Clemson University Creative Inquiry
Discharge Instructions Project

Haley Vaigneur, Kristin Vanest, Irene Vogt, Matthew Csernica, and Ashley Kay Childers

Department of Industrial Engineering
Clemson University

South Carolina Patient Safety Symposium
Care Transitions/Readmissions Breakout
Thursday, April 17, 2013
What is Creative Inquiry?

• Out-of-classroom, engaged learning experience for undergraduate students at Clemson University

• Team-based projects with a faculty mentor
  • Typically 2 – 4 semesters

• Our group developed out of our interests in health care
Industrial Engineers

• “Big picture” engineering
  • Human factors, logistics, quality, time, budgets, etc.

• Improve or design integrated, user-centered systems to optimize them (more efficient, more effective, cheaper, safer, etc.)

• Both manufacturing and service sectors
Purpose of our IE Creative Inquiry Project

- Provide hospitals with a resource to help improve the effectiveness of patient discharge instructions
  - Content
  - Usability
  - Design
<table>
<thead>
<tr>
<th>Elements Specified by Premier Partnership for Patients</th>
<th>Included in Your Form?</th>
<th>Your Hospital's Form Currently States...</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason for inpatient admission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major procedures and tests performed during inpatient stay and summary of results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principal diagnosis at discharge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current medication list</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studies pending at discharge (e.g., lab, radiological)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-hour/7-day contact information including physician for emergencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact information for obtaining results of studies pending at discharge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plans for follow-up care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary physician or other responsible for follow-up care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advance directives or surrogate decision maker (recommended but not required)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability/Design Considerations</td>
<td>Comments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organized Format</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate Spacing for Information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Written at a Low Literacy Level</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall Comments

---

General Rules for Creating/Revising Effective Discharge Summaries
Choose Words Carefully

- Avoid technical jargon\textsuperscript{1,2,3,4}
  - Design for 8\textsuperscript{th} grade literacy level\textsuperscript{1}

- Focus on critical concepts\textsuperscript{4}
  - Limit the number of messages
  - Include most frequent complications or questions

- Use positively worded statements\textsuperscript{5}

- Be precise\textsuperscript{4}
  - Use exact units
Format for Readability – Electronic Text

• Use 12-point font\(^1\)

• Left align text (do not justify)\(^1\)

• Use colored text to represent importance (e.g., DO NOT…\(^2\))

• Use various fonts to show differentiation (no more than 3)\(^5\)
Format for Readability – Electronic Layout

- Use tabs and headings to identify meaningful sections\(^1\)
  - Headings one font size larger

- Use borders to define regions and improve attractiveness\(^1,2\)

- Section labels should be directly above the form element and left aligned\(^5\)

- Use 1-inch margins\(^1\)
Format for Usability – Handwritten Text

• Leave adequate space for horizontal writing\(^4\)
  • i.e., 2+ inches for a “name” field

• Use ¼ inch space vertically for writing\(^6\)
Other General Rules

• Use pictures when possible\textsuperscript{4}
  • Improves comprehension and recall
  • Helps explain new of difficult concepts to patients

• Leave white space\textsuperscript{4}

• Document should flow from top to bottom, left to right\textsuperscript{1}
  • Include patient name on every page\textsuperscript{3}

• Use page numbers\textsuperscript{1}
Common Trends
Most Included Premier/PfP Requirements

- Plans for Follow Up Care
- Current Medication List
- Advance directives
- Principle Diagnosis at Discharge

Frequency
Most Commonly Omitted Premier/PfP Statements

1. Studies pending at discharge and phone number to obtain test results

2. Contact information (24/7) including physician for emergencies

3. Major procedures and tests performed during inpatient stay and summary of results
Most Included Non-Requirements

- Symptoms to Report to Physician
- Signature of Patient
- Activity Level
- Patient Acknowledges he/she Understands Information
- Smoking Cessation
- Diet

Frequency
Most Included Non-Requirements (continued)

- Wound Care Instructions
- Signature of Nurse/Doctor
- Vaccination Status
- When to Return to Work/School

Frequency
## Overall Comparisons

### Statistical Analysis

<table>
<thead>
<tr>
<th></th>
<th>Number of statements per form</th>
<th>Number of pages per discharge instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of statements per form</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>32.14</td>
<td>2.14</td>
</tr>
<tr>
<td>Median</td>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>7.08</td>
<td>2.19</td>
</tr>
<tr>
<td>Range</td>
<td>27-47</td>
<td>1-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For more information

- Please email our advisor, Ashley Kay Childers
  - childer@clemson.edu

- She removes any information that identifies the hospital and then shares de-identified discharge instructions with our team
Acknowledgements

Laura Manhard and Shannon Weill
Department of Industrial Engineering
Clemson University
References


Thank you!