IOE 481 Study: Pressure Ulcer Management System

University of Michigan Health System

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December 2004
Client:
Eric Kratochwill, Associate Hospital Administrator, TeleMedicine

Project Coordinator:
Sam Clark, Senior Management Engineer, Programs and Operations Analysis
INTRODUCTION

PROBLEM

- Significant increase in number of pressure ulcer related lawsuits over past year
- Implies increasing number of hospital acquired pressure ulcers
- Average payout: $110,000 - $120,000
PROBLEM

- Average payout: $110,000 - $120,000
- Increase in length of stay of pressure ulcer patients
- Hospital is often not compensated for additional time patient spends in hospital
INTRODUCTION

PURPOSE

- Understand and analyze current process for pressure ulcer management
- Make recommendations for process improvements
- Benchmark with other comparable institutions

...
INTRODUCTION

PROJECT SCOPE
Focus on 3 areas within hospital system
1) Human & Information Resources
2) In-Patient Health Care
3) Out-Patient Health Care
OVERVIEW
Three independent approaches
1) Interviews
2) Numerical Analysis
3) Benchmarking
METHODOLOGY

1) INTERVIEWS
   - Human & Information Resources
   - Education Services for Nurses
   - Hospital Wound Care Clinician
   - In-Patient Nursing Units
   - Surgery Intensive Care Unit (SICU)
   - Cardiology Intensive Care Unit (CICU)
   - Internal Medicine Unit
   - PM&R Rehabilitation Unit
1) INTERVIEWS
- Out-Patient Units
- Plastic Surgery
- PM&R Physical Therapy (PT)
- Discharge Planning
- Michigan Visiting Nurses (MVN)
- Assistant General Counsel
METHODOLOGY

DISCLAIMER OF BIAS

- Bias in Interviews
- Preparation of individual
- Small Sample size
- Human Error
- Bias in Numerical Analysis
- Pressure Ulcer documentation
- Missing Coding
OVERVIEW

1. Human & Information Resources
2. Inpatient Nursing Units
3. Outpatient Units

INTERVIEW FINDINGS
EDUCATION SERVICES FOR NURSING

- Central Nursing Orientation
- 6 days
- General refresher course for nurses
- One-hour wound care education module
- Wound care module only introduced in 2002
1. What is significance of WC module not being a requirement of central orientation?

2. Nurse Aide training - refer to wound care only?

Wound care module initiated by an education administrator - not requirement of central orientation

Nurse Aides and Nurse Techs only undergo 3 days of training

- Education needs to be a combination of theory and practical training
INFO RESOURCES

HUMAN & INFO RESOURCES

WOUND CARE CLINICIAN (WCC)
- Primary resource to nurses across institution in matters of wound care
- Previously all wound patients must undergo consultation with WCC
- Provides consultations for:
  - Staging
  - Treatment
  - Bedside debridement
HUMAN & INFO RESOURCES

WOUND CARE CLINICIAN (WCC)
- WCC refers patients to Plastic Surgery
  - if wound problem too complicated
  - if surgical debridement necessary
HUMAN & INFO RESOURCES

RECENT HOSPITAL-WIDE MOVEMENTS

- Training of Unit WC Specialist
  - Serves as unit-wide resource for wound care matters
- Monthly Skin Care Sweep
  - "Skin Team": nurses and physicians
  - Every 3rd Tuesday of the month
  - Charts month-to-month trends of pressure ulcer prevalence and incidence rates by unit

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INPATIENT NURSING UNITS

CATEGORIZING INFORMATION

1. Background of Nursing Unit
2. Education & Competency of Nurses
3. Protocols on Admission
4. Protocols throughout Patient Stay

Assessment Protocols

Documentation Protocols

Protocols
INPATIENT NURSING UNITS

INTERVIEW SAMPLE

Four inpatient units: SICU, CICU, Internal Medicine, Rehab

Interviewed from each unit:
- Nursing Manager
- Unit WC specialist
- Clinical Nurse II

Additional interviewees:
- Internal Med: Unit Clerk, Clinical Nurse Spec
- Rehab: Clinical Nurse I
1. Background of Nursing Units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Common Patient Profiles</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Circulation, respiration</td>
<td>Airway, breathing, circulation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10E481 Study: Pressure Ulcer Management System
1. Background of Nursing Units

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
</table>
| Estimated incidence rate | 20%  | <0.5%| Nursing Manager: 3%  
Clin II: 1%               | 0.5% |
## INPATIENT NURSING UNITS

