Analysis of Nursing Workload at the Division of Rheumatology

University of Michigan Health System

Project Final Report

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December 8, 2008
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Executive Summary

The Division of Rheumatology is a part of Internal Medicine at the University of Michigan Health System (UMHS). Its nursing team, which is comprised of eight members, performs a variety of tasks.

The management of the Division of Rheumatology wants the current tasks performed by the nursing team to be more efficient. The problem is shown by the frequent overtime (~$23,000 in FY 07 for the entire nursing team). In addition to the costs, frequent overtime affects worker morale and productivity. The major challenges currently faced by the nursing team include a need to efficiently operate the lab management system, establish consistent work practices and clearly define roles and responsibilities.

To address these challenges, the student team collected and analyzed data related to nursing tasks and developed recommendations. The recommendations were aimed at standardizing the processes performed by the nursing team, clarifying the roles of various members in the nursing team, automating the transfer of information from the nursing team to the Cancer Center, and optimizing the lab management system.

This project is a detailed account of the student team’s analysis of the current nursing workload. During the course of the project, the student team has analyzed and evaluated the current nursing tasks and developed recommendations to improve their efficiency.

Methodology

The student team used the following methodology for this project:

Conducted literature search: Three nursing workload studies from past IOE 481 student projects were examined to identify the appropriate methodology required for this project.

Performed initial interviews and observations: Six of the nursing team members, including two registered nurses (RNs), a licensed practical nurse (LPN), a medical assistant (MA), the clerk, and the float nurse, were interviewed. The nursing team was then observed for approximately 24 hours over a period of one week to gain a better understanding of the current situation and tasks performed by them.

Obtained existing data on nursing workload: The Nursing Manager’s assistant provided data on nursing overtime and number of clinic visits from the beginning of January 2008 through September 2008. Data on the number of outgoing calls from the end of June 2008 through September 2008 and LPN coverage data from the beginning of February through October 2008 were also provided.

Performed data collection and analysis: The student team worked with the nursing team to develop three kinds of studies for data collection. The nursing team performed work sampling, phone call and task volume tick mark studies. A total of 648 work sampling data points were
collected for two RNs and two MAs; data for 128 phone calls were collected for two RNs. The student team used this data to quantify the proportion of time the nursing team spends on each task, determine the volume and duration of incoming and outgoing phone calls, and provide a breakdown of the types of phone calls made and received. Due to an insufficient number of data points from the task volume tick mark studies, the student team was unable to estimate the volume of each type of task performed by the nursing team.

Findings
The student team developed findings that were qualitative and quantitative in nature. The qualitative findings were based on interviews and observations while the quantitative findings were based on analysis performed on existing and collected data. The key findings are summarized below.

Qualitative:

- Cancer Center does not accept electronic notes for scheduling Rheumatology patients for Cytoxan infusions. The nursing team has to prepare infusion paperwork and arrange for its physical transfer to the Cancer Center.
- Standard practice is for the Cancer Center to inform patients regarding their infusion appointments. However, they occasionally do not inform the patients. Hence, patients are sometimes unaware of their infusion appointments and tend to miss them. As a result, the nursing team has to reschedule infusion appointments.
- Patients are periodically leaving incorrect or incomplete information in the Refill (Rx) mailbox. Also, often times, the Problem Summary List (PSL) has incorrect patient and medication information. Hence, the nursing team has to spend time every day contacting patients to get information regarding patient medications to process refill requests.
- Physicians, sometimes, prescribe refills for certain chronic medications for three to four months even when they can be prescribed for as long as a year.
- The nursing team places several calls to certain phone numbers every day. The team does not use speed dials when placing these calls.

Quantitative:

- Two nurses and one LPN worked for a total of 274 hours of overtime between January 2008 and September 2008.
- The clerk spends on an average one hour and 58 minutes every day manually entering labs into the Immunosuppressive System (IMS).
- There is no critical relationship between the total number of overtime hours worked and the number of clinic visits by physicians.
- Two RNs spent, on an average, 59 minutes every day on outgoing phone calls between June 08 and September 08.
- The RNs spend approximately four to seven minutes per phone call.
The amount of overtime worked and the LPN coverage for each week follow an inverse relationship.
Talking to the patients and documenting in CareWeb are the two most time consuming tasks for the RNs and the MAs.
The RNs spend more than 60% of their time on the phone talking to patients and around 10% of their time on the phone talking to the pharmacy.
The MA box receives, on an average, 3.6 incorrectly flagged messages per day.

**Conclusions**
The key findings from analysis of collected data, existing data, interviews and observations indicates the possibility of reducing nursing workload if recommendations were formulated, aimed at
- Streamlining activities that occupy majority of the RNs’ work time.
- Enabling processes that will allow the RNs to function more efficiently.
- Redistributing certain tasks performed by the RNs amongst others in the nursing team.

Formulating a method of allowing RNs to better utilize their time on phone and CareWeb (tasks that occupy the majority of their time) will allow them to function more efficiently. The findings indicate that recommendations developed should also be directed at standardizing existing tasks and clarifying roles in the nursing team.

