Health IT and Patient Safety: A Nursing Perspective from the United States

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Objectives/Agenda

• Describe 3 ways you can use health IT to make care safer
• Describe 3 ways you can improve the safety of health IT
• List at least 2 health IT patient safety resources
• Identify the key areas of focus for an effective organizational health IT safety program
Nursing in the USA

- 3.4 Million Nurses
- Represented by the American Nurses Association (ANA)
- Nursing Informatics recognized as a specialty in 1992
- Board Certification - 1,700
- Graduate education in NI since 1980’s
- Most trusted profession – honesty / ethics
Use Health IT to Make Care Safer

Examples:

- Catheter Associated Urinary Tract Infections (CAUTI)
- Modified Early Warning Score (MEWS)
- Suggestion Box
Catheter Associated Urinary Tract Infection (CAUTI)

• Tied with pneumonia as second most common type of healthcare associated infection
• Account for more than 15% of infections reported by acute care hospitals
• Question: Can technology help?
• Answer: Yes by supporting a nurse driven protocol
# Urinary Catheter Order

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reason for Insertion:</td>
<td>- Medically/surgically unstable</td>
</tr>
<tr>
<td></td>
<td>- Chemically paralyzed</td>
</tr>
<tr>
<td></td>
<td>- Obstruction/retention</td>
</tr>
<tr>
<td></td>
<td>- Strict I/O's</td>
</tr>
<tr>
<td></td>
<td>- Surgical Procedure</td>
</tr>
<tr>
<td></td>
<td>- Comfort Care</td>
</tr>
<tr>
<td></td>
<td>- Multiple Stage 2 pressure ulcers, chest to knees with dermatitis</td>
</tr>
<tr>
<td>2. Follow Foley Protocol?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>- Chemically paralyzed</td>
</tr>
<tr>
<td></td>
<td>- Obstruction/retention</td>
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<td></td>
<td>- Multiple Stage 2 pressure ulcers, chest to knees with dermatitis</td>
</tr>
</tbody>
</table>

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Alert - Nurse

Urinary Catheter Protocol: Document criteria for appropriate use and status OR document removal criteria and discontinue. *CLICK THE LINK BELOW TO DOCUMENT.*

Acknowledge reason: 

Remind me the next time I open the chart...

CLICK HERE TO DOCUMENT REQUIRED URINARY CATHETER ASSESSMENT.

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CAUTI Rate per 1000 Catheter Days

- Median

- Data points for each month from Sep-13 to Aug-15.
# Modified Early Warning Score

<table>
<thead>
<tr>
<th>Value</th>
<th>10/18 9:00am</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>132/76</td>
</tr>
<tr>
<td>HR</td>
<td>86</td>
</tr>
<tr>
<td>RR</td>
<td>16</td>
</tr>
<tr>
<td>Temp</td>
<td>37</td>
</tr>
<tr>
<td>LOC</td>
<td>Alert</td>
</tr>
<tr>
<td>MEWS</td>
<td>0</td>
</tr>
</tbody>
</table>
## Modified Early Warning Score (MEWS)

<table>
<thead>
<tr>
<th>Score</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of Consciousness</strong></td>
<td>Confused or Agitated</td>
<td>Alert</td>
<td>Responds to Voice</td>
<td>Responds to Pain</td>
<td>No Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Respiratory Rate (breaths/min)</strong></td>
<td>&lt; 9</td>
<td>9 - 14</td>
<td>15 - 20</td>
<td>21 - 29</td>
<td>≥ 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heart Rate (bpm)</strong></td>
<td>≤ 40</td>
<td>41 - 50</td>
<td>51 - 100</td>
<td>101 - 110</td>
<td>111 - 129</td>
<td>≥ 130</td>
<td></td>
</tr>
<tr>
<td><strong>Systolic Blood Pressure (mmHg)</strong></td>
<td>≤ 70</td>
<td>71 - 80</td>
<td>81 - 100</td>
<td>101 - 199</td>
<td>≥ 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature (°F)</strong></td>
<td>&lt; 95</td>
<td>95 - 101</td>
<td>&gt; 101</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Recommended Interventions