### 2. Education & Competency of Nurses

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit orientation</td>
<td>??</td>
<td>6-week. 1:1 with seasoned RN</td>
<td>6-week. 1:1 with seasoned RN</td>
<td>??</td>
</tr>
<tr>
<td>In-house education</td>
<td>None</td>
<td>Unit WCS: 15-minute in-services</td>
<td>Unit WCS: Presentations Information available online to all nurses.</td>
<td>Unit WCS: In-services. Education &amp; Research Comm: 1) Pocket reference 2) 7-minute presentations</td>
</tr>
</tbody>
</table>

IOE 481 Study: Pressure Ulcer Management System
# INPATIENT NURSING UNITS

## 2. Education & Competency of Nurses

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge/skill level</td>
<td><img src="image" alt="Circle" /></td>
<td><img src="image" alt="Circle" /></td>
<td><img src="image" alt="Circle" /></td>
<td><img src="image" alt="Circle" /></td>
</tr>
<tr>
<td>Comfort level</td>
<td><img src="image" alt="Circle" /></td>
<td><img src="image" alt="Circle" /></td>
<td><img src="image" alt="Circle" /></td>
<td><img src="image" alt="Circle" /></td>
</tr>
</tbody>
</table>

**Key:**
- 1 of high level by interviewee consensus
- 2 of average level by interviewee consensus
- 3 of low level by interviewee consensus

*IGE 481 Study: Pressure Ulcer Management System*
### INPATIENT NURSING UNITS

#### 3. Protocols on Admission
   a. Assessment Protocols

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full head-to-toe assessment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes. Within first shift.</td>
</tr>
<tr>
<td>Braden score assessment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>FIM score assessment</td>
<td>?</td>
<td>?</td>
<td>N/A</td>
<td>Yes. To determine intervention methods.</td>
</tr>
</tbody>
</table>
INPATIENT NURSING UNITS

3. Protocols on Admission
   a. Assessment Protocols
   - In event of prevalence

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUSH score assessment</td>
<td>?</td>
<td>?</td>
<td>N/A</td>
<td>Yes.</td>
</tr>
</tbody>
</table>
## 3. Protocols on Admission

**b. Documentation Protocols**

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUSH score</td>
<td>?</td>
<td>?</td>
<td>N/A</td>
<td>Yes. On Skin Assessment Form.</td>
</tr>
</tbody>
</table>
### 3. Protocols on Admission
#### b. Documentation Protocols

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo-documentation</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes. Letter-size, color digital photo.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Attached to care plan.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Recent addition to 6A documentation protocol.</td>
</tr>
</tbody>
</table>
## INPATIENT NURSING UNITS

4. Protocols throughout Patient Stay

a. Assessment Protocols

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full head-to-toe assessment</td>
<td>Daily</td>
<td>Every 8 hours</td>
<td>To all patients every 3rd Tuesday of the month</td>
<td>Every 8 hours</td>
</tr>
<tr>
<td>PUSH score</td>
<td>?</td>
<td>?</td>
<td>N/A</td>
<td>Daily</td>
</tr>
</tbody>
</table>
# INPATIENT NURSING UNITS

4. Protocols throughout Patient Stay
   
a. Assessment Protocols

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Braden score assessment</td>
<td>Daily</td>
<td>Daily</td>
<td>If &gt;17 - Once a week. If &lt; 17 - every MWF.</td>
<td>If &gt;17 - Once a week. If &lt; 17 - every MWF.</td>
</tr>
</tbody>
</table>
### INPATIENT NURSING UNITS

**Protocols throughout Patient Stay**

#### b. Documentation Protocols

<table>
<thead>
<tr>
<th>Unit</th>
<th>SICU</th>
<th>CICU</th>
<th>Internal</th>
<th>Rehab</th>
</tr>
</thead>
</table>

Daily.

Includes Braden score and ulcers. - -

Includes PUSH score to track changing status of ulcer.

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**Lee:**

SICU, CICU, Internal: Verify if "ulcers" on flowsheet = PUSH score

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Patient Education Comparison Study

UMHS had referral information and appointment scheduling links from the general categories studied, but not from the specific health topics searched. Geisinger, Dartmouth-Hitchcock, and Aurora were the same as UMHS. The rest of the sites studied did not have any referral information or appointment scheduling links for either the specific health topics or the general categories.

It was possible to search for Health Topics A to Z using a search box on the UMHS website as well as all the other sites studied except for Johns Hopkins Medicine, which did not have a resource like Health Topics A to Z.

For each health topic searched, UMHS listed and explained the symptoms, treatments, and diagnosis. Dartmouth-Hitchcock and Intermountain also explained 100% of the health topics. WebMD explained all of the health topics except the ideal weight table. Six of the websites studied explained less than 50% of the health topics studied. The average number of health topics that a health system's website explained was determined from the averaging the number of symptoms listed, symptoms explained, diagnosis explained, and treatment explained that were present for each health topic at each website. (See Figure 5.)