**Recommendations**
Based on the interviews, observations, and data analysis for the work sampling, phone call studies and existing data, the student team developed the following key recommendations:

- The Nursing Manager should discuss with the Cancer Center the possibility of automating the process of scheduling Cytoxan infusions.
- The Nursing Manager should ensure with the pathology clinic that labs from outside vendors are entered into the Immunosuppressive System (IMS) by the pathology clinic instead of the nursing team.
- The Rheumatology department should implement online medication refill request forms to streamline the time currently spent trying to contact patients to collect information regarding patient medication.
- The Rheumatology department should formalize the communication between the nursing team and the call center to ensure messages are handled more efficiently.
- The Rheumatology physicians should standardize the medication refill process for chronic medications to make sure they are prescribed for the maximum allowable period.
Overview

The University of Michigan Health System (UMHS) is a leading educational health system in Ann Arbor, Michigan. Within UMHS, the Division of Rheumatology at the Taubman Center is a part of Internal Medicine. The division is internationally recognized for excellence in diagnosis and management of rheumatic and musculoskeletal diseases, basic and clinical research, and training of rheumatology clinicians and students. Its nursing team is comprised of two full-time registered nurses (RNs), two full-time licensed practical nurses (LPNs), three medical assistants (MAs) and one clerk to support the nurses. One of the LPNs was hired towards the end of the student project. The effects of her hiring were not included in our project analysis. In addition, a float RN helps whenever needed. The nursing team performs a variety of tasks, which include:

- Processing referrals and calls from patients
- Performing tasks delegated by physicians
- Coordinating post-visit care of patients
- Managing medication and lab tests
- Managing symptoms
- Scheduling Cytoxan infusions
- Educating patients about medications
- Answering general questions from patients

The Nurse Manager at the Division of Rheumatology reported that the nurses currently work a lot of overtime (~$23,000 for the FY 2007) and hence thinks that the tasks performed by the nursing team could be more efficient and is looking for opportunities to streamline and standardize these tasks. The student team assisted the Nurse Manager of the Division of Rheumatology by conducting interviews, observations and performing work sampling, phone calls, and task volume tick mark studies. Subsequently, the student team analyzed collected and existing data on the various tasks that the nursing team performs and then developed recommendations to streamline and standardize these tasks. The studies helped identify wasted work, clarify roles and enabled the student team to recommend ways to allocate work more efficiently amongst the nurses. Based on these findings, the team recommended changes that directly address the challenges faced by the Division of Rheumatology. The purpose of this report is to present in detail the goals and objectives, methodology, findings and recommendations of the study conducted at the Division of Rheumatology.

Background

The management of the Division of Rheumatology thinks that the current tasks performed by the nursing team could be more efficient. The problem is shown by the frequent overtime. In addition to the costs, frequent overtime affects worker morale and productivity.
The major challenges facing the nursing team include a need to:

- Efficiently operate the lab and medical management system
- Establish consistent work practices
- Clearly define roles and responsibilities

The nursing team does most of its work through phone calls and through online systems called CareWeb and Immunosuppressive Management System (IMS). They perform a majority of their work in a small room with up to seven nursing team members present. The small size of the room is another challenge faced by the nursing team.

The student team has looked to alleviate current challenges faced by the nursing team by observing and studying the current processes, collecting relevant data, interviewing nurses and physicians, analyzing the collected data, and finally developing recommendations.

**Key Issues**

Through interviews with the nursing team and the client, and by observing the processes at the Division of Rheumatology, the student team determined that the key issues that needed to be addressed in this project are:

- Inefficient processing of calls
- Lack of coordination while performing tasks delegated by physicians
- Inconsistent coordination of post-visit care of patients
- Inefficient management of medication and lab tests
- Inefficient transfer of information to the infusion team at the Cancer Center

**Goals and Objectives**

The primary goal of this project was to standardize and streamline the processes performed by the nursing team at the Division of Rheumatology at the University of Michigan Hospital. To achieve this goal, the student team analyzed the tasks performed by the nursing team in detail. With this information, the student team made recommendations to:

- Standardize the processes performed by the nursing team
- Clarify the roles of different members in the nursing team
- Automate the transfer of information from the nursing team to the infusion team
- Optimize the lab management system

**Project Scope**

The scope of this project included examining the processes performed by the nursing team at the Division of Rheumatology. Specifically, the student team examined the most common nursing
tasks, which include prescription refills, orders, lab monitoring, test results and immunosuppressive enrollment of patients.

This project did not include examining activities performed by nurses not at the Division of Rheumatology. Treatment activities that occur within the out-patient clinic were not studied as a part of this project.

**Methodology**

The student team conducted a literature search, interviewed and observed the nursing team at the Division of Rheumatology; performed data collection and analysis; and obtained data on overtime, outgoing calls, LPN coverage and number of clinic visits. The methodology used by the student team is described in further detail below.

**Literature search:** Three similar IOE 481 nursing workload analysis project reports in the Program and Operations Analysis Department Library were examined. The student team looked closely at the data collection methodology and recommendations implemented by other teams. Performing a literature search gave the student team a chance to learn from the work of others to improve the project results and reduce potential issues that frequently arise. The report titles are referenced in Appendix A.

**Initial interviews:** Two RNs, an LPN, an MA, a clerk, and the float nurse were interviewed. The student team inquired about the activities nurses perform regularly, the approximate percentage of time that each nurse spends on each of these activities, and any changes that they think would improve their ability to do the job. The information collected from these interviews assisted the student team in developing a clear understanding of the current situation at the Division of Rheumatology. This information was important in validating the student team’s initial assumptions about the challenges at the Division of Rheumatology. A list of some of the interview questions can be seen in Appendix B.

**Initial observations:** The nursing team was observed by shadowing the nurses and recording the tasks they perform and methods of each nurse for approximately 24 hours over the period of a week. These observations helped the student team understand the processes performed at the Division of Rheumatology and helped the team in developing recommendations.
**Existing data:** Existing data was obtained from the Nursing Manager’s assistant. The data obtained is shown below:

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of daily nursing overtime</td>
<td>January 08 - September 08</td>
</tr>
<tr>
<td>Number of clinic visits by physicians</td>
<td>January 08 - September 08</td>
</tr>
<tr>
<td>Number of outgoing phone calls</td>
<td>June 08 – September 08</td>
</tr>
<tr>
<td>Amount of LPN coverage</td>
<td>February 08 - October 08</td>
</tr>
</tbody>
</table>

**Quantitative data collection:** Data was collected in the form of work sampling, phone calls and task volume tick mark studies, which the team developed based on the nursing interviews and observations. Two nurses, three MAs, an LPN and a clerk performed work sampling studies for two weeks and phone calls studies for one week. A RN and an MA performed the task volume tick mark studies for one week.