- **0 to 2**: Continue routine/ordered monitoring of vital signs.
- **3 to 4**: Increase monitoring to every four hours, seek advice of resource nurse, consider notifying physician and transferring to a higher level of care if more frequent monitoring needed.
- **5 or >**: Above plus: Observe every 30 minutes - Seek advice of resource nurse and/or physician.
  - **STRONGLY CONSIDER CALLING RAPID RESPONSE TEAM**

Use clinical judgement for DNRs and chronically ill patients.

*Subbe CP, Kruger M, Rutherford P, Gemmel L. Validation of a modified Early Warning Score in medical admissions. QJM 2001; 94: 521-6*
Alert to Nurse for MEWS Score ≥ 5

MEWS Score Greater than or equal to 5--
This patient has scored greater than or equal to 5 on the MEWS (Modified Early Warning Score). This puts the patient at high risk for further deterioration. You should increase observation to every 30 minutes and contact the resource nurse and/or the physician for immediate reassessment and transfer to a higher level of care if more frequent monitoring is needed. Strongly consider calling a Rapid Response call.

<table>
<thead>
<tr>
<th>Filed Vitals:</th>
<th>09/25/15 1339</th>
<th>09/30/15 0820</th>
<th>09/30/15 1114</th>
<th>09/30/15 1302</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP:</td>
<td>199/89</td>
<td>80/40</td>
<td>80/40</td>
<td>70/30</td>
</tr>
<tr>
<td>Pulse:</td>
<td>120</td>
<td>120</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td>Temp:</td>
<td>102 °F (38.9 °C)</td>
<td>102 °F (38.9 °C)</td>
<td>103 °F (39.4 °C)</td>
<td></td>
</tr>
<tr>
<td>Resp:</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>26</td>
</tr>
</tbody>
</table>

Acknowledge reason: [Rapid Response Initiated] [Provider Notified (See Progress Notes)] [Patient Assessed, No Further Action] [Other Interventions (See Progress Notes)] [Intervention-Comfort Care] [Remind Me Next Time I Open the Chart]

Go to Notes Activity to Document Actions and Response

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The Suggestion Box

<table>
<thead>
<tr>
<th>Patient Header</th>
<th>MRN</th>
<th>Allergies</th>
<th>Code Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name, First Name</td>
<td>DOB</td>
<td>Code Status</td>
<td></td>
</tr>
</tbody>
</table>

![Image of application interface with dropdown menu and text box]

Enter something here
Example Suggestions

• For medications that are ordered to start at a future date, they come up as active in the meds view list as well as carried over to being active meds in the notes. Is there a way to note these medications as "future" even if currently ordered?

• Allergy documentation could be improved. Often we are forced to choose "other" for an allergy and then when we are in our clinical documentation screens (i.e. outpatient treatment/procedure) it does not pull the allergy information in. It only lists "other" and you are unable to confirm/review allergies from that screen. Thank you.

• Add "tea-colored" or some other variation for urine that is dark brown, typically indicating high bilirubin to the nursing assessment flow sheet.

• Is it possible to increase the allowed number of characters for typing documents? Abbreviating words could sometimes provide insufficient info for proper nsg care. Thanks.

• There are two dates of birth listed and they don't match. The first one is correct. This was worrisome as I am giving blood.
Continuously Improve the Safety of Health IT

Examples:

- Height/Weight inaccuracies
- Anesthesia Volume Calculator
- Patient Identification

Make it hard to do the wrong thing
Height/Weight Documentation

The Problem:

• Wrong weight entered by nurse into EHR
  – Put temperature in weight field
  – Put systolic blood pressure in weight field
  – Put decimal in wrong place

• Pharmacy prepares medication and dispenses to nursing unit for administration
Height/Weight Documentation

• The Solution
• Alert nurse when height/weight entered is 10% higher or lower than previous value.

