University of Michigan Health System

Care Management Workflow Analysis
Unit 8B: Inpatient Medicine

Final Report

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Executive Summary

Introduction
The Care Management Department within the University of Michigan Hospital System (UMHS) works to ensure patient satisfaction while simultaneously improving the quality and efficiency of care. Care management constantly seeks to streamline the continuity of care throughout all phases of a patient’s stay, across all provider levels. The Care Management Department has noticed a communication gap between upper-level management and its direct care providers. Specifically, there is a lack of knowledge and standardized procedures regarding the workflow of care managers and the interaction between the patient, case manager, and social worker.

Care management has not met the following goals, established in a 2012 external consulting engagement: improved patient satisfaction; reduced length of stay as a result of reduced delays and barriers to timely care; reduced unnecessary admissions and readmissions by improving the discharge transition process; and compliance with regulatory, financial, and utilization review requirements. The inability to meet these goals is attributed to the lack of standardization in the care management process. As a result, and in an effort to understand why these goals have not been achieved, the Care Management Department requested detailed documentation of the current state workflow of a specific hospital unit, in the form of swim lane diagrams.

The student team has conducted key personnel interviews and shadowing, on-site observations, unit-wide surveys, and workflow time studies (via self collection data sheets). Furthermore, the team studied the interaction between patient and provider, and between various provider levels within the unit. These observations provided insight and understanding on how patient cases are managed, the workflows of key hospital personnel, and lastly, how information is passed throughout the unit during the duration of a patient’s stay.

Background
The hospital unit of study is Unit 8B, a General Inpatient Medicine unit. Unit 8B admits high acuity patients and usually maintains a very high turnover rate (average length of stay 3-5 days). The unit has 32 beds, often with very high occupancy rates, and accepts 24/7 admissions, mostly through the emergency department (ED). In general, the complex interactions between the case manager, social worker, and other providers create a difficult process to standardize and improve. This is largely due to the reactive nature of the workflow within Unit 8B and the constant variability in day-to-day work.

Several key statistics exemplify the need for better continuity of care and improved discharge planning within UMHS:
- At UMHS specifically, the average 30-day readmission rate is 14.53% (July 2012-February 2015)
Within the University Hospital (UH) alone, the average avoidable days per month was 413 days, from January 2014 - March 2015.

Key Issues
The following key issues were identified as the driving factors behind the project:

- Lack of understanding and documentation of workflow in the care management process
- Lack of standardized work methods
- Communication gaps between various providers within Unit 8B and between other external departments

Project Scope Changes
As the project progressed, three major changes to project scope occurred:

- Small sample size in self-collection sheets shifted the focus of observation from solely a patient perspective to a more comprehensive, unit-wide approach
- Lack of a statistically significant sample size also did not allow for concrete conclusions to be drawn about readmissions patients specifically
- The final deliverable is no longer a value stream map, but rather a swim lane diagram comprised of the following components: case manager workflow, social worker workflow, and the patient flow throughout the unit. The swim lane diagram is structured to show which tasks are occurring simultaneously, and displays the exchange of information between the case manager and social worker

Goals and Objectives
The main goal of the project was the observation and documentation of the current state workflow of Unit 8B: General Inpatient Medicine, leading to the creation of a swim lane diagram. This diagram, along with two data collection campaigns, allows upper-level management to fully understand the following concepts: the most representative processes of Unit 8B (includes the work stream of key unit personnel and the flow of the patient throughout the unit), the distribution of key tasks (broken down by patient), the main obstacles to efficient workflow, concerns with communication lapses (both internally within the unit and externally between other hospital entities), and lastly, the common barriers to timely discharge.

Both the student team and clients have recognized that this project as being the project that establishes a common understanding amongst all provider and management levels. It is important to note that the information gathered in this project lays the groundwork for future process improvement projects.

Methods and Findings
The team collected data through four methods: 1) literature search 2) interview and shadowing 3) self-data collection and 4) Qualtrics survey. These methods are detailed in this section as well as the bulleted findings associated with each method.
**Literature Search**
The team researched the best in practice hospitals for care management to find what could be applied to the project. The team read ‘A Day in the Life’ documents regarding social work and case manager daily responsibilities.

- The best practices being used in comparable hospitals to UMHS include big data, investment in staff through education, training, and access to support materials, and collaborative interdisciplinary philosophies
- Social worker and case manager both start the day becoming familiar with the patient's status, which is followed by the unit morning rounds. Next, they begin meeting with patients face to face, and continue the communicating with other care providers throughout the day as patient status changes

**Interview and Shadowing**
The team interviewed the case manager and social worker to discuss details of their responsibilities. The team then shadowed both the case manager and social worker individually, throughout various days of the week.

