UNIVERSITY OF MICHIGAN HEALTH SYSTEM  
Program and Operations Analysis

Discharge Navigator Efficacy in Reducing Nursing Workload

Final Report (Draft)

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EXECUTIVE SUMMARY

Background
Discharge Navigator (DCN) is a web-based data collection system developed by Dr. J. Michael Kramer of the University of Michigan Health System developed to standardize the patient discharge process by leading patient care teams through all data collecting steps. In the fall of 2003, DCN was implemented in Internal Medicine units 6B and 6C at the University Hospital in Ann Arbor. Hospital administration is interested in justifying the further implementation of this technology by quantitatively determining if DCN has measurable benefits over the paper discharge process. The Institutional Review Board (IRB) granted permission for a study of DCN, with expectations that the findings will be made available to interested parties outside of the University of Michigan Health System. The Discharge Navigator Study Team (DCNST), composed of three IOE 481 Senior Design students, was assigned to collect current time/motion data for nursing discharge tasks to compare to similar data collected in fall of 2001, and analyze patient and nurse satisfaction survey data in order to determine if benefits exist through the use of DCN.

Method
Because of IRB-approval of the study, participant consent was obtained from all nurses who agreed to being observed by a member of the DCNST. During the consent gathering phase, a nursing workload flowchart outlining the general tasks involved in a patient discharge from units 6B and 6C was developed by the DCNST after two interviews were conducted with clinical nursing staff from the units. Subsequently, a time/motion study was performed regarding the activities on the flowchart, and according to the data collection sheet provided to us by our client, Jennifer Dammeyer, Clinical Nurse Specialist, UH-6C. Additionally, nurse satisfaction surveys were collected from nurses on both units and compared to similar surveys that were distributed in 2003. Finally, present patient satisfaction with the discharge process was compared with satisfaction ratings gathered in 2004.

Findings
To validate that the discharges observed from February 7, 2005 through March 13, 2005 are representative of the gross discharge volume, several measures were compared including discharges by month, time of day, and medical service. According to these comparisons, the study observations are, indeed, representative of all discharges from units 6B and 6C.

From 35 observed discharges, and when accounting for pace rating and omitting unrelated delays, the DCNST has concluded that discharges currently require an average of 29 min, standard deviation 18 min, with the largest portions of time during discharges spent on:

- DCN paperwork: average 11 min, standard deviation 4 min
- Educating patient at bedside: average 11 min, standard deviation 5 min
- Physician clarification: average 7 min, standard deviation 6 minutes, occurred in 31% of observations
These preliminary findings can be compared to the 2001 study, which found that, before the implementation of DCN, discharges required an average of 30 min with the largest portions of time spent on:

- Nursing paperwork: average 12 min, standard deviation 6 min
- Patient education: average 7 min, standard deviation 6 min
- Physician clarification: average 6 min, occurred in 40% of observations

Comparing results of the 2001 study with our preliminary findings suggests that DCN has favorably decreased paperwork time and increased patient education time, and decreased the percent of discharges in which doctor clarification is needed.

According to surveys, patient satisfaction did not significantly change over the year of DCN implementation. While this data is rather inconclusive, the similar ratings do tell us that DCN has not decreased patient satisfaction with the information and materials provided upon their discharge. Nurse satisfaction surveys revealed that nurses generally find DCN to be helpful and a valuable contribution to making nursing workload more efficient. The most suggestion for improvement from nurses was that more DCN diagnosis templates were necessary to maximize efficiency.

**Recommendations**

Due to a favorable increase in patient education time, decrease in time associated with discharge paperwork, and generally favorable patient and nurse satisfaction, the DCNST confirms the hospital initiative to further implement and improve DCN.

The DCNST recommends that, if DCN is to be continually rolled-out to additional hospital units, a more intuitive graphical user interface should be developed. The DCNST received comments from both nurses and physicians regarding the unfriendly appearance of and procession through some DCN steps. Additionally, the workload impact of DCN should be examined from the perspective of stakeholders in the patient healthcare team beyond nursing staff.
INTRODUCTION

Discharge Navigator (DCN) is a virtual workspace developed by Dr. J. Michael Kramer of the University of Michigan Health System, and in the fall of 2003 was implemented in Internal Medicine units 6B and 6C at the University Hospital in Ann Arbor. This web-based data collection and data cleaning system was developed to standardize the patient discharge process by leading patient care teams through all data collecting steps and generating reports for hospital, patient, and referring physician use.

Hospital administration has initiated the implementation of this technology in hospital units beyond 6B and 6C. To justify this resource investment, the Discharge Navigator Study Team (DCNST) was asked to quantitatively determine if DCN has measurable benefits over the paper discharge process.

To provide this information, the DCNST has measured the post-DCN-implementation nurse workload associated with the patient discharge process. After completing time and motion data collection, the DCNST made time related comparisons to discharge tasks before and after the implementation. Using these quantitative results, the DCNST developed improvements to and analyzed the further implementation of DCN. Due to a favorable increase in patient education time, and decrease in time associated with discharge paperwork, the DCNST confirms the hospital initiative to further implement and improve DCN. This report presents the history of DCN, details behind the methodology and several phases of which this study was composed, resulting data, and the DCNST’s recommendations to the University Hospital administration.

Project Goals and Objectives

In the study of DCN effectiveness in units 6B and 6C, the DCNST attempted to, and did successfully, achieve the following:

- Collect and analyze quantitative data for time and motion involved in nursing discharge tasks
- Compare pre- and post-DCN-implementation data to determine if DCN has altered the nursing workload and discharge tasks
- Determine from a nursing perspective if DCN should be implemented into hospital units beyond 6B and 6C to improve hospital-wide patient care

Background

Before the implementation of Discharge Navigator (DCN), the hospital community raised concerns regarding the frequency of inaccurate patient data acquisition, inconsistent means of discharge reporting, redundant patient care team activities, and unreliable information distribution to primary care physicians. Dr. J. Michael Kramer, Physician Lead for Clinical Systems Integration at the University of Michigan, wished to address the problems presented by the lack of discharge process standardization. As a result, Dr. Kramer developed DCN, an automated discharge component of the UMHS online medical record system, CareWeb.

Many compounding issues have increased the importance and usefulness of systems like DCN. Since the early 1990’s, a national shortage of trained registered nurses has been a documented healthcare fact. Hospitals across the United States demand high efficiency from their nursing staff, but with the large volume of paperwork required of nurses, particularly related to the
patient discharge process, the DCNST client asserts that nurses often find themselves sacrificing patient education time. The DCNST client hypothesizes that DCN will significantly decrease the time spent by nursing staff completing paperwork, transcribing physician reports, requesting physician and pharmacy follow-ups, and interpreting medical terminology into non-technical language. Consequently, DCN will positively affect patient safety and satisfaction during the discharge process.

