Using Technology to Enhance Quality, Safety, and Research: A HAPU Project

Holly Kirkland-Kyhn, PhD, FNP-c, GNP-c, CWCN
Oleg Teleten, MS, RN, CWCN
## Why are HAPU important?

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery on wrong body part</td>
<td>National Coverage Determination</td>
</tr>
<tr>
<td>Surgery on wrong patient</td>
<td>National Coverage Determination</td>
</tr>
<tr>
<td>Wrong surgery on a patient</td>
<td>National Coverage Determination</td>
</tr>
<tr>
<td>Foreign object left in patient after surgery</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Post-operative death in normal health patient</td>
<td></td>
</tr>
<tr>
<td>Implantation of wrong egg</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with use of contaminated drugs</td>
<td>Product or Device Events</td>
</tr>
<tr>
<td>Death/disability associated with use of device other than as intended</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with intravascular air embolism</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Patient Protection Events</td>
<td></td>
</tr>
<tr>
<td>Infant discharged to wrong person</td>
<td></td>
</tr>
<tr>
<td>Death/disability due to patient elopement</td>
<td></td>
</tr>
<tr>
<td>Patient suicide or attempted suicide resulting in disability</td>
<td></td>
</tr>
<tr>
<td>Care Management Events</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with medication error</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with incompatible blood</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Maternal death/disability with low risk delivery</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with hypoglycemia</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Death/disability associated with hyperbilirubinemia in neonates</td>
<td></td>
</tr>
<tr>
<td>Stage 3 or 4 pressure ulcers after admission</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Death/disability due to spinal manipulative therapy</td>
<td></td>
</tr>
<tr>
<td>Environment Events</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with electric shock</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Incident due to wrong oxygen or other gas</td>
<td></td>
</tr>
<tr>
<td>Death/disability associated with a burn incurred within facility</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Death/disability associated with a fall within facility</td>
<td>Hospital-Acquired Condition</td>
</tr>
<tr>
<td>Death/disability associated with use of restraints within facility</td>
<td></td>
</tr>
<tr>
<td>Death/disability due to use of restraints within facility</td>
<td></td>
</tr>
</tbody>
</table>
QI- LSS- DMAIC

**Define**—the specific problem

Define—the data that can be collected electronically

**Measure**—current practice outcomes, literature review, other hospital practices

**Analyze**—root cause analysis, multiple data reports

**Improve**—multidisciplinary team strategy for prevention and promote Q&S

**Control**—the changes and re-measure
Define Problem

- Present on Admission (POA) not documented
- NDNQI-data extracted manually
- Inconsistent Coding and reports to UHC
- Needed to identify where PU originated
- No reliable system for tracking and measuring outcomes
- Staff had little experience identifying and staging pressure ulcer/injury
Define Problem (continued)

- Inconsistency in UHC Reporting from Coded Quantum Data from January to June 2012:
  - UHC—coding data reported 19 HAPU stage 3-4, unstageable
  - Review of data proved 5 met criteria for reporting
- ICD-9 with new ICD-10
  - Missing codes
Coding issues:

• ICD 9 = 15,000 codes
• ICD 10 = 69,000 codes
• No codes for DTI
• No codes for “not to be staged” - often confused with “unstageable” on coding
Technology to Measure

- **EMR**
  - POA: BPA weekly generated reports on POA
  - NDNQI automatic extracted data
  - Standardized charting using templates
  - Tracking patient lists
- **Quantum**—coding, reporting, billing
- **RL solutions**—Risk management, compare and track reports
- **Excel Data Base**—25 data points for reportable HAPU
- **Wound Website**—Education and Resources
Analyze

- Root cause analysis—on every HAPU
- All incident reports—evaluated and categorized—Day, unit, stage, origin
- Data base created to collect—25 variables
- Analyze current patient flow, documentation, coding, and demographics
Improve-EMR

- Present on Admission:
  - EMR Best Practice Alert (BPA) implementation
    - before BPA = 5/week
    - after BPA = 45–60/week
- Generated weekly reports—stage, origin, unit,
- Compare with RL solutions (-25%–50%)
BPA-Patient Education
Learning About Preventing Pressure Sores

What are pressure sores?
A pressure sore is an injury to the skin caused by constant pressure over a period of time. The constant pressure blocks the blood supply to the skin. This causes skin cells to die and creates a sore. Pressure sores are also called bedsores.

Pressure sores usually occur over bony areas, such as the hips, lower back, elbows, heels, and shoulders. Pressure sores can also occur where medical equipment presses on the skin, such as when oxygen tubes press on the ears or cheeks.