- The greatest bottleneck perceived by both the case manager and the social worker is the delays in communication between external groups. The delay in communication leads to delay in patient care, discharge planning, and frustration for all involved
- Both the social worker and case manager spend the majority of their day in communication elements such as MiChart, phone calls, pages, and face-to-face interactions (both with patients and other physicians)

**Self-Data Collection**
The team distributed self-data collection sheets to the case manager and the social worker to record their interactions with a single patient at a time. In total the team collected data on 7 patients.

- Out of 310 minutes of data collected by the case manager, 32.6% was spent in room visits and 23.5% was spent in MiChart
- Out of 735 minutes of data collected by the social worker, 39.3% was spent in room visits and 28.4 % was spent in MiChart

**Qualtrics Survey**
The case manager, social worker, and floor nurses completed a survey regarding how they perceive the workflow in the unit. The survey received 16 responses.

- With regard to hindrances to daily work, over 90% of respondents included communication delays and over 60% listed pharmacy delays
- There was no strong consensus regarding whether Unit 8B has “a clear set of standard work methods that are easy to follow. 50% of respondents agreed there was clear standard work and 50% were neutral or disagreed
- Morning rounds in the unit received generally positive feedback. 67% of respondents reported that rounds had a clear purpose and that purpose was timely being met
Conclusions
Three key conclusions were derived from the team’s data analysis.
1. Both the case manager and the social worker spend most of their time in the patient room and MiChart
2. The case manager and the social worker are in constant communication about patients
3. The delays caused from external communication and pharmacy is the two largest hindrances to daily work

All conclusions were synthesized into a Swim Lane Diagram [Appendix A]. The map shows a high level interaction of a patient, social worker, and case manager. At every key step in the patient’s care there is an associated task of the case manager and social worker paralleled in the diagram as well as an illustration of the exchange of information between the two roles.

Recommendations for Future Work
Future work specifically focused on suggestions for future process improvement projects and tangible implementations of change both in Unit 8B and in units all throughout UMHS. The student team has developed the following recommendations for future work, encouraging the continuation of the work already completed:

- Creation of a revised data collection sheet to better capture workflow
  - Restructure the data collection sheet in order to better capture communication lapses
- Expansion of data collection efforts (both for the survey and data collection sheets)
  - Conduct data collection over a longer time period in multiple units to collect a larger sample size
- Expansion of the scope of study (in terms interactions with external units)
- Revisit the focus on readmission patients only
  - Would allow for further identification of barriers to timely discharge planning/execution and avoidable days identification/prevention
- Allow for room visits and MiChart process to occur simultaneously
- Stress the importance proactive discharge planning and execution techniques
  - Starts with the encouragement of the current “3 x 11” rule (three patients discharged by 11am each morning)
**Introduction**

The Care Management Department within the University of Michigan Hospital System works to ensure patient satisfaction while simultaneously maintaining or improving the quality and efficiency of care. Major entities within this group include the case manager, social worker, and of course the patients themselves. The scope of care management’s involvement ranges from patient arrival and subsequent admissions review all the way through patient discharge. Care management constantly seeks to improve the continuity of care throughout all phases of a patient’s stay, across all provider levels. The Care Management Department has noticed a communication gap between upper-level management and its direct care providers. Specifically, there is a lack of knowledge and standardized procedures regarding the workflow of care managers and the interaction between the patient, case manager, and social worker.

To restructure critical care management practices and improve efficiency within the Care Management Department, several key goals were established by management and an external consulting team in 2012. However, these goals are still not being met and key performance indicators are not being satisfied. Specifically, Care Management has not met the following goals: improved patient satisfaction; reduced length of stay as a result of reduced delays and barriers to timely care; reduced unnecessary admissions and readmissions by improving the discharge transition process; and compliance with regulatory, financial, and utilization review requirements.

The inability to meet these goals is attributed to lack of standardization in the care management process. As a result, and in an effort to understand why these goals have not been achieved, the Care Management Department requested detailed documentation of the current state workflow of a specific hospital unit, in the form of swim lane diagrams. These diagrams have been synthesized from on-site observations, key personnel interviews, unit-wide surveys, and other data collection techniques all aimed at capturing the following sources of information and communication: case manager workflow, social worker workflow, the flow of the patient through various stages of care, and the transfer of information throughout the unit. The swim lane diagrams will display the interaction between the different yet concurrent workflows within the unit, highlight the communications between different providers, and help identify areas for improvement.