In fall 2001, before DCN implementation, an Industrial and Operations Engineering (IOE) 481 student group assessed nursing workload attributed to the discharge process. They found that discharges averaged 77.2 minutes in length, with 41% of time spent on completing and explaining nursing discharge paperwork. Due to handwritten physician discharges, physician clarification accounted for 6% of nursing discharge time.

In fall 2004, after DCN implementation, a subsequent IOE 481 student group surveyed nurse satisfaction with the DCN system. Their study results were inconclusive.

The winter 2005 DCNST collected quantitative data and surveyed patients and nurses February 7, 2005 through March 31, 2005. The DCNST then compared this data with results from the fall 2001 study to determine if DCN has changed nursing workload and patient care. The DCNST used this comparison to make recommendations about further implementation of DCN. The DCNST has concluded that, with further graphical user interface enhancements and an investigation into the workload implications from the perspective of other stakeholders in the patient healthcare team, DCN will serve as a useful tool in enhancing patient safety and workload efficiency.

References to articles regarding the history of DCN, including the 2001 IOE 481 final report, can be found in Appendix A.

PROJECT PLAN
To develop its quantitative recommendations, the Discharge Navigator Study Team (DCNST) conducted a study of DCN in units 6B and 6C. Involved parties include day and evening shift charge nurses, registered nurses, student nurses, clerks, and patients. The department under study consideration is limited to Internal Medicine.

Key Issues
As originally proposed, the following key issues are being addressed:
- Non-standardized discharge process is resulting in potential report inaccuracies
- Nationwide nursing shortage is leading to an increase in workload for nurses
- Patient education time is potentially being sacrificed for discharge paperwork
- Non-value added tasks such as transcription of physician reports by nurses are inefficient

Scope
Studying the effects of Discharge Navigator (DCN) on the University of Michigan Hospital System could be an extremely laborious task, thus parameters have been set to ensure that the maximum possible quality and quantity of data is collected and analyzed. These parameters consist of project key dates and team hours spent in completing this task.
Over the course of the project each team member contributed approximately 150 project hours, for a combined effort of between 450-500 hours. A Gantt chart, showing the distribution of hours and tasks by week is given in Appendix B.

As originally planned, this project studies only the in-patient discharges on units 6B and 6C that use Discharge Navigator. Only non-surgery, non-expired patients discharged using Discharge Navigator during the 5-week study period are being observed. The time study data collection begins when the clerk notifies the DCNST that discharge paperwork has been received and the nurse arrives at the clerk station to begin the discharge. The time study ends when the nurse takes down the flow board, a patient status chart located outside the patient’s room. Any discharges outside of units 6B and 6C are excluded from this study. Also excluded are any tasks of the nurses and clerks not associated with the discharge process using DCN, as well as reasons for delay. Patient surveys from months after fall 2004 will not be included.

Method
The project was conducted in five phases, as follows:
1. Study Participant Consent
2. Nurse Interviews
3. Data Collection and Analysis
4. Nurse and Patient Surveys
5. Findings and Recommendations

Phase 1: Study Participant Consent
In phase one, we informed and obtained consent from study participants. We first sent emails to the clerks and nurses, notifying them of their involvement in the study. Nurses were given consent forms attached to the emails and placed in their mailboxes. We also posted the flyers, attached in Appendix B, in common areas in units 6B and 6C. These flyers were created by our client, the Clinical Nurse Specialist for Unit 6C. We also spoke at nurse report meetings on January 27, 2005 and February 1, 2005 to introduce ourselves and answer questions.

We expected that nurses would return signed consent forms to the mailbox of Jennifer Dammeyer, Clinical Nurse Specialist, UH-6C; or to the mailbox of Jeremy Curtis, Clinical Nurse Specialist, UH-6B. However, this was not the case. As of February 7, 2005, when data collection began, only three consent forms had been received. The majority of consents were received during data collection, by DCNST members personally asking nurses with impending discharges if they would like to participate in the study and then giving them consent forms to sign. A total of 33 nurses agreed to participate. We kept a record which nurses had and had not consented.

Phase 2: Nurse Interviews
In phase two, we interviewed two nursing staff members familiar with the nursing discharge process. The first was Diane Willis, Educational Nurse Coordinator, UH-6B, and the second was Veronica Downer, Clinical Nurse III, UH-6C. We asked them questions about the discharge process and the steps involved. This information, along with our observations in Phase 3, helped us develop a flowchart of the process, attached in Appendix C.
Phase 3: Time Data Collection and Analysis

In phase three, we collected time and motion data by observing nurse discharge tasks. We first collected data in pairs to make sure our methods were standardized across all Discharge Navigator Study Team (DCNST) members. We then moved to individual data collection, with a total of 24 hours of data collection time per week for five weeks. Each DCNST member is present in the units for two four-hour shifts per week, at hours distributed over each day to include those times discharges are most likely to occur, predicted using 2003-2004 discharge frequency data seen in Appendix D.

Clerks paged the DCNST member present when discharge paperwork was received. Monitoring of the time needed to complete the discharge and the related activities began immediately. We recorded data for each discharge on a standard form, attached in Appendix E. This form was given to us by our client, the Clinical Nurse Specialist for Unit 6C.

A digital clock was used by the DCNST member to record the time each sub-task started and ended. The DCNST member also noted any delays or interruptions and their start and end times, as well as pace rating each task, interruption, or delay. Pace rating involved rating the speed with which the task was completed with a value of 0.90, 0.95, 1.00, 1.05, or 1.10. Higher ratings corresponded to unusually fast task completion times and lower ratings corresponded to unusually slow times. For example, typing and writing quickly may have resulted in a pace rating of 1.10 for the task of completing Discharge Navigator Paperwork whereas many pauses in typing or slow, thoughtful writing may have resulted in a pace rating of 0.90. Observed task times were multiplied by their pace ratings and then added to determine average times.

A total of 35 discharges were observed. Summaries and analysis of data are given below under Results.

Phase 4: Nurse and Patient Surveys

In phase four, which began February 27, 2005, we distributed surveys to the participating nurses and collect and analyzed their responses. This survey, attached in Appendix F, asked about the nurses’ use of and satisfaction with the DCN system, as well as their suggestions for its improvement. This survey was given to us by our client, the Clinical Nurse Specialist for Unit 6C.