- **Work sampling study:** The nursing team collected observations using a beeper that was set at four beeps per hour which goes off randomly during each hour. Every time the beeper sounded, the nurse recorded the task being performed at that time. This study helped determine the proportion of time dedicated to performing each task daily by each of the nursing team member. A total of 648 work sampling data points were collected for the two RNs and two MAs. The work sampling study data collection sheet can be seen in Appendix C.

- **Phone calls study:** The nursing team recorded all incoming and outgoing phone calls during the day, including voicemails. This study helped the student team determine the volume and duration of incoming and outgoing phone calls, and provided a breakdown of the different types of phone calls made and received. The team collected data for 71 calls that RN1 received or made and for 57 calls that RN2 received or made. The phone calls study data collection sheet can be seen in Appendix D.

- **Task volume tick mark study:** The nursing team placed a tick mark in the box corresponding to the task performed at the start time of each task and indicated the number of incorrectly flagged CareWeb messages received during a day. This study was designed to help determine the volume of each type of task performed, but due to an insufficient number of data points, the student team was unable to estimate the volume of each type of task performed by the nursing team. The student team collected 118 data points, out of which 101 came from MA2 and 17 came from RN2. The task volume tick mark study data collection sheet can be seen in Appendix E.
**Data analysis:** After the data was collected, the student team used statistical tools and methods to analyze the obtained and collected data. Collected data included data from nursing interviews, work sampling, phone calls and task volume tick mark studies.

**Interviews about findings:** The nursing team was interviewed about the findings once the data collection studies were completed and the data from these studies was analyzed. These interviews helped the student team develop recommendations that can be easily implemented within the nursing team.

**Recommendation development:** Based on the interviews, observations and quantitative studies, the student team developed recommendations aimed at standardizing and streamlining the nursing tasks at the Division of Rheumatology.

**Findings and conclusions**

The observations and interviews, and the collected and existing data have been analyzed and the following findings were identified to develop conclusions and overall recommendations.

**Interviews and observations**

The findings from initial interviews with the nursing team and the client are summarized below.

**Management perceptions**

**Nursing Workload:**

- Nurses spend majority of their time on phone related activities
- Workload depends on time of the day and day of the week
- Mondays and Fridays are the busiest days
- Nurses typically work about an hour of overtime daily
- Overtime is projected to reduce greatly with the hiring of a new LPN
- Busiest time for nurses is generally right after the clinic times of the physicians they support

**Process Improvements:**

- A reminder system that automatically reminds patients about their lab tests
- The RNs being relieved of tasks that do not require a nursing license
- A measurement system to measure nursing workload

**Nursing perceptions**

**Nursing Workload:**

- Nurses spend majority of the time on phone related activities, handling infusions and CareWeb notifications
- Nurses spend the rest of the time educating patients, getting referrals and consults from doctors, and providing patient follow-up care
• Two nurses support 26 outpatient doctors
• Red flag messages (marked by call center) are attended to immediately
• Overtime hours are dedicated to catching up with phone calls and CareWeb notifications
• Infusion tasks are very time consuming

Process Improvements:
• Infusion paperwork orders eliminated and switched to electronic orders
• Call center to flag messages more appropriately according to the level of importance
• A bigger work room to increase productivity
• A dedicated room for educating patients

A simplified flow chart with nursing operations was developed based on the responses from the interviews. The flow chart can be seen in Appendix F.

The nursing team was further interviewed and observed to develop detailed flow charts for the processes of CareWeb notification management, prescription refills, Cytoxan infusions and prior authorizations. These flowcharts can be seen in Appendices G, H, I and J, respectively.

Additionally, the student team found that:

• Cancer Center does not accept electronic notes for scheduling Rheumatology patients for Cytoxan infusions. The nursing team has to prepare infusion paperwork and arrange for its physical transfer to the Cancer Center.
• Patients are sometimes unaware of their infusion appointments since the Cancer Center occasionally does not inform the patients regarding their appointments. As a result, patients tend to miss them. Therefore, the nursing team has to reschedule infusion appointments.
• Patients are periodically leaving incorrect or incomplete information on the Refill (Rx) mailbox. Also, often times, the Problem Summary List (PSL) has incorrect patient and medication information. Hence, the nursing team has to spend time every day contacting patients to get information regarding medications to process refill requests.
• Patients occasionally tend to forget to request medication refills while in clinic.
• Physicians, sometimes, prescribe refills for certain chronic medications for three to four months even when they can be prescribed for as long as a year.
• The nursing team is currently unable to access some of the physicians’ CareWeb notification boxes. As a result, the nursing team cannot access the messages in these boxes while the physicians are on leave.
• The nursing team currently spends time trying to locate a patient in the CareWeb system when a physician raises a request for the patient. This problem is aggravated in the case of multiple patients with the same first and last names. Physicians have a proxy list containing their patients’ information. If the nursing team had access to this list, they
would be able to differentiate between patients with the same first and last names more efficiently.

- The nursing team places several calls to certain phone numbers every day. The team does not use the available speed dial and redial features when placing these calls.
- Some nursing team members and physicians are more comfortable using CareWeb system than others.
- One of the physicians has informal lunch meetings with the nursing team.
- Lab protocols are based on the analysis of lab results. Physicians could save nursing team time and effort by monitoring existing practice of drawing labs and comparing it with standard lab protocol to potentially reduce the number of labs drawn.
- The nurses spend time trying to find open rooms to perform patient education. At times they have to contact the Training Specialist Associate to reserve rooms to conduct patient education.
Collected data

Findings from collected data can be broken into three categories. They include work sampling, phone calls, and the task volume tick mark studies. The findings are summarized below.