Pressure sores can range from red areas on the surface of the skin to severe tissue damage that goes deep into muscle and bone. Severe sores are hard to treat and slow to heal. When pressure sores do not heal properly, problems such as bone, blood, and skin infections can develop.

What causes pressure sores?
Things that cause pressure sores include:
- Pressure on the skin and tissues. For example, the sores may happen when a person lies in bed or sits in a wheel chair for a long time. This is the most common cause of pressure sores.
- Sliding down in a bed or chair, forcing the skin to slide over itself (shear force).
- Being pulled across bed sheets or other surfaces (friction burns).

As we get older, our skin gets more thin and dry and less elastic, so it is easier to damage. Poor nutrition and not getting enough fluids make these natural changes in the skin worse. Skin in this condition may easily develop a pressure sore.

Skin can also be damaged by sweat, tears, or urine, making pressure sores more likely and harder to heal.

How can you help prevent pressure sores?
If you are not able to do these things yourself, ask a family member or friend to help:

Change position often:
- In a bed, change position every 2 hours.
Improve-EMR automated data extraction for NDNQI

- Data collection form C
  - previously performed manually
  - Now data extracted quarterly 8am on date of survey predefined data
- NDNQI/CALNOC—increased validity & reliability
  - Cut 25 questions
  - Cut Nursing hrs—by 150 hours each quarter
  - Cut data entry time from 3 weeks to 3 days
  - Immediate data results with comparison over time
# All UC’s Comparative Table on POA

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Total PU Cases</th>
<th>% Cases</th>
<th>Total Discharge</th>
<th>Cases-Stg 2</th>
<th>Cases-Stg 3</th>
<th>Cases-Stg 4</th>
<th>Cases-Unstageable</th>
<th>Cases-Unspecified</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCDAVIS</td>
<td>823</td>
<td>2.4%</td>
<td>34,700</td>
<td>278</td>
<td>254</td>
<td>171</td>
<td>81</td>
<td>67</td>
</tr>
<tr>
<td>UCIRVINE</td>
<td>502</td>
<td>2.2%</td>
<td>22,487</td>
<td>224</td>
<td>94</td>
<td>68</td>
<td>61</td>
<td>79</td>
</tr>
<tr>
<td>UCLA-RR</td>
<td>295</td>
<td>1.2%</td>
<td>24,146</td>
<td>135</td>
<td>48</td>
<td>45</td>
<td>21</td>
<td>49</td>
</tr>
<tr>
<td>UCSD</td>
<td>423</td>
<td>1.4%</td>
<td>29,918</td>
<td>117</td>
<td>51</td>
<td>89</td>
<td>41</td>
<td>126</td>
</tr>
<tr>
<td>UCSF</td>
<td>431</td>
<td>1.2%</td>
<td>36,706</td>
<td>127</td>
<td>66</td>
<td>88</td>
<td>35</td>
<td>123</td>
</tr>
</tbody>
</table>
Immediate feedback from NDNQI data: Example PU POA

NDNQI Data Pressure Ulcers POA %
Improve-Policy Change

- Nurse & physician stage pressure ulcers on admission
- Two nurses assess on transfer
- Nurse completes Incident report and documents in EMR (checklist)
- Physician documents POA in EMR (coding)
- Nurses order all preventative interventions
Improve-IR System Reports

Incident Volume Report
Grouped by Stage of Ulcer
(Event Date (mm/dd/yyyy) is within the week of 03-19-2017) and (((General Event Type is equal to "Skin/Tissue") and ((File State is equal to "New") or (File State is equal to "In-Progress") or (File State is equal to "Closed")) and (((Entity is equal to "UCDHS") and (General Event Type is equal to "Skin/Tissue")))

