM triggers TEAM bundle and Confusion Care Plan

- At risk/meds given or positive CAM/no meds given
  - Meds reviewed by MD, RN & Pharmacist
  - CNS/Nurse Champion:
    - Validate CAM
    - Provide delirium interventions (non-pharmacologic)
  - Med changes documented in KPHC
  - Meds changed
    - No alternative found/PCP recommends against changing meds
  - Meds not changed

- Attendings/PCP & CNS if available notified of risk via phone call or inbox message
  - Presented with possible alternatives
  - Intervention documented in IVENT

CNS/Nurse Champion:
- Validate CAM
- Provide delirium interventions (non-pharmacologic)

Updated 9/9/15
The Delirium project utilizes a criteria set to determine the patient’s preliminary risk disposition and suggest a plan of care for the patient. Patient risk factors (from various EHR locations), Nursing CAM Flowsheet documentation and Physician’s medication orders (deliriogenic) are all integrated into a visual risk scoring tool that is used by the Pharmacists to make interventions to prevent deliriogenic medications from reaching the patient.

The Clinical Informatics Team provided thought process leadership in ensuring: an effective solution that removes the data silos in the EHR among different disciplines and integrating them to allow a comprehensive stratification for an accurate risk tool.
Final Thoughts; the What

• The new mandate is **VALUE**
• We must deliver care that is: Better, Safer, Less expensive
• More accessible / across the continuum of care
• More integrated, decrease data silos and continuum silos (IP, Amb, Home)
• More preventive
• Smarter: Use data already in the EHR
• More equitable
• More Inter-professional
• **ANSWER:** Inter-disciplinary, knowledge enabled, personalized care through informatics
Final Thoughts; the HOW

• In a knowledge economy, **teams** are the principle by which work gets done.
• **Teaming** is an active process that involves coordination, collaboration & flexibility.
• The Highly Reliable Organizations are resilient, adjust on the fly and leaders must trust those they lead in a *learning* frame.
• Fast-moving environments need people who know how to **team**; the skills & flexibility to act in moments of potential collaboration.
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