The team has conducted key personnel interviews and shadowing, on-site observations, unit-wide surveys, and workflow time studies (via self-collection data sheets). Furthermore, the team studied the interaction between patient and provider, and between various provider levels within the unit. These observations provided insight and understanding on how patient cases are managed, the workflows of key hospital personnel, and lastly, how information is passed through the unit for the entire duration of a patient’s stay. This final report describes the current state, project scope changes, key issues, goals and objectives of the project data collection methods, key findings, conclusions, and final recommendations for future work for the client.

**Background**

Given the large, and growing, size of the University of Michigan’s hospital, the Care Management Department’s role has become vital in recent years. Efforts to improve the care management model (complete continuity of care throughout all phases of care and across all
providers) included an October 2012 consultant engagement[1], which recommended a unit-based model of nursing case managers and social workers. This was implemented in Fall 2013 across all University of Michigan hospitals, and although intra-department localization was improved, some localization goals were still not being met, leading to noticeable increases in patient waiting times between departments. In addition, the Senior Project Manager provided the team with data developed by Press-Ganey and the University Health System Consortium, highlighting two key performances issues. The UMHS’ patient satisfactions with discharge planning and transitions have performed below its peer group median, and readmission rates are higher than the peer group median[1].

The hospital unit of study is Unit 8B, a General Inpatient Medicine unit. Unit 8B admits high acuity patients and usually maintains a very high turnover rate (average length of stay 3-5 days). The unit has 32 beds (often very high occupancy rates) with 24/7 admissions, most of which arrive via the emergency department. With telemetry capabilities, 8B often has cardiac related patients but also takes overflow from other oncology units. In general, the complex interactions between the case manager, social worker, and other levels of providers create a difficult process to standardize and improve. This is largely due to the reactive nature of the workflow within Unit 8B.

Several key metrics exemplify the need for better continuity of care within UMHS. According to the Centers for Medicare & Medicaid Services (CMS), 1 in 5 Medicare patients are readmitted within 30 days of hospital discharge[3]. At UMHS specifically, the average 30-day readmission rate is 14.53% (from July 2012-February 2015)[4]. In a study on the patient perspective for readmissions, 47% of these readmitted patients believed that their health required hospital care or that discharge occurred too soon[3]. This differs from the reasons physicians cite for readmission, but at the same time highlights the need to include patient feedback in future initiatives to reduce readmissions. Lastly, a significant issue within UMHS is the concept of avoidable days. An avoidable day is defined as any extra day(s) that a patient remains in the hospital when he/she otherwise could have been already discharged, however, barriers (i.e., pharmacy delays, communication lapses, paperwork delays, etc.) have prevented the patient from timely discharge. Each avoidable day equals a day lost to treat a new patient, which in turn, leads to a reduction in revenue for the hospital. Within the University Hospital (UH) alone, the average avoidable days per month was 413 days, from January 2014 - March 2015[4].

**Key Issues**

After reviewing all relevant background information and considering initial conversations with the client team, the following key issues were identified as the driving factors behind the project.

**Primary Issues:**

1. Lack of understanding and documentation of workflow in the care management process
   a. Specific lack of information with regard to daily workflow of Unit 8B’s case manager and social worker
   b. Leads to difficulty in improving process efficiency

2. Lack of standardized work methods
c. No ‘correct method’ for most facets of the daily workflow (ranging from reporting procedures to discharge planning)

3. Communication gaps between various providers within Unit 8B and with other departments
   d. External departments include upper-level Care Management, pharmacy, and all other departments not necessarily involved with Unit 8B on a daily basis
   e. Communication gaps include issues with the transfer of information across nursing shift changes, various provider levels, and across different mediums (i.e. physical charts to electronic charts such as MiChart)

Secondary Issues (result from primary issues and out of this project’s scope):
1. Disconnect between care provider and patient when patient enters discharge phase
2. Patient dissatisfaction and loss of revenue due to long wait times, long hospital stays, and inefficiencies in the discharge process

Project Scope

One of the original focal points of the project was to center observation and documentation around the patient in an effort to map Unit 8B from a patient’s perspective. While the team was able to capture some of the patient perspective with its data collection efforts, the team was not able to capture a large enough sample size to confidently draw conclusions and recommendations. This sentiment will be reflected later on in this report, but it is important to note that the project shifted from solely a patient’s perspective to a more comprehensive, unit-wide perspective.