We will also examine the results of patient surveys developed by the units, attached in Appendix G, from fall of 2004 and compare them to survey results from before the implementation of DCN. Shifts in the data will allow us to see if DCN has changed patient satisfaction with the discharge process. Our client will provide patient survey data from fall 2004 and from a corresponding period before DCN implementation.

Phase 5: Findings and Recommendations

In phase five we are reporting our findings and recommendations. This report identifies and quantifies any changes DCN has made to the discharge process, and discusses areas where improvement is needed. We are delivering a final presentation as well as this written report the week of April 18, 2005.
RESULTS AND RECOMMENDATIONS

Time Study
The error in the time study figures, based on sample size N=35 discharges, is 1/(N)^0.5 = 16.9%. This sample was first compared to gross discharge volumes to determine if a representative sample was collected, then analyzed to and compared with results of the 2001 study.

Representative sample
To validate that the discharges observed from February 7, 2005 through March 13, 2005 are representative of the gross discharges that occurred during this study period several measures were compared. Further support of the quality of the data from this study in representing the overall discharge process can be found in Appendix F.

All observed discharges occurred in the months of February and March, 2005. As can be seen in Figure 1, gross discharge volumes in these months were consistent with those of all months from the previous two years (1/03-3/05). This validates that the 5-week time period of the Discharge Navigator Study Team (DCNST) study was representative of any 5-week period throughout the year.

From February 7, 2005 through March 13, 2005, 426 combined discharges occurred. The DCNST observed 35 discharges during this time period which represents 8.2% of the gross discharge volume.

Figure 2 below shows gross discharge volumes versus time of day and observed discharges versus time of day. Both figures display a normal bell-shaped curve.
Gross Discharge Volumes by Time of Day

Observed Discharge Volumes by Time of Day

As can be seen, both distributions peak at 14:00. 95% of the gross discharge volume occurred between 11:00 and 21:00. 100% of the observed discharges fall within this range. This indicates that observed discharges are representative based on time of day.

Patients are separated into various services, depending on which team of doctors is caring for them. DCNST observed discharges from 11 of the 18 Internal Medicine services used on units 6B and 6C during the study period, February 7, 2005 through March 13, 2005. Figure 3 shows gross and observed discharge volumes by service for the most frequently occurring 9 services.

The services with the highest total number of discharges, MGI and MP, also comprise the largest number of observed discharges in the study. Thus, DCNST’s data is also representative of the occurred discharges based on the patient’s service.

Total discharge time

According to the study conducted in 2001, discharges took an average of 30 minutes, without delays and interruptions. This total includes all discharge-related tasks and represents the overall
picture of how long it would take a nurse to discharge a patient from start to finish without being interrupted or encountering any unusual delays.

Our observations resulted in an average total discharge time of 29 minutes, standard deviation 18 minutes. This total includes all discharge-related tasks, identical in purpose to those observed in the 2001 study. Thus, total nursing discharge time has decreased by 1 minute using the DCN system.

**Time spent doing paperwork**

According to the study conducted in 2001, nurses spent an average of 12 minutes, standard deviation 6 minutes, doing paperwork. This time included “reading the doctor’s order, punching the patient’s card, and filling out the nursing discharge summary” (2001, p. 13).

Our observations resulted in an average time of 11 minutes, standard deviation 4 minutes.¹ This time included reading the discharge order, typing and printing the Patient Education Summary from DCN, and making handwritten notes. These steps are identical in purpose to those performed in 2001, though they have been altered slightly due to the implementation of DCN. Thus, nursing paperwork time has decreased by 1 minute using the DCN system.

**Time spent at bedside**

According to the study conducted in 2001, nurses spent an average of 7 minutes, standard deviation 6 minutes, at the patient’s bedside doing discharge-related tasks. This time included “explaining prescriptions, recommended diet, care needs, the diagnosis, future appointments, activities to the patient, and the time for the patient or primary caregiver to sign the paperwork” (2001, p. 14).

Our observations resulted in an average time of 11 minutes, standard deviation 5 minutes. This time included time spent in the patient room during the discharge, assumed to be spent doing patient education and paperwork explanation. These steps are identical in purpose to those performed in 2001. Thus, nursing time spent with the patient has increased by 4 minutes using the DCN system. We hypothesize that this is due to the thoroughness of the Patient Education Summary provided by DCN.

**Time spent clarifying order**

According to the study conducted in 2001, nurses spent an average of 6 minutes, standard deviation 3 minutes clarifying doctor instructions. This occurred in 40% of observations.

Our observations resulted in an average time of 7 minutes, standard deviation 6 minutes. This occurred in 31% of our observations. Thus, time spent clarifying an order has increased by 1 minute, but the percent of time clarification has been needed has decreased by 9%. We associate these trends with the fact that DCN has no effect on methods of nurse-doctor communication.

¹ In two of our 35 observations, the nurse completed a Nursing Discharge Summary form upon completion of the discharge. We have been told that these forms are no longer required, but we included them in the DCN Paperwork time given above because they are apparently still being done by some nurses. Without these times included, paperwork took an average of 10 minutes, standard deviation 4 minutes.
during the discharge, but increases the amount and quality of information provided at the start of the discharge.

**Satisfaction Surveys**

*Patient satisfaction*

To gain a broad perspective of a patient’s experience throughout the entirety of their stay at the University Hospital, all admitted patients are asked to complete a patient satisfaction survey and submit it upon their departure of the hospital. This satisfaction card also serves as a useful administrative tool, notifying the nursing staff when a room is ready for tear down and preparation for the next patient.

Monthly patient satisfaction data is compiled and distributed to interested parties by hospital staff. A sample of the most recent patient satisfaction card from unit 6C can be found in Appendix G, however questions vary by year, thus, this card is not necessarily representative of the card that was distributed during the time span under analysis. The sample card serves to demonstrate how patients are to respond to the questions asked. In particular, patients rank their assessment of the question from one to five, one representing very poor and five representing very good.

Due to limited availability of patient survey data, the DCNST analyzed surveys of patients treated in unit 6C in February of 2004 and February of 2005. Additionally, only the three items directly pertaining to discharge quality were considered. These items include:

- Rate the usefulness of the discharge paperwork
- Rate the manner in which the medications were presented in your paperwork
- Evaluate the overall discharge process

Charts depicting patient responses to the above questions can be found in Appendix H.