STOP!
Are you sure that weight is right?
Anesthesia Volume Calculator

The Problem

- One-time infusions that are started in the OR by anesthesia continue calculating volumes indefinitely unless manually stopped.
- Can happen after a patient with a one-time infusion started in an anesthesia procedure is transferred to an inpatient floor. Unless the floor nurse documents a “stop action” for the infusion started during anesthesia, volume continues to calculate for the infusion when the nurse documents a volume using the Volume Calculator in the IV flowsheet.
- This issue results in the Volume Calculator suggesting volumes that are higher than the nurse might expect, which might cause a misinterpretation of the total volume infused.
The Solution

Initially

• Inform anesthesiologists to document a stop action for any running infusions before the patient leaves post-op
• Inform floor nurses to manually document the volume and correct any volumes calculated automatically for affected non-duplicable infusion groups for the remainder of the patient’s admission

Subsequently

• Vendor supplied coding
Choose the Right Patient

The Problem – wrong patient

• Patient names alphabetically listed
• No patient picture
• More than one patient record open at the same time
• No name on order submit button
• Default set to automatically have first patient on list selected upon log in
## Unsafe Default Value

### 1 NE Med/Surg

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>MR#</th>
<th>Date of Admission</th>
<th>Primary Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones</td>
<td>453567</td>
<td>10/1/2015</td>
<td>Postal</td>
</tr>
<tr>
<td>Smith</td>
<td>478973</td>
<td>10/4/2015</td>
<td>Brown</td>
</tr>
<tr>
<td>Thompson</td>
<td>756422</td>
<td>10/12/2015</td>
<td>Jarvis</td>
</tr>
<tr>
<td>Sengstack</td>
<td>793565</td>
<td>10/7/2015</td>
<td>Walker</td>
</tr>
<tr>
<td>Sittig</td>
<td>521235</td>
<td>10/11/2015</td>
<td>Johnson</td>
</tr>
<tr>
<td>Palau</td>
<td>643862</td>
<td>10/17/2015</td>
<td>Overton</td>
</tr>
</tbody>
</table>
Choose the Right Patient

The Solution

• Allow only one patient record to display at a time
• Do not put patient list in alphabetical order
• Use alternating line colors for better visualization
• Add the patient’s picture
• Put picture or patient name on all ordering screens and order submit button
• Do not use default setting to select patient
• Carefully monitor any test patients in production. Use names that clearly indicate test patients in production (use numbers or multiple ZZ’s)
Patient Medication List

amLODIPine 5 mg tablet
Commonly known as: NORVASC

Your next dose is: Today
Tomorrow

Other: __________

BENICAR 40 mg tablet
Generic drug: olmesartan

Your next dose is: Today
Tomorrow

Dose: 5 mg
Take 5 mg by mouth daily.

Dose: 40 mg
Take 40 mg by mouth nightly.

Dispensing Information: Comments
Refills: 0

AM: NOON: PM: BEDTIME: [ ] [ ] [ ] [ ] [ ]
<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Refills</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLOMAX 0.4 mg capsule</td>
<td>0.4 mg</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Generic drug: tamsulosin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your next dose is:</td>
<td>Today</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomorrow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>folic acid 1 mg tablet</td>
<td>1 mg</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Commonly known as: FOLVITE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Patient Medication List

methotrexate 2.5 mg tablet
Dose: 15 Refills: 0

Page Break
Commonly known as: RHEUMATREX

Your next dose is: Today
Tomorrow

Other: 

mg
Take 15 mg by mouth every Tuesday.

