Data Abstraction from EHR for Performance Improvement

University of Wisconsin Hospital and Clinics
Madison, WI

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UW Health

- Located in Madison, Wisconsin
- Academic medical center and health system for the University of Wisconsin
- Includes:
  - UW Hospital
    - 536 licensed beds
  - American Family Children’s Hospital
  - UW Paul P. Carbone Comprehensive Cancer Center

Facts and Figures

1,667 RN FTE’s (budgeted)

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient admissions</td>
<td>25,450</td>
</tr>
<tr>
<td>Emergency Dept Visits</td>
<td>42,858</td>
</tr>
<tr>
<td>Clinic visits</td>
<td>566,439</td>
</tr>
<tr>
<td>OR cases</td>
<td>24,961</td>
</tr>
<tr>
<td>Home care visits</td>
<td>14,821</td>
</tr>
</tbody>
</table>
National Recognition

- Recipient of prestigious Magnet hospital designation by the American Nurses Credentialing Center, May 2009
- Named #1 academic medical center nationwide for outstanding nursing quality by American Nurses Association, based on NDNQI performance, January 2009
- University Healthsystem Consortium, Top 10 Performer Quality and Accountability Study
- Premier Award for Quality
- “100 Top Cardiovascular Hospitals” by Thomson Reuters
- HealthGrades Distinguished Hospital Award for Clinical Excellence
- Top 100 Companies to work for by Working Mother Magazine

Presentation Objectives

Objectives
- Develop a process to assure abstracted EHR data is reliable and valid.
- Understand and recognize key data elements obtained in the EHR.
NDNQI Overview

- Member of NDNQI since 2003
- UWHC has participated in RN Satisfaction Survey for 7 years (2003-2009)
- Published monograph in ANA’s publication “Transforming Nursing Data into Quality Care: Profiles of Quality Improvement in US Healthcare Facilities”
- Presented poster at the 2007 and 2008 NDNQI conferences
- Podium presentations 2009 and 2010 NDNQI conferences

Pressure Ulcer Incidence

- Monthly Pressure Ulcer Audit
  - Monthly audit
  - Electronic report developed
    - used to abstract data from EHR
  - Resources in Skin Care (RISC) nurses conduct head – toe skin assessment
### Monthly Pressure Ulcer Audit Form

#### Monthly Pressure Ulcer Audit Form

<table>
<thead>
<tr>
<th>Date</th>
<th>R Unit</th>
<th>NDC/Prescription Number</th>
<th>PR Unit</th>
<th>PR Room</th>
<th>B Unit</th>
<th>B Room</th>
<th>PR</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/01/2023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Monthly Pressure Ulcer Audit Form

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
<th>Score</th>
<th>Yes</th>
<th>No</th>
<th>Score</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neck</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Trunk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Trunk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buttock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Monthly Pressure Ulcer Audit Form

1. Has documentation support the nursing assessment? Yes/No
2. Has documentation support the nursing intervention? Yes/No
3. Has documentation support the nursing evaluation? Yes/No

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**Note:** Please ensure all necessary fields are completed and signed. Incorrect or incomplete forms will not be accepted for review.

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**Infection Control:** The following forms must be completed within 24 hours of notification.

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**Clinical Evaluation:** The following forms must be completed within 48 hours of notification.

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**Patient Education:** The following forms must be completed within 72 hours of notification.

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**Nutrition:** The following forms must be completed within 24 hours of notification.

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**Surgery:** The following forms must be completed within 24 hours of notification.

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**Pharmacy:** The following forms must be completed within 24 hours of notification.

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**Physical Assessment:** The following forms must be completed within 24 hours of notification.

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**Pharmacology:** The following forms must be completed within 24 hours of notification.

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**Laboratory:** The following forms must be completed within 24 hours of notification.

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**Radiology:** The following forms must be completed within 24 hours of notification.

---

**Pathology:** The following forms must be completed within 24 hours of notification.

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**Social Services:** The following forms must be completed within 24 hours of notification.

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**Financial:** The following forms must be completed within 24 hours of notification.

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**Rehabilitation:** The following forms must be completed within 24 hours of notification.

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**Recovery:** The following forms must be completed within 24 hours of notification.
Pressure Ulcer Incidence

Identification of Pressure Ulcers

If this patient has a hospital acquired pressure ulcer, does your unit "own" it?  □ Yes □ No
If the pressure ulcer did not start on your unit, identify the unit it did start on. Documentation must support your claim.

Was pressure ulcer noted on admission?  □ Yes □ No

Note: Locate this information on the "Burn/Flag/Region/Wound Flowsheet".

Active Wounds

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Patient Name</th>
<th>Pressure Ulcer</th>
<th>Size</th>
<th>Site</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/01/13</td>
<td>00:00</td>
<td>Patient 1</td>
<td>1234</td>
<td>6</td>
<td>123</td>
<td>02/02</td>
</tr>
<tr>
<td>01/01/13</td>
<td>12:00</td>
<td>Patient 2</td>
<td>4567</td>
<td>8</td>
<td>345</td>
<td>02/03</td>
</tr>
</tbody>
</table>

Date/Time Event Class Site Unit Description Service
01/01/13 00:00 Admission Inpatient 1234 1234 CRITICAL CARE
01/01/13 12:00 Patient Update Inpatient 4567 345 CRITICAL CARE
01/01/13 12:00 Patient Update Inpatient 4567 345 CRITICAL CARE

Pressure Ulcer Incidence

Was the Braden Scale Total Score (Calculated) documented on admission?  □ Yes □ No

What was the admission Braden Scale Total Score (Calculated)?