Work sampling study

Figure 1 below displays the approximate proportion of time that RN1 and RN2 dedicate to performing various daily tasks.

![Figure 1: Proportion of time spent on each task by RN1 and RN2 (Collected by IOE 481 Team 8 F08, Sample size = 290 data points)](image)

The RNs spend over 40% of their time documenting and talking to patients or patient families. Each of them spends over 20% of their eight hour day documenting. The nurses spend about 6% of their time performing administrative responsibilities and doing after call coordinating for patients. They also spend about 5% of their day (~24 minutes) setting up infusions.
Figure 2 below displays the approximate proportion of time that MA1 and MA2 dedicate to performing various daily tasks.

MA1 and MA2 spent the majority of time (~35%) talking to patient or patient family and transcribing from voicemail. Similar to nurses, the MAs spend a reasonable proportion of time documenting and performing administrative responsibilities. A noticeable fact is that MA1 spends 8% of the day (~39 minutes) on hold waiting to talk to patients, physicians, or pharmacy. MA1 spends approximately 6% of the day (~29 minutes) faxing related to calls.
**Phone calls study**

Table 2 below shows descriptive statistics for time spent by the RNs on each phone call they received or made over a five day period.

Table 2: Analysis of phone call duration (minutes) for RN1, RN2 and RNs combined

<table>
<thead>
<tr>
<th>Task Type</th>
<th>RN1</th>
<th>RN2</th>
<th>RNs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Time Spent on Phone</td>
<td>4.00</td>
<td>7.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Median Time Spent on Phone</td>
<td>3.00</td>
<td>7.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.00</td>
<td>5.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

RN1 spends approximately four minutes on each phone call while RN2 spends approximately seven minutes on each phone call. The standard deviation in phone call time for RN2, at five minutes, was greater compared to that of RN1, at zero minutes.

Based on the data collected, a Pareto Chart, displayed in Figure 3 below, was developed to show the proportion of time spent on each phone call type.

![Figure 3: Proportion of time spent on different types of phone calls by RN1 and RN2](image-url)  
(Collected by IOE 481 Team 8 F08, Sample size = 128 data points)

As expected, the graph above shows that the nurses spend most of their time on the phone with patients; they also spend a significant proportion of time on the phone with the pharmacy and the doctor. With suitable recommendations the nurses could spend more time on the phone with the patients and potentially less time on the phone with doctors and the pharmacy.
Table 3 below shows the amount of time spent by the Clerk on entering labs manually into the IMS system every day over a 5 day period.

Table 3: Time spent (minutes) by Clerk on entering labs manually into IMS system

<table>
<thead>
<tr>
<th>Day</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-Oct</td>
<td>120</td>
</tr>
<tr>
<td>28-Oct</td>
<td>144</td>
</tr>
<tr>
<td>29-Oct</td>
<td>101</td>
</tr>
<tr>
<td>30-Oct</td>
<td>140</td>
</tr>
<tr>
<td>31-Oct</td>
<td>85</td>
</tr>
<tr>
<td>Average</td>
<td>118</td>
</tr>
</tbody>
</table>

The phone call study results show that for the Clerk spends approximately one hour and 58 minutes every day manually entering labs into the IMS system. Currently, the nursing team enters the data manually instead of the Pathology clinic doing it because the nursing team has complaints that the Pathology clinic enters incomplete data on multiple occasions.

Task volume tick mark study
Out of the 118 data points collected, 101 came from MA2. Due to an insufficient number of data points as well as a lack of a representative sample, the volume of each type of task performed by the nursing team was not estimated.

Table 4 shows the number of incorrectly flagged CareWeb notifications received by MA2.

Table 4: Number of incorrectly flagged CareWeb messages

<table>
<thead>
<tr>
<th>Day</th>
<th>Number of messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-Nov</td>
<td>5</td>
</tr>
<tr>
<td>24-Nov</td>
<td>4</td>
</tr>
<tr>
<td>25-Nov</td>
<td>0</td>
</tr>
<tr>
<td>2-Dec</td>
<td>3</td>
</tr>
<tr>
<td>3-Dec</td>
<td>6</td>
</tr>
<tr>
<td>Average</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Although there is a Red Call Process checklist along with a list of trigger words that has been given to the call center clerks, 3.6 messages per day coming to the Rheumatology box are still flagged incorrectly. There is a lack of formalized communication between the nursing team and the call center.
Obtained data

Findings from obtained data can be broken into four categories. They include daily nursing overtime, number of clinic visits by patients, outgoing phone calls and LPN coverage. The findings are summarized below.

Daily nursing overtime
Table 5 below shows the amount of overtime (OT) that two nurses and an LPN worked from the beginning of January 2008 to the end of September 2008.