Another shift from original project scope involves the study of readmission patients, which again was affected by a small sample size. Data collection efforts did lead to the identification of several trends, but, in an effort to stay professional and objective, the team did not make final conclusions specifically regarding readmission patients.

Additionally, there was a change in the final deliverable of the project as a direct result of the data the team was able to obtain. Instead of the creation of a value stream map based on the patient perspective, the team took a more high level approach in the creation of a comprehensive swim lane map. The more unit-wide approach fit better with the objective of documenting all facets of the unit’s workflow and is comprised of the following components: case manager workflow, social worker workflow, and the patient flow throughout the unit. The swim lane diagram is structure to show which processes and tasks are occurring simultaneously, and displays the exchange of information between the case manager and social worker.

Goals and Objectives

The main goal of the project was the observation and documentation of the current state workflow of Unit 8B: General Inpatient Medicine. This documentation of workflow led to the creation of swim lane diagrams that allows upper-level management to fully understand the following concepts: day-to-day processes of Unit 8B (includes the work stream of key unit
personnel and the flow of the patient throughout the unit), the main obstacles to efficient workflow, concerns with communication lapses (both internally within the unit and externally with other hospital entities), and lastly, the common barriers to timely discharge.

Self-data collection efforts also had the intention of identifying the aspects of daily work that take up the majority of the hospital personnel’s days. Again, this is all in an effort to identify areas for improvement in efficiency. The survey had the main intention of shedding light on the perception of workflow within the unit. It allowed unit staff to express opinions and give possible solutions for key tasks such as morning rounds, discharge planning, as well as highlight some of the barriers to optimal unit efficiency.

Additionally, the team hopes that the swim lane diagrams will display the interaction between the different yet concurrent workflows within the unit, and will highlight the communications taking place between different providers. All of this will ease the process of identifying areas for improvement.

Lastly, both the team and clientele have recognized this project as being the project that establishes a common understanding among all provider and management levels, and lays the groundwork for future improvement projects. With the knowledge gap paved, the next step is to implement change.

Methods and Findings

The team collected data through four methods: 1) literature search 2) key personnel interviews and shadowing 3) self-data collection sheets, and 4) Qualtrics survey. These methods and their corresponding findings are detailed in the following sections.

Literature Search

The first method of collecting data was searching the relevant literature for the project.

Methods

The initial step of the team’s approach to the care management workflow project was to perform a literature search. The focus of the team’s literature search was two-fold:

● **Best in practice hospitals for care management.** The team searched for best in practice hospitals, especially Franklin Award of distinction winners. The focus of this search was to find the workflow in the units and the efforts in place to improve efficiencies that could be applied to the project.

● **‘A Day in the Life’ documents for social work and case manager.** These documents were provided by the client and were created by social work and case management. The documents were used to familiarize the team with the daily roles and responsibilities of both positions.

Findings

When researching best in practice hospitals the team gave special attention to Carolina’s Medical Center. Carolina’s Medical Center performs extensive research and has educational/academic ties to University of Carolina Chapel Hill, a very similar structure to UMHS. Carolina’s Medical Center won the Franklin Award of Distinction, which is given to a medical center that showcases
great case management. The four main reasons Carolina’s Medical Center won the Franklin Award of Distinction were: 1) 24 hour on site care management services 2) Use of big data to increase care 3) Investment in staff through education, training, and access to support materials 4) A collaborative interdisciplinary philosophy[2]. These findings helped the team to learn what makes excellent care management and compare it to what UMHS is currently doing.

The first ‘A Day in the Life’ document provided by the clients gave the team a background knowledge of the average workday for a case manager at UMHS. The document describes the morning routine of checking the updates on existing patients and becoming familiar with new patients. Then there is a unit meeting where the nurses update the case manager on all patients. From there the case manager re-prioritizes the day. The case manager meets with the patients to update them on the current plan, and is in constant contact with the physicians regarding this current plan. Throughout the day, the case manager is updating documentation and meeting with care providers regarding the patients.

The second ‘A Day in the Life’ document pertained to social work. The social worker starts the day by checking the updates for existing patients and screening new patients to see if there is a social work need on the case. The social worker then will find patients to take on during morning rounds. The social worker is continuously in communication with care providers to clarify patient care delivery priorities. The social worker spends much of the day seeing and assessing patients, initiating interventions, resource finding, community outreach, placements and referrals, and care coordination.

Interviews and Shadowing

Upon the conclusion of the literature search, the team interviewed and shadowed the case manager and the social worker in Unit 8B.