As can be seen in Table 1, average satisfaction scores for these three questions did not significantly change between 2004 and 2005, falling only slightly from 4.7, 4.6, and 4.6 in 2004 to 4.5, 4.5, and 4.5 for questions 1, 2, and 3, respectively. It is notable, however, that despite the changes caused by DCN, patients are still pleased with the usefulness of discharge paperwork, medication information, and the overall discharge process. Because discharge satisfaction was already relatively high, we can see that patients either with or without previous discharge experience would rate this aspect of their stay between good and very good.

Because the DCNST is only analyzing patient satisfaction surveys from one month over two years on a single hospital unit on which Discharge Navigator has been implemented, the results should not be taken as conclusive. Many factors could have contributed to the increase or decrease of patient satisfaction with a particular element of the discharge process. Such examples might be returning patients who are familiar with the tasks involved in a discharge, the level of experience and availability of time of the nursing staff, or a patient’s inability to separate satisfaction or dissatisfaction with their overall hospital visit from the discharge alone.
Table 1. Patient Satisfaction in February of 2004 and 2005

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2004</td>
<td>2005</td>
</tr>
<tr>
<td><strong>Usefulness of the Discharge Paperwork</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5=Very Good</td>
<td>72.73%</td>
<td>60.94%</td>
</tr>
<tr>
<td>4=Good</td>
<td>16.36%</td>
<td>29.69%</td>
</tr>
<tr>
<td>3=Fair</td>
<td>9.09%</td>
<td>7.81%</td>
</tr>
<tr>
<td>2=Poor</td>
<td>1.82%</td>
<td>0.00%</td>
</tr>
<tr>
<td>1=Very Poor</td>
<td>0.00%</td>
<td>1.56%</td>
</tr>
<tr>
<td><strong>Average score</strong></td>
<td>4.6</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Manner in which Medications Presented in Paperwork</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5=Very Good</td>
<td>83.64%</td>
<td>62.50%</td>
</tr>
<tr>
<td>4=Good</td>
<td>5.45%</td>
<td>31.25%</td>
</tr>
<tr>
<td>3=Fair</td>
<td>9.09%</td>
<td>1.56%</td>
</tr>
<tr>
<td>2=Poor</td>
<td>1.82%</td>
<td>3.13%</td>
</tr>
<tr>
<td>1=Very Poor</td>
<td>0.00%</td>
<td>1.56%</td>
</tr>
<tr>
<td><strong>Average score</strong></td>
<td>4.7</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Overall Discharge Process</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5=Very Good</td>
<td>76.92%</td>
<td>67.19%</td>
</tr>
<tr>
<td>4=Good</td>
<td>9.62%</td>
<td>25.00%</td>
</tr>
<tr>
<td>3=Fair</td>
<td>7.69%</td>
<td>3.13%</td>
</tr>
<tr>
<td>2=Poor</td>
<td>3.85%</td>
<td>1.56%</td>
</tr>
<tr>
<td>1=Very Poor</td>
<td>1.92%</td>
<td>3.13%</td>
</tr>
<tr>
<td><strong>Average score</strong></td>
<td>4.6</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Nurse satisfaction**

Based on the five nurse survey responses\(^2\) received thus far in DCNST's study, 60% of nurses believe the current functions of DCN are sufficient for hospital-wide rollout and 20% of the nurse responses say that DCN is not ready for rollout and 20% are undecided.

Nurses were asked about the top functions needed to enhance DCN to make it more usable. Their responses included, from most frequent to least:

- "More variety of templates to choose from"
- "Improved training—in person"
- "More disciplines to document on the Discharge Summary"
- "More information in each template"

These responses are consistent with comments received from several nurses during the study, discussed under Observations below.

\(^2\) A copy of the nurse survey is provided in Appendix I.

13
When nurses encounter problems with DCN they most often “Ask other nurses for help” or “Try again until it works.” Based on the surveys the nurses usually do not “Use the help button” and never “Ask the clerk секретaries for help.” All respondents reported regular use of a PC, the Internet, and slightly less use of Careweb. Thus, the nurses are familiar with computers and the internet, which should limit their learning curve for DCN.

Discharge Navigator was used less than one time per week by 40% of the respondents, one to two times per week by 40% of respondents and three to four times per week by 20% of respondents.

Important comments included one regarding DCN’s positive impact on patient care. It was noted that “not enough info [is] provided on the nursing aspect for diagnosis template.”

Observations
Comments from nurses were recorded during 12 of the 35 observed discharges. Several comments were made regarding the positive affects DCN has had on the discharge process. DCN:

- “Eliminates transcription of doctors’ orders”
- “Makes discharges easier” and is “faster when done correctly”
- Allowing the printout of the webpage for a complicated diagnosis is helpful

The nurses also had critical feedback that could be used to improve DCN. The most common comment was the need for more templates and available diagnoses. Also:
- The “illogical order of the buttons” within the DCN interface can be “confusing, causing overlapping steps and should be labeled in the order that they need to be pushed.”
- The limit of 4,000 characters was also seen to be a problem when the doctor has entered too much information and the nurse must try to condense it before adding his/her part.
- Problems were also noted by nurses when “doctors complete the wrong section” and the “histories [of patients] may be inaccurate.”

EXPECTED IMPACT
This study provides the hospital administration with quantitative data about the impact of Discharge Navigator (DCN). It includes recommendations for improvement and further implementation of the system, as well as the data to support these recommendations. We expect that this study will have both short term and long term implications for the University Hospital discharge process.

Short Term:
- Generate quantitative data for time and motion involved patient discharge tasks
- Determine if DCN has altered nursing workload and discharge tasks
- Recommend to implement or not to implement DCN into hospital units beyond 6B and 6C

Long Term:
- Improve satisfaction of nurses and patients with the discharge process
- Improve efficiency by decreasing the amount of time nurses need to spend discharging patients
• Improve quality of patient care by increasing the accuracy and completeness of discharge information
• Increase throughput of patients

SUPPORT PROVIDED BY OPERATING ENTITIES
The project coordinator provided the Discharge Navigator Study Team (DCNST) with guidance and resources throughout this project. Specifically, the coordinator provided a copy of the fall 2001 study, a spreadsheet of the number of discharges by day and by hour in the years 2003 and 2004, access to copy machines and computers, and a clipboard, pager, and digital clock to aid in data collection. The project coordinator gave feedback on data collection and assisted in evaluating the project’s progress. She also helped us maintain a positive relationship with our client.