<table>
<thead>
<tr>
<th>Month</th>
<th>RN1 OT</th>
<th>RN2 OT</th>
<th>LPN OT</th>
<th>Total OT</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>26.5</td>
<td>19.3</td>
<td>10.8</td>
<td>56.6</td>
</tr>
<tr>
<td>February</td>
<td>19.8</td>
<td>11.4</td>
<td>3.4</td>
<td>34.6</td>
</tr>
<tr>
<td>March</td>
<td>11.8</td>
<td>8.0</td>
<td>2.0</td>
<td>21.8</td>
</tr>
<tr>
<td>April</td>
<td>9.5</td>
<td>7.3</td>
<td>1.9</td>
<td>18.7</td>
</tr>
<tr>
<td>May</td>
<td>1.3</td>
<td>7.5</td>
<td>3.2</td>
<td>12.0</td>
</tr>
<tr>
<td>June</td>
<td>8.0</td>
<td>8.1</td>
<td>6.4</td>
<td>22.5</td>
</tr>
<tr>
<td>July</td>
<td>22.5</td>
<td>18.5</td>
<td>6.7</td>
<td>47.7</td>
</tr>
<tr>
<td>August</td>
<td>18.0</td>
<td>20.4</td>
<td>2.8</td>
<td>41.2</td>
</tr>
<tr>
<td>September</td>
<td>8.3</td>
<td>9.8</td>
<td>1.0</td>
<td>19.1</td>
</tr>
<tr>
<td>Total</td>
<td>125.7</td>
<td>110.3</td>
<td>38.2</td>
<td>274.2</td>
</tr>
<tr>
<td>Average</td>
<td>14.0</td>
<td>12.3</td>
<td>4.3</td>
<td>30.5</td>
</tr>
</tbody>
</table>

The RNs and the LPN worked for a total of 274 hours of overtime during the time span. RN1 and RN2 worked approximately 14 hours and 12.3 hours of overtime per month while the LPN worked 4.3 hours of overtime per month. Assuming 20 working days in a month, the RNs work approximately 80 minutes of overtime per day.
**Number of clinic visits by physicians**

Table 6 below shows the number of clinic visits that the Division of Rheumatology physicians accommodated from the beginning of January 2008 until the end of October 2008.

Table 6: Number of clinic visits by month

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of clinic visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1003</td>
</tr>
<tr>
<td>February</td>
<td>780</td>
</tr>
<tr>
<td>March</td>
<td>920</td>
</tr>
<tr>
<td>April</td>
<td>944</td>
</tr>
<tr>
<td>May</td>
<td>907</td>
</tr>
<tr>
<td>June</td>
<td>847</td>
</tr>
<tr>
<td>July</td>
<td>1087</td>
</tr>
<tr>
<td>August</td>
<td>980</td>
</tr>
<tr>
<td>September</td>
<td>1002</td>
</tr>
<tr>
<td>October</td>
<td>1047</td>
</tr>
</tbody>
</table>

Figure 4 below shows a relationship between the total number of overtime hours of the above nursing team and the number of clinic visits by physicians.

![Figure 4: Relationship between the number of nursing OT and number of clinic visits](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAAEAAABCAQMAAABg5z0pAAAABGdBTUEAALGPC/xhBQAAAAB3RJTUUH3NkAgiWxWAAAABdJREFUeF5ex9z9/8AAgADAMBAAkEALAAAAAABJRU5ErkJggg==)

Figure 4: Relationship between the number of nursing OT and number of clinic visits
(Data received from Nursing Manager’s assistant by IOE 481 Team 8 F08, Sample size = 8,470 visits)

From figure above, it can be seen that there is no clear relationship between the number of clinic visits performed by physicians and the number of overtime hours of nursing team. This is
contrary to the Nursing Manager’s perception that nursing overtime was directly proportional to the number of clinic visits.

**Outgoing phone calls**

Table 7 below displays descriptive statistics of outgoing phone call data for RN1. Existing outgoing phone call data was analyzed over a period of three months.

<table>
<thead>
<tr>
<th>Time period</th>
<th>Number of days</th>
<th>Mean (minutes)</th>
<th>Median (minutes)</th>
<th>Standard deviation (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 25 to Jul 25</td>
<td>22</td>
<td>58.39</td>
<td>52.76</td>
<td>23.61</td>
</tr>
<tr>
<td>Jul 28 to Aug 25</td>
<td>21</td>
<td>57.88</td>
<td>52.82</td>
<td>23.39</td>
</tr>
<tr>
<td>Aug 26 to Sep 25</td>
<td>22</td>
<td>64.40</td>
<td>67.55</td>
<td>21.36</td>
</tr>
<tr>
<td>All</td>
<td>65</td>
<td>60.26</td>
<td>54.57</td>
<td>22.64</td>
</tr>
</tbody>
</table>

RN1 spends approximately 60.26 minutes on the phone per working day on outgoing calls.

Figure 5 below shows the trend line used to analyze outgoing calls per day for RN1.

![Figure 5: Trend line on outgoing phone calls data for RN1](image)

(Data received from Nursing Manager’s assistant by IOE 481 Team 8 F08, Sample size = 1,321 calls)

The figure shows a random pattern in outgoing calls per day over a three month period.
Table 8 below displays descriptive statistics of outgoing phone call data for RN2.

Table 8: Descriptive statistics of outgoing phone calls data for RN2

<table>
<thead>
<tr>
<th>Time period</th>
<th>Number of days</th>
<th>Mean (minutes)</th>
<th>Median (minutes)</th>
<th>Standard Deviation (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 25 to Jul 25</td>
<td>21</td>
<td>54.46</td>
<td>52.80</td>
<td>20.71</td>
</tr>
<tr>
<td>Jul 28 to Aug 25</td>
<td>21</td>
<td>68.41</td>
<td>71.43</td>
<td>26.29</td>
</tr>
<tr>
<td>Aug 26 to Sep 25</td>
<td>22</td>
<td>51.70</td>
<td>51.78</td>
<td>25.20</td>
</tr>
<tr>
<td>All</td>
<td>64</td>
<td>58.15</td>
<td>53.34</td>
<td>24.92</td>
</tr>
</tbody>
</table>

RN2 spends approximately 58.15 minutes on the phone per working day on outgoing calls.

Figure 6 below shows the trend line used to analyze outgoing calls per day for RN2.