Methods
To gain more knowledge of the care management department the team interviewed both the case manager and the social worker of Unit 8B together. Questions were chosen before the interview, and the purpose was to find the day-to-day responsibilities and the perceived bottlenecks in the process from their point of view. Two days of shadowing followed the interviews. During the shadowing, the team took notes to construct a general flow map for the events that occurred.

Findings
The interviews gave an insight into the operations of Unit 8B from the perspective of key care providers on the floor. The greatest bottleneck perceived by both the case manager and the social worker is the delays in communication between external groups. The delay in communication leads to delay in patient care and frustration for all involved. The most chaotic days are Fridays and Mondays. Friday is a high discharge day and by Monday there are many new patients to become familiar with. The social worker reported to have approximately half the amount of patients as the case manager.

The shadowing highlighted the importance of communication in each role. Much of the case manager’s day is spent communicating with other care providers in regards to a patient’s care
plan. The social worker is consulted on some patients and willingly takes on patients during rounds as well. The social worker is constantly reacting to changes in the patient’s care plan and constantly re-prioritizing the patients based on the complexity of the case. Both the social worker and case manager spend extensive amounts of time in communication elements such as MiChart, phone calls, and pages.

**Self-Collection Data Sheets**

Interactions between care managers and the patients were self-collected in 8B by the social worker and case manager.

**Methods**
To track case managers and social workers interaction with patients, the team designed a self-collection data sheet to be used in Unit 8B. The case manager involved in the Unit 8B is responsible for 16 of the 32 beds, while the social worker’s number of patients varies pending on patient need. Due to the demanding schedules of case managers and social workers the team asked each of the care manager to track one patient at a time. The respective care manager would select patient at admission and track their interactions with the patient until discharge.

First some basic information is entered in the header of the first page about the patient including diagnosis and if the patient is a readmission patient. The self-collection sheet was designed to collect all interactions with patient; however, based on conclusions made from interviews and shadowing check boxes were made for pages, calls, MiChart, room visits, and ‘other’ to include less frequent interactions. Care managers checked the interaction as well as recorded the date, time, and length of the interaction. To track delays in communication one column labeled response was implemented. If the interaction required a response such as a page out, the care manager would check the response box in that row. When a response was made the care manager would also be recording the date, time, and length of that interaction (say a call back). The care manager would also record the row number to which a response was requested so the time stamps could be compared for response time. The data collection packet also included bulleted instructions and a list of 12 readmission reasons given to the team by the clients. The self-collection data packets can be found in Appendix B.

As self-collection data packets were finished they were picked up from Unit 8B by the team, and entered into Excel. The case manager finished three packets spanning over three weeks, while the social worker finished four packets in the same time span. Data for the case manager and social worker were analyzed separately. Summary statistics, graphs, and pivot tables were created in order to see the flow of data. A follow up meeting was also made to confirm trends in the data (because of small sample size) with the case manager and social worker.

**Findings**
During the team’s data collection period, data was collected for three patients by the case manager and four patients by the social worker. Three patients were readmits, however, due to the relatively small sample size little distinction was made between readmission versus non-readmission patients. The following sections describe the data collected by the case manager and social worker in detail.
To make connections between the patient and data collected a brief introduction of each patient is given below including patient # used in the study, general diagnosis, and readmission status. The case manager studied patients 1-3 while 4-7 was studied by the social worker.

- **Patient 1**: Endometrial Adenocarcinoma Cellulitis, readmission type 12  
  ○ uncontrollable advancement of chronic disease
- **Patient 2**: Interstitial Lung Disease, non-readmission
- **Patient 3**: Chest Pain readmission patient (type not listed in 12 types)
- **Patient 4**: Lung Cancer, non-readmission
- **Patient 5**: Congestive Heart Failure, readmission type 7,12  
  ○ substance abuse, uncontrollable advancement of chronic disease
- **Patient 6**: Osteoporosis, non-readmission
- **Patient 7**: Hypertensive Emergency, non-readmission

After analyzing the collected data the team was able extract two more categories from the ‘other’ check box. Based on the notes left by the care managers the team was able to separately analyze face-to-face interactions with other care providers talking about patient status, as well as using the All Scripts referral system. Below detailed findings are described for both the case manager and social worker.

**Case Manager**

First data collected by the case manager in Unit 8B will be discussed. Table 1 below summarizes the number of each interaction type the case manager had with the three patients that were studied.