The client acted as an intermediary between the DCNST and the nursing staff on units 6B and 6C in order to gain their cooperation and understanding of the study and objectives. She provided the necessary time sheets and methodology that were followed for this study to be in accordance with those approved by the Institutional Review Board (IRB). Contact information and data relevant to the project were also provided by the client. The client specifically outlined her expectations of the DCNST.
APPENDICES

Appendix A: Bibliography


Appendix B: Study Information Flyer

TIME/MOTION RESEARCH STUDY
TO BE DONE ON 6B & 6C
WITH NURSE PARTICIPANTS

PURPOSE:
The purpose of this time/motion study is to observe and measure the time spent on the discharge paperwork and the patient education portions of a discharge related to nursing. This will be done from when the researcher is notified of an impending discharge until the nurse has completed the discharge paperwork.

DATA COLLECTORS:
The data collectors will be students from the winter 2005 Industrial Operations and Engineering class 481. Data collectors will be on the units from 9am to 8 pm any day of the week, as their class schedules will allow, during the winter 2005 semester. The clerk is instructed to page the researchers to notify them of an impending discharge.

PROCESS:
The data collection process will begin when the data collector is notified and will be stopped if there is a change in the patient’s condition and the patient is no longer going to be discharged from the hospital. Data collection will be completed on each discharge process before the researcher begins to collect data on another discharge.

PARTICIPANTS:
All nurses on 6B & 6C will have the opportunity to participate by reading and signing the consent form. If the nurse has a patient to be discharged while the data collectors are available then the nurse may be observed. Participation is optional and the management teams will not be made aware of who consents for participation and who does not. The data collectors will confirm consent before proceeding.

Please contact the researcher listed below to:

- Obtain more information about the study
- Ask a question about the study procedures or treatments
- Leave the study before it is finished
- Express a concern about the study

Principal Investigator: Jennifer A. Dammeyer, MSN, RN
Mailing Address: 6C University of Michigan Hospital
Telephone: (734) 936-4719

You may also express a concern about a study by contacting the Institutional Review Board listed below, or by calling the University of Michigan Compliance Help Line at 1-888-296-2481.

University of Michigan Medical School Institutional Review Board (IRBMED)
4673 Kresge I
200 Zina Pitcher Place
Ann Arbor, MI 48109-0570
Telephone: 734-763-4768
Fax: 734-615-1622
e-mail: irbmed@umich.edu
Appendix C: Nursing Consent Form

University of Michigan
Consent To Be Part Of A Research Study

Information About This form
This form gives you important information about the study. It describes the purpose of the study, and the risks and possible benefits of participating in the study. Please take time to review this information carefully. After you have finished, you should talk to the researchers about the study and ask them any questions you have. If you decide to take part in the study, you will be asked to sign this form. Before you sign this form, be sure you understand what the study is about, including the risks and possible benefits to you.

1. General Information About This Study And the Researchers
1.1 Study title: Analysis of Discharge-Related Nursing Workload: Post-Discharge Navigator Implementation
1.2 Company or agency sponsoring the study: University of Michigan, Nursing Unit 6C

Names, degrees, and affiliations of the researchers conducting the study:

Dammeyer, Jennifer MSN, RN, Clinical Nurse Specialist 6C University of Michigan

Cprek, Diana, Registered Nurse, Bachelor in Business Administration, University of Michigan, Nurse Manager, 6C

Kramer, J. Micheal, MD, MBA
MCIT Department, Physician Lead for Clinical Systems Integration
Clinical Assistant Professor, General Internal Medicine and Pediatrics
University of Michigan Health Systems

Lapinski, Jacquelynn, Master of Science in Engineering, University of Michigan, Management Engineer, Program and Operation Analysis

Downer, Veronica, RN, Clinical Nurse III, 6C, University of Michigan

2. PURPOSE OF THIS STUDY

Study purpose:
We need your help with a research study tracking the amount of time it takes to complete the discharge paperwork when a patient has been discharged to home/extended care facility. We are trying to determine which of two methods better improves the quality and usefulness of discharge paperwork. The two interventions are (1) use of the Discharge Navigator, a computer-based information management system generating a discharge summary (2) use of the University of Michigan Hospitals' traditional handwritten discharge. The potential impact of this study is to profoundly change nurses discharge documentation and the education of patients during hospitalization.

Your participation in this study is completely voluntary. By agreeing to participate, you will be asked to be observed during your normal discharge process.

3. Information About STUDY participants (SUBJECTS)
3.1 Who can take part in this study? Nurses who work on 6B and 6C and have a patient that is being discharge from the hospital.

3.2 How many people (subjects) are expected to take part in this study?
30 – 60 nurses are expected to participate.
Half of the nurses from 6B and half from 6C.

4. Information about study procedures
4.1 What exactly will be done to me in this study? What kinds of research procedures will I receive if I agree to take part in this study?
Nursing activities will be observed from when the discharge order is written until the nurse has completed the discharge paperwork.

How much of my time will be needed to take part in this study? When will my participation in the study be over?
No additional time, other than worked related events. You may be observed with another discharge process at another time until the study is complete.
5. Information about RISKS and benefits
5.1 What risks will I face by taking part in the study? What will the researchers do to protect me against these risks? The known or expected risks are: Awareness of being observed performing nursing activities.

5.2 What happens if I get hurt, become sick, or have other problems as a result of this research?
N/A

5.3 If I take part in this study, can I also participate in other studies?
Yes

5.4 How could I benefit if I take part in this study? How could others benefit?
You may not receive any personal benefits from being in this study. The benefit will be improved patient satisfaction with discharge time, education, and paperwork. Improved nursing job satisfaction from reduced time completing paperwork and more time spent at the bedside.

6. Other options
If I decide not to take part in this study, what other options do I have?
Continue work as usual.

7. ENDING THE STUDY

7.1 If I want to stop participating in the study, what should I do?
You are free to leave the study at any time. If you leave the study before it is finished, there will be no penalty to you, and you will not lose any benefits to which you may otherwise be entitled. If you choose to tell the researchers why you are leaving the study, your reasons for leaving may be kept as part of the study record. If you decide to leave the study before it is finished, please notify one of the persons listed in Section 10 “Contact Information” (below).

7.2 Could the researchers take me out of the study even if I want to continue to participate?
Yes. There are many reasons why the researchers may need to end your participation in the study. Some examples are:
The researcher believes that it is not in your best interest to stay in the study.
The discharge is cancelled.
The study is suspended or canceled.