![Figure 6: Trend line on outgoing phone calls data for RN2](image)

(Data received from Nursing Manager’s assistant by IOE 481 Team 8 F08, Sample size = 1,321 calls)

The figure shows that for RN2, there was a slight increase in outgoing phone call time during August as compared to other months. The average time spent on outgoing phone calls rose to 68.41 minutes between July and August 2008.)
LPN coverage
Figure 7 below shows a relation between weekly LPN coverage and total overtime. The graph was plotted using total overtime and LPN coverage data for the period beginning June 30, 2008 and ending September 29, 2008 (Beginning June 30, the LPN position was changed from 20 hours/week to 40 hours/week).

![Graph showing relationship between LPN coverage and total overtime]

Figure 7: Relationship between the amount of LPN coverage and number of nursing OT
(Data received from Nursing Manager’s assistant by IOE 481 Team 8 F08, Sample size = 53 days)

From the graph, it can be clearly seen that when the weekly LPN coverage is low, the overtime is high whereas when the LPN coverage is high, the total overtime is low. This relation suggests the need for an additional LPN. With the hiring of the new LPN, nursing overtime will reduce greatly as well as eliminate the need for LPN coverage.

Recommendations
Based on the findings from the observations, interviews, work sampling, phone call, and task volume tick mark studies and analysis of data obtained from the nursing manager, the following recommendations were developed:

- The nursing manager should meet with the Cancer Center to discuss the possibility of the Cancer Center accepting electronic notes for scheduling Cytoxan infusions for Rheumatology patients.

- The nursing manager should meet with the Cancer Center to further investigate as to why a few patients are unaware of their infusion appointments at the Cancer Center.

- The Nursing Manager should meet with the Pathology clinic to discuss the entering of labs into the IMS system. If the Rheumatology staff is freed of the task of entering labs
manually into the IMS system, it will save the Clerk approximately one hour and 58 minutes per day (~9 hours and 50 minutes per week).

- The Rheumatology department should implement online medication refill request forms. A significant amount of time is currently spent contacting patients to get information regarding medication to process the refill requests. With the use of an online refill request form, where the patient will be asked to fill out patient medication information, the nursing process of collecting patient medication information will be streamlined.

- The Rheumatology department should develop in-clinic protocols to increase the number of patients that get prescription refills while in clinic. This would streamline the process of trying to contact patients and collecting patient medication information over the phone. It would also reduce the number of CareWeb notes exchanged.

- The medication refill process for chronic medications should be standardized. Certain chronic medication refills can be prescribed for up to a year. Although a few physicians prescribe refills for these medications for a year, it is not standard across all physicians. If medication refills for chronic medications could be prescribed for longer periods, it would reduce nursing workload.

- The Rheumatology department should survey its physicians using a short email approximately every six months to allow the physicians to reflect on their existing practice of drawing labs. These surveys will allow the physicians to compare their existing practice of drawing labs with the standard lab protocol to potentially reduce the number of labs drawn.

- The Rheumatology department should have informal meetings between the nursing team and its physicians. These meetings would help improve physician–nurse relations and help perform nursing tasks more efficiently since the nursing team would get to know their physicians and their practices better.

- The Rheumatology department should assess staff competency in the CareWeb system and accordingly implement CareWeb refresher classes. A sample size of nine people (six nursing team members, a physician, the nursing manager, and the training specialist associate) was surveyed regarding refresher classes in CareWeb. 100% of the responses said that the refresher classes would be useful.

- The Rheumatology department should formalize communication between the nursing team and the call center. The student team recommends the use of a list of suggestions
and comments that can be updated every time a nursing team member thinks that the call center needs to perform a task more efficiently.

- The nursing team should implement the use of the fax server. Each of the nursing team members currently spends, on an average, 13 minutes every day receiving and sending faxes. With the use of the fax server, this time can be significantly reduced.

- The University of Michigan Health System should create ‘super-users’ in CareWeb system who can give permissions to the nursing team to access physician boxes and patient proxy lists.

- The RNs should delegate some of their tasks including informing patients regarding appointments, collecting patient information, and certain administrative responsibilities. Also, tasks related to scheduling Cytoxan infusions (e.g., putting folders together and updating PSL and IMS with dosage changes) should be delegated.

- The MAs at the Rheumatology clinic should be given access to the “Open Exam Room” group-wise calendar so that they can reserve rooms for nurses to conduct patient education. This will eliminate the need to contact the Training Specialist Associate to reserve rooms.

- The nursing team should use the speed dialing and redialing features on the phone systems. The phone systems have a speed dial and redial features which are currently not being used by the nursing team. The instructions for the use of the speed dial are included in Appendix K.

Implications for future research

Certain practices at the Division of Rheumatology can be studied more closely over time to further streamline and standardize nursing tasks. The student team recommends the following for further research:

- Interviewing more physicians to inquire if they follow lab protocol while drawing labs and what they think about streamlining the number of lab draws performed.
- Studying the number and type of faxes received during the day. This study will help quantify the number and type of duplicate requests that come in from different sources.
- Brainstorming the optimal room layout for the nursing team to be implemented after the renovation of the third floor of Taubman Center.
Acknowledgement

The student team would like to extend its gratitude to the project client, Karen Nairn, who is the Nurse Manager of the Division of Rheumatology. Karen has been instrumental in providing ongoing details of the challenges faced by the nursing team and keeping the student team up-to-date with project requirements and expectations. Karen has also assisted the student team with key existing data and contact information.

The student team would also like to thank the project coordinator, Tammy Ellies, who has been its guide and mentor. Tammy has helped the student team immensely in maintaining analytical quality and a positive client relationship. Tammy has also been providing the student team continuous feedback on the project progress.

Next, the student team would like to thank the nursing team. The nursing team has helped the student team understand and analyze the nursing processes by answering interview questions and by performing various data collection studies.