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>All Script Calls</th>
<th>MiChart Calls</th>
<th>Other Pages</th>
<th>Room Visit</th>
<th>Face-to-face</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.0</td>
<td>4.0</td>
<td>1.0</td>
<td>-</td>
<td>5.0</td>
<td>14.0</td>
</tr>
<tr>
<td>2</td>
<td>1.0</td>
<td>1.0</td>
<td>13.0</td>
<td>-</td>
<td>2.0</td>
<td>21.0</td>
</tr>
<tr>
<td>3</td>
<td>1.0</td>
<td>2.0</td>
<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
<td>14.0</td>
</tr>
</tbody>
</table>

*Sample size of 3 patients data collected from 3/18-4/14*

The most frequent interaction being MiChart, which accounts for just over 36% of the interactions. Room visits are the second most frequent interaction accounting for nearly 25% of patient interaction. While MiChart occurs the most when looking at interactions with a patient it does not account for the most time. Table 2 breaks down the average amount of time spent on each interaction per patient.

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>All Script Calls</th>
<th>MiChart Calls</th>
<th>Other Pages</th>
<th>Room Visit</th>
<th>Face-to-face</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.0</td>
<td>4.0</td>
<td>1.0</td>
<td>-</td>
<td>5.0</td>
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<td>-</td>
<td>2.0</td>
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<tr>
<td>3</td>
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<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
<td>14.0</td>
</tr>
</tbody>
</table>

Table 2: Average Time Spent by case manager per Interaction
Interactions that take up the most time for the case manager are room visits, calls out, and other. After extracting All Script referrals and face-to-face meetings from the ‘other’ category, the remaining data in the other column included filling out homecare plans and preparing discharge documentation. Next the team decided to look at the fraction of time spent on each interaction based on the total time data that was collected. The case manager collected 310 total minutes of data and the breakdown is displayed below in figure 1.

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>All Script Calls</th>
<th>MI Chart Calls</th>
<th>Other Calls</th>
<th>All Script Pages</th>
<th>MI Chart Pages</th>
<th>Other Pages</th>
<th>Room Visit Length</th>
<th>Face-to-Face Length</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
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<td>15.0</td>
<td>19.0</td>
<td>40.0</td>
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<td>10.0</td>
<td>5.0</td>
<td>5.0</td>
<td>102.0</td>
</tr>
<tr>
<td>Total</td>
<td>37.0</td>
<td>41.0</td>
<td>73.0</td>
<td>45.0</td>
<td>5.0</td>
<td>8.0</td>
<td>101.0</td>
<td>8.0</td>
<td>310.0</td>
</tr>
</tbody>
</table>

When looking at both average time an interaction takes, as well as the frequency of each interaction for a patients stay it can be seen that 32.6% of time is spent visiting the patient. Followed by MiChart documentation and reviewing of documentation at 23.5%. Again the other category included filling out homecare plans and preparing discharge documentation.
It was also noted that MiChart had three main components:

1. Initial assessment and documentation (around 10 minutes)
2. Daily review of clinicals (2-5 minutes)
3. Updating charts after room visits (2-10 minutes)

In the follow up interview the case manager was in agreement with the percent breakdown of the fraction of time spent on each interaction, and that it seemed indicative of daily work.

Social Worker
Data collected from the social worker in Unit 8B was analyzed in a similar fashion as the data collected by the case manager. The team analyzed the number each type of interaction the social worker had with their selected patients.

Table 3: Interaction Frequency per Patient by case manager

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>All Script</th>
<th>Calls</th>
<th>Mi Chart</th>
<th>Other</th>
<th>Pages</th>
<th>Room Visit</th>
<th>Face-to-face</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3.0</td>
<td>3.0</td>
<td>8.0</td>
<td>-</td>
<td>3.0</td>
<td>6.0</td>
<td>-</td>
<td>23.0</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
<td>4.0</td>
<td>7.0</td>
<td>1.0</td>
<td>3.0</td>
<td>4.0</td>
<td>-</td>
<td>20.0</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>1.0</td>
<td>5.0</td>
<td>-</td>
<td>-</td>
<td>2.0</td>
<td>2.0</td>
<td>10.0</td>
</tr>
<tr>
<td>7</td>
<td>1.0</td>
<td>1.0</td>
<td>4.0</td>
<td>1.0</td>
<td>3.0</td>
<td>4.0</td>
<td>1.0</td>
<td>12.0</td>
</tr>
</tbody>
</table>

*Sample size of 4 patients data collected from 3/17-4/7*

Updating MiChart and making patient room visits are the most frequent interactions. MiChart updating accounts for over 39% of all interactions while room visits account for nearly 25% of interactions. While the frequency of social worker and case manager interaction are very similar the social worker tends to spend more time per interaction than the case manager. Table 4 below breaks down the average amount of time spent on each interaction per patient.