Figure 5. Average Number of Health Topics Explained at each Website

![Graph showing average number of health topics explained at each website]

Source: Patient Information and Education Analysis Team, Patient Education Comparison Study

Very few of the websites studied offered health topics in a language other than English. Those that did just offered Spanish as an alternative. Only the two sites that used MEDLINEplus®, Dartmouth-Hitchcock and Intermountain, had another language
The clicks study indicated that eight of the other health centers studied allowed a user to search for a doctor from a link on the main site using different search options such as specialty, location, or the provider’s last name. The Find a Doctor link at the UMHS site only takes a user to a site with a phone number to call. The user must make an additional click from this site to access a very basic physician and clinic directory search. The Find a Doctor link should not only link to the phone number, but also to the search for a provider on the same page. On that page, more search options should be added, including the following: by location, by specialty, or by the provider’s last name. (See Appendix E)

Improve on Missed Criteria
Since 83% of the studied health websites had a site map, to make the UMHS website more patient-centric, UMHS should create a site map. Some of the individual departments had their own site maps such as the Geriatrics Center and the Comprehensive Cancer Center. However, there was no site map for the entire UMHS website.

In addition to a site map for the whole site, consistent design templates and logos should be implemented on the UMHS website. Inconsistent templates and logos affected the usability of UMHS site. When on the UMHS website, a user may encounter a different template or an inconsistent logo. The different templates found throughout the departments hinder the user because each template has a different navigation bar. Of the health websites studied, 67% had a consistent design template and logo. These sites were easier for the user to navigate. A consistent logo is a constant reminder to the user's location in the website. Inconsistent templates make it difficult because users have to re-educate themselves with every new template. (See Appendix F)

UMHS should implement You Are Here indicators to help users navigate the website. Of the health sites studied, 58% had You Are Here indicators. You Are Here indicators show users the path they took to get to their current page. It allows a user to trace their steps, and move back and forth within the site easily. (See Appendix G)

Links to external sources should be added to UMHS Health Topics A to Z, starting with the most visited general health topics. Of the hospitals studied 33% had links to external sources within their Health Topics A to Z. UMHS was one of health sites that did not. Though some UMHS health topics do have links to external health sources there is no consistency in this linking. External links make Health Topics A to Z more patient-centric because the website links them directly to external sources for the topics they are interested in.

Improve Characteristics Available for Health Topics A to Z
Though the Health Topics A to Z on the UMHS website ranked well compared to the other health systems studied, there are areas for improvement. All health topics should be available in popular languages other than English. All of the top visited health topics and the four general categories should be available in Spanish. Currently, only a selection of Health Topics A to Z on the UMHS website is available in Spanish.
Summary of Recommendations

- Focus on most visited health topics
- Make *Health Topics A to Z* available in Three Most Requested Non-English Languages
- Improve Maps and *Find a Doctor* Searches
- Implement hierarchy in UMHS site map
- Implement a consistent design template and logo
- Implement use of *You Are Here* indicators
- Link to external sources within *Health Topics A to Z*
- Make basic M-Call Non-Standard Referral Procedure available to UMHS website users
- Electronically save Hits and Visits Data monthly
- Receive *Health Topics A to Z* in database form

By implementing these recommendations, the Patient Portal can be more patient centric, more competitive in the health care industry, and increase access to UMHS.

Next Step

The next step to this project will be to have the recommendations reviewed with the Patient Portal team and subject matter experts for validation and prioritization and those that impact vendor selection will be added to the Request for Proposal. The findings will be used during the project detailed web content design activities scheduled for the first and second quarter of 2005.
## Appendix B: Health Websites Used