8. Financial Information
Will taking part in this study cost me anything?
No
Will I be paid or given anything for taking part in this study?
No

8.3 Who could profit or financially benefit from the study results?
N/A

9. Confidentiality of subject records
University of Michigan policies require that private information about you be protected. This is especially true for your personal information. On the other hand, sometimes the law allows or requires others to see your information. The information given below describes how your privacy and the confidentiality of your research records will be protected in this study.

9.1 How will the researchers protect my privacy?
Research records will be kept in a separate research file that does not include nurse names, registration numbers, or other information that is likely to allow someone other than the researchers to link the information to you. Nurse managers will not have access to who has participated and who has declined. The data distributed will not have nurse identifiers.

9.2 What information about me could be seen by the researchers or by other people? Why? Who might see it?
The data will be seen by the student researchers and the Discharge Navigator Stakeholder Team. The Principle Investigator in this study is not a manager.
9.3 What happens to information about me after the study is over or if I cancel my permission?
As long as the data information is kept within the University of Michigan Health System, it is protected by
the Health System's privacy policies.

10. Contact Information
10.1 Who can I contact about this study?
Please contact the researchers listed below to:
Obtain more information about the study
Ask a question about the study procedures or treatments
Leave the study before it is finished
Express a concern about the study

Principal Investigator: Jennifer A. Dammeyer, MSN, RN
Mailing Address: 6C University of Michigan Hospital
Telephone: (734) 936-4719

You may also express a concern about a study by contacting the Institutional Review Board listed below,
or by calling the University of Michigan Compliance Help Line at 1-888-296-2481.

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4673 Kresge I
200 Zina Pitcher Place
Ann Arbor, MI 48109-0570
Telephone: 734-763-4768
Fax: 734-615-1622
e-mail: irbmed@umich.edu

If you are concerned about a possible violation of your privacy, contact the University of Michigan Health
System Privacy Officer at 1-888-296-2481.

When you call or write about a concern, please provide as much information as possible, including the
name of the researcher, the IRBMED number (at the top of this form), and details about the problem.
This will help University officials to look into your concern. When reporting a concern, you do not have to
give your name unless you want to.

11. Record of Information provided
11.1 What documents will be given to me?

Your signature in the next section means that you have received copies of all of the following documents:
This "Consent to be Part of a Research Study" document.

12. SIGNATURES

Research Subject:
I understand the information printed on this form. I have discussed this study, its risks and potential benefits, and
my other choices with the IOE student researcher. Questions so far have been answered. I understand that if I have
more questions or concerns about the study or my participation as a research subject, I may contact one of the people
listed in Section 10 (above). I understand that I will receive a copy of this form at the time I sign it and later upon
request. I understand that if my ability to consent for myself changes, either I or my legal representative may be
asked to re-consent prior to my continued participation in this study.

(Please mark with x)
I wish to participate in this research study_____.
I do not wish to participate in this research study ______.

Signature of Subject:_____________________________________ Date: ____________________

Name (Print legal name): ______

Patient ID:______
Principal Investigator (or Designee):
I have given this research subject (or his/her legally authorized representative, if applicable) information about this study that I believe is accurate and complete. The subject has indicated that he or she understands the nature of the study and the risks and benefits of participating.

Name: ____________________________  Title: _______________________________________

Signature: ____________________________  Date of Signature: ____________________________
Appendix D: Discharge Process Flowchart

Patient Discharge Process on Hospital Units 6B and 6C

<table>
<thead>
<tr>
<th>Clerk</th>
<th>Nurse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clerk Receives Discharge (DC) Papers from Patient's Attending Physician</td>
<td>Nurse Busy?</td>
</tr>
<tr>
<td>Clerk Pages Patient's Nurse Regarding Discharge</td>
<td>14 min, 26.57%</td>
</tr>
<tr>
<td>Nurse Reports to Clerk Station</td>
<td>No</td>
</tr>
<tr>
<td>Nurse Reads DC</td>
<td>2 min</td>
</tr>
<tr>
<td>Homecare Supplies Necessary?</td>
<td>Yes</td>
</tr>
<tr>
<td>Nurse Completes Discharge Navigator (DN) Paperwork</td>
<td>2 min, 2.86%</td>
</tr>
<tr>
<td>Physician Clarification Necessary?</td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>9 min, 14.29%</td>
</tr>
<tr>
<td>Yes</td>
<td>9 min, 31.43%</td>
</tr>
<tr>
<td>Nurse Prints and Organizes DN Paperwork</td>
<td>Nurse Educates Patient/Family/ Caregiver</td>
</tr>
<tr>
<td>Pharmacy Contacted</td>
<td>Nurse Hands Flow Board to Clerk – DC Complete</td>
</tr>
<tr>
<td>Patient Waits</td>
<td>12 min</td>
</tr>
<tr>
<td>Patient Waits</td>
<td>21 min, 8.57%</td>
</tr>
<tr>
<td>Patient Leaves Hospital Unit</td>
<td>Yes</td>
</tr>
<tr>
<td>Nurse Completes SOAP Note</td>
<td>Patient/Family/ Caregiver Signs Paperwork</td>
</tr>
<tr>
<td>Nurse Tears Down Flow Board</td>
<td>2 min</td>
</tr>
<tr>
<td>Patient/Family/ Caregiver</td>
<td>1 min</td>
</tr>
</tbody>
</table>
Appendix F: Discharge Frequency Data

Total Inpatient Discharges vs. Time of Day
1/1/03-12/31/04

![Graph showing daily discharge frequency from 1/1/03 to 12/31/04.]

Source: Patient Management Systems, POA-JL (1/1/03-12/31/04)
Excludes expired patients.
Sample Size = 8,846

Occurred Discharges vs. Day of Week
1/1/03-12/31/04

![Graph showing weekly discharge frequency from 1/1/03 to 12/31/04.]

Source: Patient Management Systems, POA-JL (1/1/03-12/31/04)
Excludes expired patients.
Sample Size = 8,846

Observed Discharges vs. Day of Week
2/7/05-3/13/05

![Graph showing weekly discharge frequency from 2/7/05 to 3/13/05.]

Source: 6B & 6C Discharge Data Collection (2/7/05-3/13/05)
Sample Size = 35

6B Occurred Discharges vs. Week

![Graph showing weekly discharge frequency for 6B from 2/6/05 to 3/6/05.]

Source: Patient Management Systems, POA-JL (2/7/05-3/13/05)
Excluded expired patients.
Sample Size = 426

6B Observed Discharges vs. Week

![Graph showing weekly discharge frequency for 6B from 2/6/05 to 3/6/05.]