Table 4: Average Time Spent by social worker per Interaction

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>All Script</th>
<th>Calls</th>
<th>Mi Chart</th>
<th>Other</th>
<th>Pages</th>
<th>Room Visit</th>
<th>Face-to-face</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>25.0</td>
<td>18.0</td>
<td>70.0</td>
<td>-</td>
<td>3.0</td>
<td>94.0</td>
<td>-</td>
<td>210.0</td>
</tr>
<tr>
<td>5</td>
<td>13.0</td>
<td>63.0</td>
<td>64.0</td>
<td>15.0</td>
<td>5.0</td>
<td>40.0</td>
<td>-</td>
<td>200.0</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>10.0</td>
<td>50.0</td>
<td>-</td>
<td>-</td>
<td>65.0</td>
<td>30.0</td>
<td>155.0</td>
</tr>
<tr>
<td>7</td>
<td>10.0</td>
<td>10.0</td>
<td>25.0</td>
<td>15.0</td>
<td>-</td>
<td>90.0</td>
<td>20.0</td>
<td>170.0</td>
</tr>
<tr>
<td>Total</td>
<td>48.0</td>
<td>101.0</td>
<td>209.0</td>
<td>30.0</td>
<td>8.0</td>
<td>289.0</td>
<td>50.0</td>
<td>735</td>
</tr>
</tbody>
</table>

*Sample size of 4 patients data collected from 3/17-4/7*

It can be seen that room visits take up more time for the social worker. MiChart also is a larger proportion of daily work. For the social worker the other category consists of discharge documentation and SAR interaction. The social worker collected 735 minutes of data, figure 1 below displays the proportion of each interaction.
The social spent 39% of the total time interacting with a patient during room visits, while 28.4% of time is spent on documentation and reviewing MiChart. The social worker also confirmed in the follow up meeting that the breakdown of time spent per patient was as expected.

When comparing the social worker to the case manager, the proportion of total time spent on each interaction is very similar. Both spent over 58% of total time either in room visits or in MiChart. The social worker spent a slightly larger proportion on these activities, which was as expected because on an average day the case manager is responsible for more patients than the social worker. Both the case manager and social worker also confirmed this observation in the follow up meeting.

Qualtrics Survey

To obtain further insight about how care providers on Unit 8B perceive their current work processes, the team created a survey for the unit. The survey was created using the Qualtrics service because it is quite robust in its instant summary statistics; furthermore, because of the University of Michigan’s having an academic license with Qualtrics, UM students and employees are familiar with its interface.

Methods
Questions in the survey addressed both Unit 8B’s general care management operations as well as specific processes (such as morning rounds) to achieve care management’s goals. After the initial survey was drafted, feedback from the project coordinators was incorporated to ensure clarity of the questions as well as the option of anonymity. The survey was then sent to Unit 8B’s case manager, social worker, and Nurse Manager. After receiving the survey the Nurse Manager then to be forwarded the survey to the floor nurses on the unit. After a two-week collection period, a total of 16 responses were received and analyzed.

**Findings**

Over 90% of respondents to the Qualtrics survey were floor nurses. A high percentage of floor nurse responses was expected, considering the survey was sent to only three other staff members. Also due to previous interviews with some staff members, they may have felt taking the survey to be redundant, as they had already shared their opinions with the team.

Care management’s morning rounds received generally positive feedback. 67% of respondents believe that morning rounds have a clear purpose that is currently being met (the purpose being to highlight major points and/or developments in patients’ conditions). 71% of respondents also believe that morning rounds were being completed in a timely manner - that is, in the 30 minutes that is currently being set aside for morning rounds.

However, there was no strong consensus regarding whether Unit 8B has “a clear set of standard work methods that are easy to follow.”

Communication-related issues were perceived to be the most disruptive to care management operations. When asked what the greatest hindrances to daily work was, over 90% of respondents included communication delays (such as waiting for a response to a page). Pharmacy-related issues were also perceived to be highly disruptive to care management operations. Over 60% of survey respondents listed pharmacy delays (such as waiting for a subscription to be filled and received) as being one of the most significant hindrances to daily work. Both of these issues correlated with and were seen as causes for dissatisfaction with Unit 8B’s current discharge process.