<table>
<thead>
<tr>
<th>Health Website</th>
<th>Uniform Resource Locator</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Michigan Health System</td>
<td><a href="http://www.med.umich.edu">http://www.med.umich.edu</a></td>
</tr>
<tr>
<td>Geisinger Health Systems</td>
<td><a href="http://www.geisingerhealth.com">http://www.geisingerhealth.com</a></td>
</tr>
<tr>
<td>Dartmouth-Hitchcock Health Systems</td>
<td><a href="http://dartmouth-hitchcock.org">http://dartmouth-hitchcock.org</a></td>
</tr>
<tr>
<td>Aurora Health Care</td>
<td><a href="http://www.aurorahealthcare.org">http://www.aurorahealthcare.org</a></td>
</tr>
<tr>
<td>Henry Ford Health Systems</td>
<td><a href="http://www.henryford.com">http://www.henryford.com</a></td>
</tr>
<tr>
<td>Spectrum Health</td>
<td><a href="http://www.spectrum-health.org">http://www.spectrum-health.org</a></td>
</tr>
<tr>
<td>St. John’s Health: System</td>
<td><a href="http://www.stjohn.org">http://www.stjohn.org</a></td>
</tr>
<tr>
<td>Johns Hopkins</td>
<td><a href="http://www.hopkinsmedicine.org">http://www.hopkinsmedicine.org</a></td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td><a href="http://www.mayo">http://www.mayo</a> clinic.com</td>
</tr>
<tr>
<td>Cleveland Clinic</td>
<td><a href="http://www.clevelandclinic.org">http://www.clevelandclinic.org</a></td>
</tr>
<tr>
<td>Intermountain Health Care</td>
<td><a href="http://www.ihc.com">http://www.ihc.com</a></td>
</tr>
<tr>
<td>WebMD</td>
<td><a href="http://www.webmd.com">http://www.webmd.com</a></td>
</tr>
</tbody>
</table>
Appendix C (cont.)

Missing Criteria by Health Website

<table>
<thead>
<tr>
<th>Health Website</th>
<th>Number of Missing Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. John</td>
<td>1</td>
</tr>
<tr>
<td>Geisinger</td>
<td>2</td>
</tr>
<tr>
<td>Henry Ford</td>
<td>2</td>
</tr>
<tr>
<td>WebMD</td>
<td>2</td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td>3</td>
</tr>
<tr>
<td>Spectrum</td>
<td>3</td>
</tr>
<tr>
<td>Aurora</td>
<td>3</td>
</tr>
<tr>
<td>InterMountain</td>
<td>3</td>
</tr>
<tr>
<td>UMHS</td>
<td>5</td>
</tr>
<tr>
<td>Cleveland Clinic</td>
<td>8</td>
</tr>
<tr>
<td>Johns Hopkins</td>
<td>8</td>
</tr>
<tr>
<td>Dartmouth Hitchcock</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: Patient Information and Education Analysis Team, Patient Information Usability Study
Appendix D (cont.)

Cleveland Clinic Map

Building H - Cleveland Clinic Hospital Building
2054 Clinic Drive
Cleveland, OH 44195

The H building contains the main hospital entrance and lobby, the hospital cafeteria, and many hospital units. It is directly connected with and hard to distinguish from the F, G, and M buildings.

Source: Cleveland Clinic
http://www.clevelandclinic.org/maptour/buildings.asp?building=h
Appendix E (cont.)

Aurora Doctor Search

Find a doctor or provider

Last name: (even first few letters)  Language spoken:

Specialty: ALL (English)  Gender: ALL  Age: ALL

Facility practice at:

Zip code radius: County:

within 5 miles ALL

Only profiles with a photo Only profiles with a video bio

Source: Aurora Health Care

http://www.aurorahealthcare.org/doctors/index.asp
## Appendix H: Interviews Conducted

<table>
<thead>
<tr>
<th>Date</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/01/04</td>
<td>Sharon Redmer (Administrative Manager, UMH Operations)</td>
</tr>
<tr>
<td></td>
<td>Bonnie Turner (Manager of Interactive Marketing, PRMC)</td>
</tr>
<tr>
<td></td>
<td>Jane Severson (Administrator of Ambulatory Services)</td>
</tr>
<tr>
<td></td>
<td>Pam Cittan (Manager of Clinical Department)</td>
</tr>
<tr>
<td></td>
<td>Teresa Katlin (Project Client)</td>
</tr>
<tr>
<td>10/06/04</td>
<td>Kallie Michels (Associate Director of Planning and Marketing, PRMC)</td>
</tr>
<tr>
<td></td>
<td>Dave Bruden (Associate Director, PRMC)</td>
</tr>
<tr>
<td></td>
<td>Teresa Katlin (Project Client)</td>
</tr>
<tr>
<td>10/15/04</td>
<td>Kris Talley (Applications Programmer, PRMC)</td>
</tr>
<tr>
<td>10/21/04</td>
<td>Lynn Bryant (Program Associate, PRMC)</td>
</tr>
<tr>
<td>11/03/04</td>
<td>Michelle Harris (Program Associate, UMHS Interpreters Program)</td>
</tr>
<tr>
<td>11/12/04</td>
<td>Josie Aguirre (Assistant Director, PRMC)</td>
</tr>
<tr>
<td></td>
<td>Bonnie Turner (Manager of Interactive Marketing, PRMC)</td>
</tr>
</tbody>
</table>