Source: 6B & 6C Discharge Data Collection (2/7/05-3/13/05)
Sample Size = 35
Source: Patient Management Systems, POA-JL (2/7/05-3/13/05)
Excluded expired patients.
Sample Size = 426

Source: 6B & 6C Discharge Data Collection (2/7/05-3/13/05)
Sample Size = 35
## Appendix E: Data Collection Sheet

**Date:** ___________________________  
**Time:** ______________:________  
**Discharge Navigator Yes/No (circle)**  
**Service:** ______________________  
**Unit 6B or 6C (circle)**  

**Type of Discharge:**  
- Simple  
- Intermediate  
- Complex

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Pace</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read the D/C order</td>
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<tr>
<td>Contact physician for clarification</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Time spent on patient education</td>
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<tr>
<td>Send prescriptions to in-house pharmacy</td>
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<tr>
<td>Complete Discharge Navigator paperwork</td>
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<tr>
<td>Complete SOAP note</td>
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<tr>
<td>Order homecare supplies</td>
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<tr>
<td>Patient/Family/Caregiver sign paperwork</td>
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<tr>
<td>Take down Flow Board</td>
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<tr>
<td>Give Flow Board to Clerks</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Activities:</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Pace</th>
<th>Rating</th>
<th>Comments</th>
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</tbody>
</table>

25
**Patient Discharge Card: Satisfaction Survey**

Your opinions matter. Thank you for taking a few minutes to provide us with your feedback. Please circle the number that best reflects your satisfaction with each of the issues listed below.

- **1 Very Poor**  
- **2 Poor**  
- **3 Fair**  
- **4 Good**  
- **5 Very Good**

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the nurse give you information about your disease process and medications?</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. How would you rate the quality of the educational material provided?</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. How well did the nurses keep you informed regarding tests and procedures?</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. Evaluate the overall nursing care you received on 6C.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. Promptness of your call light being answered while a patient on 6C.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. To what extent did the nurse prepare you for discharge home?</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7. Did you feel that you were involved in your care and the decision making process?</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. How well did the nursing staff show concern for your privacy while on 6C?</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9. Evaluate the overall discharge process?</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

Please comment on any rating less than very good:

________________________________________________________________________

________________________________________________________________________
Appendix H: Patient Survey Results

Usefulness of the Discharge Paperwork

2004

Manner in which medications presented in paperwork

2004

2005
Overall discharge process

2004
- Very good: 76%
- Good: 10%
- Fair: 8%
- Poor: 4%
- Very poor: 2%

2005
- Very good: 67%
- Good: 25%
- Fair: 3%
- Poor: 2%
- Very poor: 3%

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Appendix I: Nurse Satisfaction Survey

Discharge Navigator Survey
You have been asked to complete the following survey because you have used Discharge Navigator at least one time to discharge a patient from 6B or 6C.

Attached is a survey about the Discharge Navigator. As part of our effort to make this system more useful to you, we are interested in your opinions about this system. This survey takes about 15 minutes to complete.

You may leave blank any information that you can not or do not find necessary to answer.

This information will be shared with the Discharge Navigator Stakeholder team to use for quality improvement and with the 6C management team to improve information technology education. In the future, the data may be analyzed and used in research for nursing workload associated with Discharge Navigator.

Your name is not attached to this information in anyway directly or indirectly using a coding system.

Thank you for your time!

Jennifer Dammeyer MSN, RN
Clinical Nurse Specialist, 6C
University of Michigan Health System

Discharge Navigator Survey
This is a survey about the Discharge Navigator. As part of our effort to make this system more useful to you, we are interested in your opinions about this system. This survey only takes about 15 minutes to fill out.

1. On the blank space next to each item, please rate your agreement using the following scale:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Neither agree nor disagree</td>
<td>Strongly agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. ___ The Discharge Navigator is easy to use.
b. ___ When I have a problem with the Discharge Navigator, I am able to solve it quickly.
c. ___ When I need help on the Discharge Navigator, I can find it easily.
d. ___ Learning to use the Discharge Navigator is DIFFICULT for me.
e. ___ I find the Discharge Navigator flexible to interact with.
f. ___ I have PROBLEMS accessing the Discharge Navigator.
g. ___ The Discharge Navigator is user-friendly.
h. ___ The Discharge Navigator is reliable - it does its job consistently.
i. ___ The Discharge Navigator improves my productivity.
j. ___ The Discharge Navigator has a positive impact on patient care.
k. ___ The Discharge Navigator gives me the information I need to make better clinical decisions.
l. ___ Collaboration with other caregivers is easier with the Discharge Navigator.
m. ___ Patient discharge is easier because of my use of the Discharge Navigator.
n. Using the Discharge Navigator in my job enables me to accomplish tasks more quickly.

o. Using the Discharge Navigator WORSENS my job performance.

p. Using the Discharge Navigator makes it easier to do my job.

2. How CRUCIAL are the following issues to you when working in this department? Please use the following scale:

<table>
<thead>
<tr>
<th>NOT CRUCIAL</th>
<th>VERY CRUCIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ___ Being able to improve my productivity.</td>
<td>b. ___ Improving patient care.</td>
</tr>
<tr>
<td>c. ___ Having information I need to make better clinical decisions.</td>
<td>d. ___ Being able to collaborate more easily with other caregivers.</td>
</tr>
<tr>
<td>e. ___ Being able to discharge patients more easily.</td>
<td>f. ___ Being able to accomplish my job tasks more quickly.</td>
</tr>
<tr>
<td>g. ___ Improving my job performance.</td>
<td>h. ___ Doing my job more easily.</td>
</tr>
</tbody>
</table>

3. On the blank space next to each item, please rate your agreement using the following scale:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ___ It is important to me to be the best among my peers at using new information technologies.</td>
<td>b. ___ I like to find better ways of using the hospital information systems.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>c. ___ I believe that information technology with an uncertain potential for success should be AVOIDED.</td>
<td>d. ___ If I come across a useful new information system, I can influence others in my department to use it.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>e. ___ I welcome the opportunity to try new information system in my field.</td>
<td>f. ___ When new information technologies are introduced, I talk to others about them.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>g. ___ I like to take time off to learn new information technologies.</td>
<td>h. ___ In this department, it is important to show improvement in my abilities to use information technology over time.</td>
<td></td>
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</tr>
<tr>
<td>i. ___ This department actively encourages staff to use new information technologies.</td>
<td>j. ___ Being on the cutting edge of innovative information technology is important to this department.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>k. ___ I often hear my co-workers and colleagues talking about what they can do with new information technologies.</td>
<td>l. ___ This department favorably recognizes staff who use new information technologies.</td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>m. ___ In this department, we are DISCOURAGED to learn new information technologies during office hours.</td>
<td>n. ___ It is normal for staff in this department to ask each other for help when using new information technologies.</td>
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4. On the blank space next to each item, please rate your agreement using the following scale:

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<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly agree</th>
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</thead>
<tbody>
<tr>
<td>a. ___ The nursing templates are easy to locate.</td>
<td>b. ___ The diagnosis listed on the templates are those I frequently use.</td>
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<tr>
<td>c. ___ The templates are listed in a logical order.</td>
<td>d. ___ The content on a standard template cover all the areas needed to discharge a patient.</td>
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</table>
e. _____ I like the format of the templates.

f. _____ Having Discharge Navigator has allowed me to complete the discharge process more quickly.

g. _____ Having the content for a diagnosis available on a template has allowed me to complete the discharge process more quickly.

h. _____ Having Discharge Navigator has allowed me to provide more valuable activities to the discharge.

i. _____ Discharge Navigator provides more clarification between disciplines.

j. _____ I need to locate the physician for clarification less using Discharge Navigator.

5. Are the current functions in Discharge Navigator sufficient to use so that it may be rolled out to the rest of nursing hospital-wide?

a. _____ Yes

b. _____ No

6. If not, of the functions listed below, what is needed to enhance Discharge Navigator to make it more usable?

(Circle the top 3 functions)

a. Ability to save the document on-line

b. Ability to sign the document on-line

c. Incorporate web content into the document

d. Improved training- in person

e. Improved training- on-line

f. More disciplines to document on the Discharge Summary

g. More variety of templates to choose from

h. More information in each template

i. To know who edited the template last

7. Of the items on the preceding page, which 3 would you want to see added to enhance Discharge Navigator function: (List the letter of the items)

_____ _____ _____

8. How often do actually use Discharge Navigator?

a. _____ Never

b. _____ Less than 1 time/week

c. _____ 1-2 times/week

d. _____ 3-4 times/week

9. When you have problems with Discharge Navigator, what do you usually do? Indicate your response to each item using the following scale:

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<tr>
<td>Never</td>
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<td>Always</td>
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</table>

a. _____ Try again until it works

b. _____ Ask nurses for help

c. _____ Ask clerks/secretaries for help

d. _____ Use help button
e. Other (describe)_____________________________________________________

10. How much experience do you have with the following?
   a. Using personal computers (circle one number)
      
      |   1 |   2 |   3 |   4 |   5 |   6 |   7 |
      |-----|-----|-----|-----|-----|-----|-----|
      | Never use them | Sometimes use them | Regular/expert user |

   b. Using the internet? (circle one number)
      
      |   1 |   2 |   3 |   4 |   5 |   6 |   7 |
      |-----|-----|-----|-----|-----|-----|-----|
      | Never use them | Sometimes use them | Regular/expert user |

   c. Using CareWeb? (circle one number)
      
      |   1 |   2 |   3 |   4 |   5 |   6 |   7 |
      |-----|-----|-----|-----|-----|-----|-----|
      | Never use them | Sometimes use them | Regular/expert user |

11. How many years have you worked at UMHS? 1-3 ______ 4-10 ______ 11-15 ______ 16+_______
12. How many years have you worked as a nurse? 1-3 ______ 4-10 ______ 11-15 ______ 16+_______
13. Position: CNI ______ other_______
14. Age (years): 20-24 ______ 25-30 ______ 31-40 ______ 40+_______
15. Gender: Male / Female  (Circle your answer)

THANK YOU FOR YOUR TIME!
## Appendix J: Discharge Navigator Project Gantt Chart

### Key Dates:
- **Project Start Date**: 1/24
- **Project Completion Date**: 4/25

### Meetings:
- Client Jennifer Dammeyer
- Coordinator Jacqueline Lapinski
- Discharge Navigator Investigator Group
  - Literature Search
  - Hospital Tour
  - Clerk and Nurse Introductions
  - Distribute Study Information Via E-mail/Fly
- Initial Nurse Interviews
- Prepare Discharge Process Flowchart
- Prepare Proposal Draft
- Prepare Proposal PowerPoint Presentation
- Proposal Revision
- Data Collection:
  - Phases I & 2: Study Participant Consent
  - Obtain Data Collection Supplies
- Phase 3: Data Collection and Analysis
- Phase 4: Nurse and Patient Surveys
- Compare to Past Data
- Interim Report:
  - Prepare Interim Draft
  - Prepare Interim PowerPoint Presentation
  - Interim Revision
- Phase 5: Findings and Recommendations
- Final Report:
  - Prepare Final Draft
  - Final Revision
  - Final Presentation:
  - Prepare Final PowerPoint Presentation
  - Revise Final PowerPoint Presentation
- Present to Class
- Present to Client and Guests

### Task Description and Hours

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### Project Person Hours
- **Anderson**: 15, 15, 15, 45
- **Anstrom**: 15, 15, 15, 45
- **Bochneak**: 15, 15, 15, 45
- **Total**: 51, 51, 51
To: Management, University of Michigan Health System
From: Emily Anderson, Julia Angstrom, and Danielle Bochneak, 2005 Discharge Navigator Nursing Workload Time/Motion Study Team (IOE 481)
Date: April 4, 2005
Subject: Evaluating Discharge Navigator from Physicians’ Perspectives

As we spent nearly 120 combined hours at the University Hospital, we learned quite a lot about the hospital staff’s perception of Discharge Navigator and its contribution to increasing value-added tasks and decreasing staff workload. While the majority of our interaction was with registered nurses and hospital clerks, we did receive comments from additional stakeholders, particularly physicians.

Upon learning of our investigation of Discharge Navigator (DCN) and its effects on units 6B and 6C, two physicians informed us that while they recognize the positive influence DCN has had on nursing workload and tasks, the user interface is not well designed for the needs of physicians.

Particularly, text boxes in which they are to enter extensive medication notes or special instructions cannot be easily edited or reviewed. Additionally, we were told that the windows separating functions and discharge steps do not flow logically, and sometimes upon leaving a window and then returning later, information that was entered will be lost. Comments were also made about DCN’s lack of interface coordination with Discharge Planning.

To resolve these issues, and evaluate DCN’s functionality from a physician’s perspective, we recommend that an investigation similar to the one outlined in this report is conducted with scope limited to physician tasks.