![Graph showing incident volume report grouped by stage of ulcer]
<table>
<thead>
<tr>
<th>Date</th>
<th>POA/HAC</th>
<th>Stage</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/12/2017</td>
<td>na</td>
<td>Home</td>
<td>Left elbow</td>
</tr>
<tr>
<td>na</td>
<td>na</td>
<td>Home</td>
<td>Stage II, Heel</td>
</tr>
<tr>
<td>3/18/2017</td>
<td>POA?</td>
<td>Home</td>
<td>Stage I, Left scapula</td>
</tr>
<tr>
<td>3/17/2017</td>
<td>POA</td>
<td>ACF</td>
<td>Stage I, Back/spine, Sacrum</td>
</tr>
<tr>
<td>1/26/2017</td>
<td>POA</td>
<td>ACF</td>
<td>Stage II, Coccyx</td>
</tr>
<tr>
<td>1/4/2017</td>
<td>POA</td>
<td>Home</td>
<td>Multiple, Paraplegia-Buttock, bilateral heel</td>
</tr>
<tr>
<td>2/10/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage IV, Paraplegia-Right ischial tuberosity</td>
</tr>
<tr>
<td>2/17/2017</td>
<td>POA</td>
<td>Home</td>
<td>Unstageable, Stage III/IV</td>
</tr>
<tr>
<td>3/10/2017</td>
<td>POA</td>
<td>Home</td>
<td>Unstageable, Paraplegia-Multiple</td>
</tr>
<tr>
<td>3/20/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage IV, Paraplegia-Left Hip, Right Hip, Coccyx</td>
</tr>
<tr>
<td>2/20/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage IV, Paraplegia-Left Hip, Right Hip, Coccyx</td>
</tr>
<tr>
<td>3/12/2017</td>
<td>POA</td>
<td>Home</td>
<td>Coccyx</td>
</tr>
<tr>
<td>3/12/2017</td>
<td>POA</td>
<td>Home</td>
<td>Closed, Spina Bifida, CKD-Left ishium</td>
</tr>
<tr>
<td>2/16/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage IV, Buttocks</td>
</tr>
<tr>
<td>3/24/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage II, Sacrum, coccyx</td>
</tr>
<tr>
<td>2/25/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage II, Sacrum, left heel</td>
</tr>
<tr>
<td>2/26/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage II, Sacrum</td>
</tr>
<tr>
<td>3/16/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage II-Device related, Nose-CPAP related</td>
</tr>
<tr>
<td>1/5/2017</td>
<td>POA</td>
<td>Home</td>
<td>Stage II, Positioning from OR</td>
</tr>
<tr>
<td>1/5/2017</td>
<td>POA</td>
<td>Home</td>
<td>Buttocks, Coccyx</td>
</tr>
</tbody>
</table>
Improve- Created Wound Web Site for Education and Resources

Stage IV Pressure Ulcers

Definition

- Full thickness tissue loss with extensive destruction, tissue necrosis down to muscle, bone, or tendon.
- Undermining or tunneled area may be present.

Appearance

Interventions

1. Request an order for Wound Care Nurse Consult.
2. Complete inpatient report.
3. Position patient off affected area. Use pressure redistribution surfaces (pillows, special mattresses, slings).
4. Dressings are dependent on amount of exudate: use foam, silicone, hydrofiber, or alginate dressings for heavy exuding wounds.
5. Maximize blood flow to the area by providing proper nutrition, hydration and warmth.
7. Keep area clean and dry.
Improve: All staff education

Wound Care Economics
(and the SWAT team)

Holly Kirkland-Kyhn PhD, FNP
Pirko Maguiña, MD
• Gender and age
• Type of nursing unit
• Length of stay (LOS)
• Braden score on admission and on the discovery of pressure ulcer
• Date of discovered, initial stage, and final stage; type, length & location,
• Primary and secondary medical diagnosis
• Type of surgical procedures, position and time on OR
• Body mass index (BMI)
• Albumen level

• Lowest measured hemoglobin and hematocrit (HCT) for the 2-week period before the HAPU was identified
• International ratio (INR) for clotting of blood
• Lowest measured systolic blood pressure (SBP) and diastolic blood pressure (DBP)
• Dialysis or no dialysis
• Vasopressor use or no vasopressor use
• Documented shock and type of shock (i.e., neurogenic, hemorrhagic, septic, cardiogenic).
First study

• What is best redistribution surface for preventing sacral pressure ulcers in the OR?

• Needs
  • comparatively affordable
  • Ease of use=use

• Problems
  • Believe there is a problem
  • Lead a change
Measurement technology
- 0°
- 30°
- 45°
Pressure Mapping Comparison of Four OR Surfaces

Holly Kirkland-Walsh, MSN, FNP, CWCN; Oleg Teleten, MS, RN, CWCN; Machelle Wilson, PhD, Bonnie Raingruber, PhD, RN