What is today's Braden Scale Total Score (Calculated)?
(if today’s Braden Score not completed, please calculate)

Time since last Braden Scale Total Score (Calculated)
Note: Click last field value and hover over Braden Scale Total Score (Calculated).

- >0 to 12 hrs
- >12 to 24 hrs
- >24 to 48 hrs
- >48 to 72 hrs
- not assessed

Flowsheet Data by Cohen (all recorded)

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Braden Scale Total Score (Calculated)</th>
<th>Braden Scale Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/01/13 00:00</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>01/01/13 01:00</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>01/01/13 02:00</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>01/01/13 03:00</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>01/01/13 04:00</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>
Pressure Ulcer Incidence

Skin assessment on admission standard states:
- Braden score will be documented within 4 hours of admission
- Compliance allows for documentation of the Braden score prior to admission (within the same encounter) and 4 hours past arrival on the unit

Overall compliance per unit per month
- Scorecards
- Variance
Nursing Scorecards

- Include variety of measures from 5 different categories
  - Patient Satisfaction
  - Clinical Effectiveness, Quality, and Safety
    - Hospital Acquired Pressure Ulcer Rate
  - Operational Efficiency
  - Employee Growth and Management

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Total Device Days

- Central Line-Associated Bloodstream Infection (CLABSI) Indicator
- Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN)
- Device-days are the total number of days of exposure to the central line by all of the patients in the selected population during the selected time period.
- Manual Method – RNs in Intensive Care Units record how many devices each patient has
- Electronically – RN adds a central line using a “Lines, Drains and Airway” function
### July 2009

#### Strategies

- Daily report from EHR on active lines reviewed with Health Unit Coordinator (HUC)
- Discontinue line function on discharge navigator
- Discontinue line function on transfer navigator
- Report modifications

#### Table

<table>
<thead>
<tr>
<th>Unit</th>
<th>Manual</th>
<th>EHR</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>10</td>
<td>-9%</td>
</tr>
<tr>
<td>2</td>
<td>560</td>
<td>428</td>
<td>-24%</td>
</tr>
<tr>
<td>3</td>
<td>121</td>
<td>96</td>
<td>-21%</td>
</tr>
<tr>
<td>4</td>
<td>210</td>
<td>192</td>
<td>-9%</td>
</tr>
<tr>
<td>5</td>
<td>226</td>
<td>184</td>
<td>-19%</td>
</tr>
<tr>
<td>Overall</td>
<td>1128</td>
<td>910</td>
<td>-19%</td>
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</table>
### October 2009

<table>
<thead>
<tr>
<th>Unit</th>
<th>Manual</th>
<th>EHR</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>47</td>
<td>-46.8%</td>
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<tr>
<td>2</td>
<td>495</td>
<td>487</td>
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</tr>
<tr>
<td>3</td>
<td>72</td>
<td>85</td>
<td>-15.3%</td>
</tr>
<tr>
<td>4</td>
<td>181</td>
<td>185</td>
<td>-2.2%</td>
</tr>
<tr>
<td>5</td>
<td>226</td>
<td>233</td>
<td>-3.0%</td>
</tr>
<tr>
<td>Overall</td>
<td>999</td>
<td>1037</td>
<td>-3.7%</td>
</tr>
</tbody>
</table>

### November 2009

<table>
<thead>
<tr>
<th>Unit</th>
<th>Manual</th>
<th>EHR</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>37</td>
<td>-13.5%</td>
</tr>
<tr>
<td>2</td>
<td>510</td>
<td>490</td>
<td>4.1%</td>
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<tr>
<td>3</td>
<td>70</td>
<td>76</td>
<td>-7.9%</td>
</tr>
<tr>
<td>4</td>
<td>273</td>
<td>270</td>
<td>1.1%</td>
</tr>
<tr>
<td>5</td>
<td>169</td>
<td>182</td>
<td>-7.1%</td>
</tr>
<tr>
<td>Overall</td>
<td>1054</td>
<td>1055</td>
<td>-0.1%</td>
</tr>
</tbody>
</table>
Pain

- Assessment/Intervention/Reassessment (AIR) Cycle
- 24 hour period after admission
- All Inpatients
- Require Timed Reassessments
- PRN Intervention
- Timing of reassessment

Pain - Manual

- Weekdays, auditors reviewed chart
- Used an electronic report to determine admission
- Review of paper medical record
- Approximately 6 hours per day
- Report generated from shadow electronic health record
- Review data pulled for each patient
- Summarize findings
- New process takes about 2 hours per day
Other Metrics

- Suicide assessment
- Oral care
- Coordinated patient education
- Learning assessment
- Education based on assessed needs
- Height
- Weight
- Fall risk assessment on admission and transfer
- Skin risk assessment
- Restraint prevalence
- Verbal orders
- Primary nurse assigned
- Narcotic documentation
- Medication doses
Data Abstraction
Lessons Learned

- Larger Sample Size
- Build impact of data abstraction
- Nurse sensitive measures are easily abstracted when clinicians work closely with the reporting team
- Data abstraction from EHR requires rigorous validation

- Develop a data dictionary
- Refinement of data variables to measure compliance
- Process improvement is readily demonstrated with use of reporting workbench and aggregate reports from the data base
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