Finally, student team would like to thank Richard J. Coffey, Director, Program and Operations Analysis, Professor Mary Lind, Brock Husby, the rest of the IOE 481 teaching and hospital staff who have played a very important role in the student team’s learning experience this semester. Their insights and knowledge have helped the student team understand some of the challenges the health industry in the United States is facing today as well as techniques used to tackle pressing issues in this industry.
Appendix A: Literature search references

Title: Analysis of Cardiovascular Center Nursing Workload for Orders Management Project
Semester: Winter 2008
Group Members: Tracy Bachelder, Janna Davis, Danielle Scapa

Title: Workload Analysis of Ambulatory Care Nursing: Briarwood Medical Group
Semester: Winter 2008
Group Members: Mary Jo Luppino, Jamie Tompkins, Tim Vezino

Title: Analysis of Nursing Workload in the Trauma Burn ICU
Semester: Fall 2003
Group Members: Adam Forney, Ryan Hatcher, Jillian Kwiatkowski, Kathy Mokienko
Appendix B: Interview questions

1. Could you please list activities and tasks you perform regularly? Which tasks among these do you think can be performed by the MAs/Clerks?

2. What percentage of your time, would you say, goes towards each of the activities you listed?

3. Do you think that percentage depends on the day of the week?

4. Are there any activities that you listed which you feel are not in your job description?

5. What, if any, changes do you think would improve your ability to do your job?

6. Typically, during the overtime hours, what activities do you perform? Are there any activities which you HAVE to perform at the end of the day? Can those activities be performed during other times of the day?

7. Karen told us that she is hiring another LPN to help the nursing team. Once she is here, how much do you think the overtime will decrease if at all it does? If no then why?

8. How many physicians do you support? Do you think there are some physicians who delegate more work to you than others?

Specific questions:

1. What are the different types of phone calls you get? Do you think any of these can be solved at the call center itself?

2. How much time on an average do you spend on each phone call?

3. Could you explain more about the CareWeb notes and who are you getting them from?
Appendix C: Work sampling study data collection sheet

Staff:  
Department:  
Date:  

Instructions: When the random reminder beeper sounds, please place a check mark in the box corresponding to the task performed at the time of the beep, under the time that the beep occurred. Also, please note start, lunch, and end times below.

<table>
<thead>
<tr>
<th>Nursing Tasks:</th>
<th>7:00-8:00</th>
<th>8:00-9:00</th>
<th>9:00-10:00</th>
<th>10:00-11:00</th>
<th>11:00-12:00</th>
<th>12:00-1:00</th>
<th>1:00-2:00</th>
<th>2:00-3:00</th>
<th>3:00-4:00</th>
<th>4:00-5:00</th>
<th>5:00-6:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Phone Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In process of talking to patient/ family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting for next patient call</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>On hold</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking to provider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking to another internal department</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Leaving a message for pt/family</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking to pharmacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking to external agency</td>
<td></td>
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</tr>
<tr>
<td>Work related to call</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Faxing related to the call</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>After call coordinating for patients (non-phone)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Consulting with providers (non-phone)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looking up patient and care information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Call-Related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performing administrative responsibilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-clinic care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervising/delegating/precepting/orienting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taking personal time/self development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Start Time: _______  Lunch Time _______:_______  End Time: _______
### Appendix D: Phone calls study data collection sheet

Instructions: Record all incoming calls received during the day, including voicemails. Also, please note start, lunch, and end times below.

<table>
<thead>
<tr>
<th>Call #</th>
<th>Source</th>
<th>Type</th>
<th>Caller</th>
<th>Call Info</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Date:** _______
- **Start Shift:** _______
- **Lunch:** _______
- **Name:** _______
- **End Shift:** _______
- **Break:** _______

**Call Info**
- **Caller Name:**
- **Subject:**
- **Follow Up** - indicate type:
  - **Call**
  - **Fax**
  - **CW**

**Outcome**
- **Resolved**
- **Call**
- **Fax**
- **CW**
Appendix E: Task volume tick mark study data collection sheet

Data: _____________  Start Shift: _____  Lunch: _____:______
Name: ____________  End Shift: ____  Break: _____:______

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Type</th>
<th>Volume (Place tick every time you perform task)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8:00-9:00</td>
</tr>
<tr>
<td>1</td>
<td>Patient education</td>
<td>[ ]</td>
</tr>
<tr>
<td>2</td>
<td>Prescription refill</td>
<td>[ ]</td>
</tr>
<tr>
<td>3</td>
<td>Reviewing lab results</td>
<td>[ ]</td>
</tr>
<tr>
<td>4</td>
<td>Prior authorizations</td>
<td>[ ]</td>
</tr>
<tr>
<td>5</td>
<td>Receiving a sick call</td>
<td>[ ]</td>
</tr>
<tr>
<td>6</td>
<td>Setting up infusion</td>
<td>[ ]</td>
</tr>
<tr>
<td>7</td>
<td>Disability paperwork</td>
<td>[ ]</td>
</tr>
<tr>
<td>8</td>
<td>Sick letters</td>
<td>[ ]</td>
</tr>
<tr>
<td>9</td>
<td>Admitting patient</td>
<td>[ ]</td>
</tr>
<tr>
<td>10</td>
<td>Others</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

**CareWeb Notifications**

How many CareWeb notifications were there at beginning of the day?  ____________

How many CareWeb notes do you work on?  ____________

Could they have been differently flagged?  ____________

How many are pending at the end of the day?  ____________
Appendix F: Nursing operations flowchart

Patient Calls

Clerk at Call Center answers call

Clerk records initial information

Live Call

Call Enters Queue

Red/Flagged Call

Message notification sent to appropriate nursing box through CareWeb

MA reviews notifications

MA attends to notification if within scope else places in RN’s inbox

RN opens message and reviews given information

Call patient

Patient referral is needed

Contact referral

Document referral

Patient referral is needed

Note forwarded to doctor

Follow medication refill protocol

Is the medicine a narcotic?