# Pressure Mapping Comparison of Four OR Surfaces

## Table 1. Surface Comparison Summary

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard</th>
<th>Air-Inflated Cushion</th>
<th>Static Seat</th>
<th>Self-Contouring Gel/Foam</th>
<th>Fluid Immersion Simulation</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacral area average interface pressure (mm Hg)</td>
<td>23.6 (3.2)</td>
<td>23.9 (3.1)</td>
<td>23.4 (4.2)</td>
<td>22.1 (2.0)</td>
<td></td>
<td>0.0004*</td>
</tr>
<tr>
<td>Sacral area peak interface pressure (mm Hg)</td>
<td>43.4 (7.3)</td>
<td><img src="image" alt="Circle1" /></td>
<td>40.6 (6.0)</td>
<td><img src="image" alt="Circle2" /></td>
<td>35.9 (4.7)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>Sacral area skin contact area (in(^2))</td>
<td>214.5 (52.9)</td>
<td><img src="image" alt="Circle3" /></td>
<td>250.2 (47.8)</td>
<td>225.4 (50.1)</td>
<td>213.7 (47.9)</td>
<td>&lt;0.0001*</td>
</tr>
</tbody>
</table>

* A P value < 0.05 is considered significant and is represented by an asterisk.
Findings

• All surfaces have average interface pressure within the accepted standard
• No surface can be identified as the best surface in providing the lowest average and peak pressures
• The static-air seat cushion has the largest skin contact area in the sacral region as compared to the other surfaces
Improvements

- Document POA and stage by MD/ RN-IR
- Huddle discuss=High Risk for sacral PU
  - Previous pressure ulcer with scarring
  - Surgical scarring that impedes blood flow
  - Positioning -Spinal cord injury/Spina Bifida
  - Multiple surgical procedures- trauma
  - Diastolic BP below 50
  - See card for high risk in acute care
<table>
<thead>
<tr>
<th>Surface type</th>
<th>Average pressure mmHg</th>
<th>Peak Pressure mmHg</th>
<th>Surface area in²</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iso mattress (G) flat</td>
<td>21.5</td>
<td>39.9</td>
<td>778.13</td>
<td><img src="image1" alt="Photo" /></td>
</tr>
<tr>
<td>Dolphin (G) flat</td>
<td>22.3</td>
<td>37.8</td>
<td>864.06</td>
<td><img src="image2" alt="Photo" /></td>
</tr>
<tr>
<td>Dolphin (G) 30°</td>
<td>23.3</td>
<td>42.0</td>
<td>892.19</td>
<td><img src="image3" alt="Photo" /></td>
</tr>
<tr>
<td>Dolphin (G) flat with EHOB bariatric seat cushion</td>
<td>21.8</td>
<td>38.1</td>
<td>934.38</td>
<td><img src="image4" alt="Photo" /></td>
</tr>
<tr>
<td>Dolphin (G) 30° with EHOB bariatric seat cushion</td>
<td>24.0</td>
<td>41.5</td>
<td>912.5</td>
<td><img src="image5" alt="Photo" /></td>
</tr>
</tbody>
</table>
Control

Incidence:

- **2014**—66% related to prolonged or multiple OR procedures—
- **2015**—50% related to OR
- **2016**—30% related to OR

*Keep measuring: the data will speak for itself*
A Retrospective, Descriptive, Comparative Study to Identify Patient Variables That Contribute to the Development of Deep Tissue Injury Among Patients in Intensive Care Units

Holly Kirkland-Kyhn, PhD, FNP-c, GNP-c, CWCN; Oleg Teleten, MS, RN, CWCN; and Machelle Wilson, PhD

# Research Results

Comparison: General ICU population vs HAPU patients

## Demographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>General ICU population</th>
<th>HAPU population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>72</td>
<td>47</td>
</tr>
<tr>
<td><strong>Average age (years)</strong></td>
<td>58.9</td>
<td>55.0</td>
</tr>
<tr>
<td>Range</td>
<td>18–94</td>
<td>28–93</td>
</tr>
<tr>
<td><strong>Male (n)</strong></td>
<td>46</td>
<td>28</td>
</tr>
<tr>
<td>%</td>
<td>64</td>
<td>60</td>
</tr>
<tr>
<td><strong>Female (n)</strong></td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>%</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
<td><strong>Average BMI range</strong></td>
<td>29.9</td>
<td>30.6</td>
</tr>
<tr>
<td>Range</td>
<td>16–65.2</td>
<td>18.9–74.3</td>
</tr>
<tr>
<td><strong>Average LOS (days)</strong></td>
<td>12.8</td>
<td>24.9</td>
</tr>
<tr>
<td>Range</td>
<td>1–124</td>
<td>2–82</td>
</tr>
</tbody>
</table>