No Name
Health IT Safety Tools

- Safety Assurance Factors for EHR Resilience - SAFER Guides
- Institute for Safe Medication Practices - ISMP
- National Institute of Standards and Technology - NIST
- Pick list Checklist
SAFER Guides

- High Priority Practices
- Organizational Responsibilities
- Contingency Planning
- CPOE with CDS
- Clinician Communication

- System Interfaces
- System Configuration
- Patient Identification
- Test Results Reporting and Follow up

https://www.healthit.gov/safer/safer-guides
Institute for Safe Medication Practices

- Draft Guidelines for the Safe Electronic Communication of Medication Information: Safe Presentation of Drug Nomenclature and Dose Expression. Comments were due October 16, 2015
- Guidelines for Standard Order Sets
Institute for Safe Medication Practices

- Separate orders into logical groupings of treatment, procedure, and medication orders
- Use tall man bolded letters (e.g., DOBUTamine and DOPamine)
- When the drug name, strength/dose, and the unit of measure appear together, require a space between the drug name and strength/dose (e.g., propranolol20 mg has been misread as 120 mg)
- Provide a field to enter the purpose/indication for all medications communicated electronically
- Avoid entries where the name of the drug and available dosage strength are on the first line, and the patient-specific dose is on the next line
- Avoid trailing zeros (e.g., 1.0 mg) when expressing medication doses (or other numerical values, as appropriate)
- Avoid drug name abbreviations (e.g., ASA, MTX, PCN, MSO4)
- Include prompts for patient allergies (including food allergies) and associated reaction in a format where the allergy and reaction appear next to one another
NIST Usability – This just in!

- October 2015 - from the National Institute of Standards and Technology
- NIST Releases NISTIR 7804-1, *Technical Evaluation, Testing, and Validation of the Usability of Electronic Health Records*
- “Patient safety is negatively affected by poorly designed EHRs”
Pick List Checklist

✓ Use alternate line colors between patients to help visual separation of names and any list that spans across the screen horizontally
✓ Do not put patient lists in alphabetical order
✓ If greater than 12 items in the list, then group the most commonly used items at the top
✓ Do not put similar terms on top of one another in drop down lists
✓ Use 1.5 spacing between items (not single spaced)

✓ Avoid abbreviations in drop down lists
✓ By default, there should not be an item pre-selected when opening the list
✓ Do not truncate items on pick-list
✓ Font size at least 12
✓ Provide the ability to search from medication lists which use “Tall Man” letters

I ❤ Checklists in Healthcare!

American Nursing Informatics Association

**Mission:** To advance the field of nursing informatics through communication, education, research and professional activities

[www.ania.org](http://www.ania.org)
ANIA – Position Statement on Health IT & Patient Safety

• Published Oct 1\textsuperscript{st}

• 7 ways that organizations can address health IT and patient safety

• \url{https://www.ania.org/about-us/position-statements}
ANIA Position Statement

• Incorporate EHR-related patient safety initiatives into existing patient safety efforts. This will require a strong collaboration among personnel with expertise in nursing/clinical informatics, quality improvement, patient safety, and risk management.

• Develop an EHR safety program that includes regular multi-disciplinary self-assessments, using the SAFER Guides from the ONC. ([http://www.healthit.gov/safer/safer-guides](http://www.healthit.gov/safer/safer-guides)).

• Enhance incident-reporting systems to include identification and collection of patient safety events associated with the use of EHRs.

• Use standardized terms to report EHR-related patient safety events and incorporate these terms into incident-reporting systems (For example, Agency for Healthcare Research and Quality’s (AHRQ) Common Formats, Hazard Manager or Magrabi et.al.’s classification for health IT reporting).
ANIA Position Statement

• Make the reporting process easy for nurses and other care providers to submit EHR-related patient safety events.
• Ensure that a risk management response protocol is in place to review and investigate EHR-related patient safety events. Include personnel with informatics expertise in these incident reviews.
• Ensure follow-up and communication to the original submitter of an EHR-related patient safety event.

www.ania.org
Thank You!

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