Yes

No

Medicine refill is needed

Pass back to MA for refill

Message put on hold for later
Appendix G: CareWeb notification management flowchart

Clerks at the Call Center initiate notification

MA initiates notification

Nurse initiates notification

Flags notification according to level of importance

Disability paperwork

Patient sick calls

Patients in need of sick letters

Lab result management (Cytoxan and other drugs)

Prior authorizations

Patient is guided to follow up in another department

Patients curious of next step in medication procedure

Refills

Standing lab orders

Require authorizations

Nurses coordinate scheduling appointments

MA’s and nurses deal with Cytoxan related re-fills
Appendix H: Prescription refills flowchart

1. **Receive prescription refill message**
2. **Receive patient information including name, registration number, contactable and home phone numbers.**
3. **Collect information such as Pharmacy name and phone number, medication name, dosage type, amount of dosage left and frequency of dosage.**
4. **Visit history with ordering provider, including last visit and next scheduled appointments.**
5. **Is the drug a narcotic or DMARD?**
   - **Yes:** RN verifies provider dose (dose and frequency) using the electronic record.
   - **No:** MA / LPN verifies information directly with the provider.
6. **Verify with the provider regarding narcotics. Call in via phone.**
7. **Obtain additional data and / or assess effectiveness of medication and absence of side effects and document any pertinent data.**
8. **Contact designated pharmacy (RN/ LPN/MA) with the order for medication to last until next appt. or with refills for a maximum of one year.**
9. **Call patient over phone (RN).**
10. **Give patient explanation over phone.**
11. **Is the patient already on medication?**
    - **Yes:** Treated as sick call
    - **No:**
12. **Verify with the provider regarding narcotics. Call in via phone.**
13. **Obtain additional data and / or assess effectiveness of medication and absence of side effects and document any pertinent data.**
14. **Contact designated pharmacy (RN/ LPN/MA) with the order for medication to last until next appt. or with refills for a maximum of one year.**
15. **Call prescriptions to pharmacy (RN/ LPN/MA) as directed by the reviewing RN or provider.**

**Preliminary Information**

**Medication Information**

**START**

**END**

**Prior Authorization Process**

**Update Patient Summary List. Information includes quantity of medication and number of refills**

**Can the prescription be re-filled?**

**Yes**

**No**
Appendix I: Cytoxan infusions flowchart

Physicians request Cytoxan infusion and notify the nurses either through CareWeb, by email or in person.

<table>
<thead>
<tr>
<th>Physicians request Cytoxan infusion and notify the nurses either through CareWeb, by email or in person</th>
<th>Complete and fax infusion request form (RN) to infusion area (8A or Cancer Center)</th>
<th>Set up appointment date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Is the patient enrolled in the IMS program?</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Create folder and infusion order for patient</td>
<td>Enroll patient in IMS for cytoxan infusion</td>
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<tr>
<td></td>
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<td></td>
<td>Has the patient been to infusion labs before?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
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<tr>
<td>No</td>
<td>Check for lacking patient information from PSL (Problem Summary List)</td>
<td></td>
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<tr>
<td></td>
<td>Call patient and educate them briefly</td>
<td></td>
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<tr>
<td></td>
<td>Confirm appointment date</td>
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<tr>
<td></td>
<td>Mail the patient the information packet and a copy of the latest lab order</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Pull out lab results from previous medications and place in folder</td>
<td></td>
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<tr>
<td></td>
<td>Ear – mark document with colored label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Place folder with necessary documents in doctor’s folder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physician completes infusion orders in folder and endorses them</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Folder with completed infusion orders and post-Cytoxan lab results is returned to the folder nurses’ box</td>
<td></td>
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<tr>
<td></td>
<td>Nurse who initiated the process collects the folder</td>
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<tr>
<td></td>
<td>Notify MA’s to remind patients of pre-Cytoxan lab draws (6 days prior to infusion)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check IMS for pre-Cytoxan lab results 3-4 days prior to infusion (RN)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Review (RN) pre-Cytoxan labs (CBC, pregnancy test, UA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Are lab results acceptable?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Fax Cytoxan infusion orders and lab results to infusion center</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Review lab results with doctor</td>
<td></td>
</tr>
</tbody>
</table>

At times, Clerk / MA takes the folder to physician. Usually, the doctor collects it.
Appendix J: Prior authorization flowchart

1. Prior-authorization requested
2. Call Insurance company
3. Ask for prior-auth form
4. Look up patient information
5. Fill out paperwork
6. Fax paperwork to insurance company along with Doctors notes
7. Is prior-auth urgently required?
   - Yes
   - No
   - Wait up to three days
8. Did insurance company call back?
   - No
   - Call Insurance provider again
   - Yes
   - Is prior-auth approved?
     - No
     - Check with Doctor if need to appeal
     - Yes
8. Image approved prior-auth form for future use
9. Call Pharmacy
10. Update information into PSL
11. Inform patient
12. Did insurance company call back?
   - Yes
   - Letter of Medical Necessity developed?
     - No
     - Change medication
     - Yes

Appendix K: Phone speed dial instructions

Speed Call (Individual)
20 speed dial numbers can be programmed.
The list of codes will range from 00-19

To program:
1. Without lifting the handset
2. Press SPCCTRL
3. Enter 2-digit speed call code and the number (e.g. 00 9712481234567).
Enter number just as you would dial it.
4. Press DONE to save the code and the number
5. Repeat steps 2-4 to program the next speed dial number

To Use:
1. Lift handset
2. Press the SPCCCTLRL key and enter code (e.g. 00)