ICU=intensive care unit; HAPI=hospital-acquired pressure injury; BMI= body mass index; LOS=length of stay
<table>
<thead>
<tr>
<th>Variable (units)</th>
<th>General ICU population</th>
<th>HAPU population</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td>116±3.3 (109.5-122.5)</td>
<td>88.8±1.8 (85.8-92.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diastolic blood pressure (mm Hg)</td>
<td>62.2 ± 2.0 (58.2-66.3)</td>
<td>46.3± 1.3 (43.6-48.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Length of surgery (hours)</td>
<td>2.6±0.5 (1.5-3.7)</td>
<td>9.7± (6.2-13.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hematocrit (g/dL)</td>
<td>30.6±0.9 (28.9-32.2)</td>
<td>25.4±0.7 (24.1-26.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>International ratio (units)</td>
<td>1.2±0.03 (1.1-1.7)</td>
<td>1.5±0.08 (1.3-1.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Dialysis (yes %)</td>
<td>29</td>
<td>71</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Shock (yes %)</td>
<td>2.5</td>
<td>87.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Vasopressor (yes %)</td>
<td>19.4</td>
<td>80.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Braden score</td>
<td>15.0±0.4 (14.2-15.8)</td>
<td>12.9±0.3 (12.2-13.5)</td>
<td>0.03</td>
</tr>
<tr>
<td>Body mass index (kg/m²)</td>
<td>29.6±0.9 (27.8-31.5)</td>
<td>31.0±1.3 (28.3-33.7)</td>
<td>0.42</td>
</tr>
</tbody>
</table>

HAPI=hospital-acquired pressure ulcer. Values are expressed as mean ± standard error of the mean and (confidence intervals) for continuous values.
<table>
<thead>
<tr>
<th>Effect</th>
<th>Odds ratio</th>
<th>95% Wald confidence limits</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialysis (yes or no)</td>
<td>4.0</td>
<td>0.060</td>
<td>0.99</td>
</tr>
<tr>
<td>Shock (yes or no)</td>
<td>10.0</td>
<td>0.025</td>
<td>0.43</td>
</tr>
<tr>
<td>Diastolic blood pressure (mm Hg)</td>
<td>0.93</td>
<td>0.88</td>
<td>0.99</td>
</tr>
<tr>
<td>Time in Surgery (hours)</td>
<td>1.20</td>
<td>1.07</td>
<td>1.33</td>
</tr>
</tbody>
</table>

- Patients on dialysis had 4 times greater chance of developing a DTI.
- Patients with diastolic blood pressure below 49mmHg had 10 times greater chance of developing a DTI.
- Surgical patients were at higher risk of DTI; for every 1 hour in surgery the likelihood of a DTI increased by 20%.
• We found a decrease in perfusion (hypotension) as the most significant contributor to DTI.

• We did not find any significant difference in the Braden Score between those patients that developed DTI and those patients who did not develop DTI.

• However, all Braden risk related interventions were implemented.
Knowledge Gained to New Research

Based on previous study:

- low BP
- high sustained pressure over surface
ABCD for pressure ulcers

A-Ambulance
B-Bed side care in ED
C-Critical Care
D-Discharge (Transition of Care)
A-Ambulance

• What do first responders know?
• What can they tell ED nurses about the pick up and transport?
  • Position?
  • How long down?
  • B/P?
• Education
  • who, what, where, risk factors
• Prevention
  • pressure redistribution
B-Bedside ED

- No Braden
- Ask questions about transport BP and position
- Use **Acute Care Risk Assessment card** to assess, provide interventions, and document
- Use pressure redistribution surface
- Dressings to prevent moisture and friction
Acute Care Risk Assessment card

Use Mepilex dressing and EHOB for any below:

- BP Below 100/55
- HCT below 30
- Shock: Sepsis, Neurogenic, Cardiac
- Dialysis
- Spinal Cord Injury/Spina Bifida
- Stroke
- Projected multiple surgeries
Document:
• Skin assessment
• Interventions:
  • Surface
  • Dressings
  • Moisture management
Stage PU with MD for coding
Remind floor RN to complete IR
C-Critical Care