**Conclusions**

Three key conclusions were derived from the team’s findings in literature search, interviews, observations, data collection, and a survey. The team created a swim lane diagram to display the findings and conclusions of the social worker and case manager workflow as it interacts with the patient.

1. Both the case manager and the social worker spend most of their time in the patient room and MiChart.

From all time study data collected, the case manager spends 32% of the time with the patient in the room and 24% charting. Similarly, the social worker spends 39% of the time with the patient in the room and 28% in MiChart. The team saw that the social worker spent a longer amount of time in the patient room and MiChart. This can be explained by the fact that the social worker typically has less patients per day than the case manager.
2. The case manager and the social worker are in constant communication about patients.

In the interview and shadowing portion of the data collection, it was noticed that the workflow of both case manager and social work involved vast communication with external sources as well as with each other. Both positions described this relationship as specific to Unit 8B and critical to their daily workflows being executed efficiently.

3. The delays caused from external communication and pharmacy are the two largest hindrances to daily work.

During interviews and shadowing there was an expressed concern from both the case manager and the social worker regarding delays in communication. The results of the Qualtrics survey indicated that the floor nurses overwhelmingly agree that delays in communication and delays in pharmacy are the biggest hindrances to daily work. The majority of respondents also listed both as being issues that, if addressed, could expedite the discharge process.

Swim Lane Diagram

The aforementioned conclusions were synthesized into a Swim Lane Diagram [Appendix A]. The map shows a high level interaction of a patient, social worker, and case manager. The “typical” stay of the patient is the summarized from entry into Unit 8B until discharge. At every key step in the patient’s care there is an associated task of the case manager and social worker paralleled in the diagram. The diagram also illustrates the exchange of information at each step between the social worker and the case manager.

Expected Impact

The team expects that the impact of this project’s deliverables will manifest itself in two major ways. First, materials such as the swim lane diagram will provide management with the normal flows of people and information within care management on Unit 8B. Second, the data submitted can be used as the groundwork for future projects to take a deeper look into the care management operations on Unit 8B. Similar studies could be conducted on other units as well, to find potential differences and how to turn the generally reactive duties of care management into more proactive work.

Recommendations for Future Work

As stated in the expected impact section, the intention of this project was to establish a common understanding between the direct care providers on the unit and all levels of management. As a result, the groundwork is established, allowing for future work specifically focused on process improvement and tangible implementation of change both in Unit 8B and in unit all throughout UMHS. The student team has developed the following recommendations for future work, encouraging the continuation of the work already completed:

- Creation of a revised data collection sheet to better capture workflow
  - Based on feedback from those who completed the sheet on-site
Based on the difficulties we faced in capturing key data elements like readmission type, discharge planning, etc.

- Restructure the data collection sheet in order to better capture communication lapses

### Expansion of data collection efforts (both for the survey and data collection sheets)

- Conduct data collection over a longer time period to collect a larger sample size
- Includes distribution to units other than 8B, also capturing a larger sample size
- A larger data collection campaign will allow for more concrete conclusions to be drawn as a result of statistically significant data

### Expansion of the scope of study

- With current state workflow mapped, and several barriers to discharge planning identified, this allows for projects examining the interaction with external departments to be studied
- Suggestions include, but are not limited to:
  - Unit interaction with hospital pharmacy
  - Communication with physicians and other external units

### Revisit the focus on readmission patients only

- If a larger sample size were to be obtained, more specific conclusions could be drawn regarding reasons for readmission
- This would shed light on two very important matters
  - Barriers to timely discharge planning and execution
  - Avoidable days identification and prevention

### Allow for room visits and MiChart process to occur simultaneously

- As discovered in data collection, MiChart-ing and patient room visits comprised the vast majority of key personnel workdays. Thus, allowing for these processes to occur simultaneously could significantly streamline daily workflow and allow personnel to see more patients

### Stress the importance proactive discharge planning and execution techniques

- Starts with the encouragement of the current “3 x 11” rule (three patients discharged by 11am each morning)
- All discharges occurring before noon do not count as an avoidable day
References


[3] A Patient-Centered Approach to Assessing the Psychosocial Factors That Impact Geriatric Readmissions. Leslie Dubin, LMSW; Jocelyn Wiggins, B.M., B.Ch. Division of Geriatric and Palliative Medicine, University of Michigan, Ann Arbor, MI, USA

[4] Susan M. Hieber, BBA, University of Michigan Hospital and Health Systems, Senior Clinical Information Analyst, Care Management Administration Performance Assessment & Clinical Effectiveness (PACE), University of Michigan, Ann Arbor, MI, USA