- Low perfusion states—Shock, dialysis, prolonged surgery
- Perform SKIN bundle interventions/documentation
  - S=Specialty surfaces
  - K=Keep repositioning
  - I = Incontinence management
  - N=Nutrition
<table>
<thead>
<tr>
<th>Age/Sex</th>
<th>Length of Stay (Days)</th>
<th>Pressure ulcer present</th>
<th>BP</th>
<th>Braden total</th>
<th>Diagnosis</th>
<th>HCT</th>
<th>Height (m)</th>
<th>Weight (kg)</th>
<th>Lactic Acid, WB</th>
<th>Last Creatin</th>
<th>INR</th>
<th>BMI</th>
<th>Race/Eth Needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>62 yr / F</td>
<td>15</td>
<td>no</td>
<td>71/39</td>
<td>10</td>
<td>Burns involving less than 10% of body surface; Acute blood loss anemia</td>
<td>22.1 %</td>
<td>1.575 m (5' 2.01&quot;)</td>
<td>97.1</td>
<td>4.9 mmol/L at 11/29/16 0200</td>
<td>1.71 mg/dL at 12/14/16 1846</td>
<td>1.50 mg/dL at 12/14/16 0200</td>
<td>1130</td>
<td></td>
</tr>
<tr>
<td>53 yr / M</td>
<td>30</td>
<td>no</td>
<td>107/62</td>
<td>18</td>
<td>Sulfur dioxide toxicity, intention self-harm, initial encounter: Chemic burns; Suicide attempt</td>
<td>23.5 %</td>
<td>1.778 m (5' 10&quot;)</td>
<td>72.9</td>
<td>No results found for this basename: LAW</td>
<td>0.91 mg/dL at 12/12/16 0545</td>
<td>0.99 mg/dL at 12/12/16 0040</td>
<td>25.3</td>
<td></td>
</tr>
<tr>
<td>28 yr / M</td>
<td>49</td>
<td>no</td>
<td>149/66</td>
<td>10</td>
<td>Burn: Burn involving 90% or more of body surface</td>
<td>21.0 %</td>
<td>1.803 m (5' 10.98&quot;)</td>
<td>86.9</td>
<td>4.3 mmol/L at 10/26/16 0003</td>
<td>0.51 mg/dL at 12/14/16 0203</td>
<td>1.23 mg/dL at 12/12/16 1230</td>
<td>26.2</td>
<td></td>
</tr>
</tbody>
</table>
D-Discharge

CARE Act: supported by AARP
Caregiver, Advise, Record, Enable Act
Designation, notification, explanation at discharge
- Pressure ulcer prevention
- Wound care
- Medications
- Transfers
<table>
<thead>
<tr>
<th>Video topics for AARP caregiver website</th>
<th>Setting</th>
<th>Actors</th>
<th>Brief description of scene</th>
</tr>
</thead>
<tbody>
<tr>
<td>General principles of wound care (hand washing, personal hygiene, dressing disposal, surgical site care, family worries and how to address them—what to report, how to problem solve)</td>
<td>Home</td>
<td>Patient, Caregiver, Nurse</td>
<td>Post op wound on knee- demonstrate inspection of surgical wound, signs &amp; symptoms of infection, how to perform dressing change and dispose of old dressing- general health care maintenance</td>
</tr>
<tr>
<td>Pressure ulcer prevention and care (light/dark skin)</td>
<td>Hospital</td>
<td>Patient, Caregiver, two Nurses</td>
<td>Limited mobility patient- (recent Dx-CVA?) Discuss risk and demonstrate interventions (SKIN bundle) prevention, demonstrate assessment, and treatment of pressure ulcers (sacral/heel)</td>
</tr>
<tr>
<td>Lower extremity wounds/cellulitis</td>
<td>Home</td>
<td>Patient, Caregiver, Nurse</td>
<td>Patient with Venous insufficiency wound and hemosiderin staining on leg. Discuss risk- demonstrate skin assessment, and absorbent dressing application &amp; compression stockings</td>
</tr>
</tbody>
</table>
Discharge: Wound care on smartphone videotaping
Measure what you treasure

**QI**
- Define the problem
- Measure
- Analyze
- Interventions
- Control & re-measure

**Research**
- Formulate Question
- Methods
- Interventions
- Measure & analyze
- Results & conclusions
Enhanced Quality

- Early identification of patients with POA PUs (coding) improved documentation and communication—inter-rater reliability
- Efficient and reliable NDNQI data collection (work hours and associated RN pay) as compared to manual abstraction of the data
- Immediate access to the outcome data
- Performed “just-in-time” education (website) to improve the documentation and quality of care
Future QI & Research

- Transitions of care
  - Improve patient engagement
  - Education for all providers in community
  - Improve transitions and “Interoperability”
- Evolving EMR for ease of use
  - Improve reliability and valid measurement
  - Trial new products to aid ease of documentation for nurses
References


Questions?

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