University of Michigan Health System

Analysis of Clerical Workload in
Central Staffing Resource Department
Final Report

Submitted to:
Kathleen Moore
Administrative Director Healthcare Nursing Administration

Lori Lathers
Training Specialist Senior Central Staffing Resource Department

Mary Duck
Industrial Engineer Expert, Lean Coach University of Michigan Health System, Program and Operations Analysis

Peter Li
Management Engineer Fellow University of Michigan Health System, Program and Operations Analysis

Dr. Mark Van Oyen
Professor, IOE 481 University of Michigan

Submitted by:
IOE 481 Project Team # 10
Daniel Gilmore
Helinda Ho
Mark Williams

Date Submitted:
December 17, 2009
Executive Summary

With the changing demands of administrative duties for healthcare today, the staffing requirements for hospital units are continuously changing. Clerical staff in the University of Michigan Health System (UMHS) perform the necessary administrative functions required to provide healthcare to the patients in the hospital units. The Senior Training Specialist of the Central Staffing Resource Department asked for a staffing model to calculate the required number of clerical staff needed in University Hospital units 5B, 5C, 6B, 6C, 8C, and Mott’s Children’s Hospital units 5 East and 5 West.

Background

In the University of Michigan Health System, clerical staff are responsible for the administrative functions that are necessary for patient care. The Health System is divided into units that perform duties which patients require. The two categories of units are surgical and medical units. Surgical units care for patients before and after surgery. The patients in these units typically have longer stays and low turnover rates. The patients in these units typically have longer stays and low turnover rates. Medical units provide general health care, and therefore tend to have a higher turnover rate. In units where there is a high patient turnover, a large amount of paperwork is generated. This paperwork tends to make the clerical staff in these units typically have a busier schedule than units with lower turnover rates. From this, the team has determined the clerical workload is a factor of the type of patients in the unit, the turnover of patients, and number of patients the unit services.

Previous studies have been conducted on the workload of clerical staff of various units. However, the hourly workload has not been previously quantified and documented. In order to propose a central surge support staffing model, a study was needed to determine the times units required additional clerical staff than the pre-assigned personnel. The team has been asked for a clerical staff workload breakdown, time spent per task, and proposed man hours for units that are in the greatest need for surge support.

Methodology

The team performed the following methods throughout the project:

- **Performed Literature Search and Extracted Historical Data**

  The team performed a literature search of previous reports on the clerical workload in UMHS, before and after the introduction of CareLink. These previous studies were conducted to assess the effectiveness of CareLink on the clerical staff workload. In addition to providing insight into the operation of UMHS units, these studies aided the team with validation of the results obtained in the current study. The previous studies cited are listed in the “Work Cited” section at the end of this report.

  The historical data extracted from the CareLink studies will provide the team with the time clerical staff spent on each task before and after the implementation of CareLink. Other
sources of historical data come from the medical order system UMHS uses, and the record of admits and discharges for patients in the current studies’ selected units.

- **Observed Clerical Tasks**

  The team observed the unit clerical staff by visiting each unit. The team recorded their initial observations on the business processes of the clerical staff, and gave each clerical staff person a preliminary interview to collect first-party in-depth knowledge.

- **Performed Workload Sampling Study**

  The team performed a workload sampling study from October 23, 2009 to October 30, 2009 to determine the distribution of the tasks the clerical staff complete daily. One pager and a task list was created by the team, and distributed to one clerical staff person per unit for all 7 units in the study. The workload sampling study took place on each unit, every day for every shift during the 1-week time period. The pager was set to signal at random intervals, approximately 4 times per hour. Each time the pager signaled, the clerical staff were told to make a tick mark in the correct time box of the task on which they were currently working.

- **Performed Time Studies**

  Following the workload sampling study, the team conducted a time study to determine the amount of time the clerical staff spent on each task for 5 East, 5 West, and 6C. The team developed a computer application using Visual Basic.Net to allow the team to record the time the clerical staff spent on each task. After completing the time study, the team conducted a detailed analysis to find the average time required to complete clerical tasks. This analysis served two purposes:
  - The results allowed the team to calculate man hours for each unit
  - The time study results served as a validation tool for the previous workload sampling study and initial observations

- **Validated and Evaluated data**

  The team validated the workload sampling and time study data, both with the members of the team, as well as past data. This information provided team an accurate view of the clerical staff workload, and a formula to be derived to quantify the number of FTEs to allocate to various units. Using the data, the team modeled the work of the clerical staff throughout the day, and identified the times which require clerical staff surge support.

**Findings and Conclusions**

The team arrived at the following findings and conclusions by analyzing the data from the initial observations, clerical staff interviews, workload sampling study, and time study.
• **Workload Distribution:**

Based on the initial client interview, the admission, discharge, and transfer processes were thought to take up the most amount of time for the clerical staff. From the workload sampling study, the team discovered that the CareLink process was the most time consuming. When the data was presented to the client, the team discovered that the clerical staff are expected to watch the patient records for updates every 15 to 30 minutes in case a high-priority change was made to a patient by the nursing staff or doctors. Also, with the transition to CareLink across the hospital units from paper forms, the clerical staff are spending increasing amounts of time on the CareLink system to process patients and their orders.

• **Time Study Conclusion:**

From the time study the team performed on the selected units, CareLink, phone communication, and staff assistance were the most frequently occurring tasks. The team’s expectations of similarity between the workload sampling study and time study was met, with 2-3 of the most frequent tasks being in the top five tasks performed in all the study’s units. There were a large number of interruptions per hour, lengthening the required time for a clerical staff person to complete their current task.

• **Man Hours and FTEs:**

The team concluded that the needs to the unit are not adequately being addressed, and a new surge support staffing model is required to meet the workload requirements of the unit. The time study units, 6C, 5 East, and 5 West, all show that the amount of workload for a clerical staff person rises at the busy times of a unit above the single pre-assigned clerical staff person. From this, the team concludes that another floating clerical staff person is needed.

**Recommendations**

Based on the conclusions of the study, the team has made the following recommendations:

• **Proposed Man Hours:**

The times that the units will need additional support coincide with the times that patients are most likely to be admitted, discharged, or transferred (9am-11am), the regular business lunch time (12:30 to 1:30pm), and the 2:30 to 3:30 day shift change to evening shift clerical staff. During these periods, the team recommends assigning another floating clerical staff person to relieve some of the workload buildup which is occurring. This additional person can be shared among geographical close units (as in 5 East and 5 West), or given completely to a unit in 4 hour shifts. This will improve the operation of the hospital, as well as raise the satisfaction level of the clerical staff with their jobs.
• **Recommended Future Studies:**

In this study, 7 units were chosen from all the units in the University of Michigan Health System. While the chosen units were thought to be representative of the different types of units the hospital contains (surgical, medical, pediatric care), further study is needed to insure the formulas and results from the current study are applicable. Also, since the intensive care units have unique demands apart from the general medicine units, the current study results need to be verified in order to ensure proper required staffing levels are met.

Also, the current report includes a recommended central pool of clerical staff, which hospital units can request when their workload becomes unreasonable for the assigned number of clerical staff. A study could be done to assess the effectiveness of this model, and how the extra support staff work in conjunction with the pre-assigned staff to meet the hospitals needs.

If the operations of the clerical staff change from technology enhancements, or the reduction in paperwork, a study will also need to be done to modify the task factors.
# Table of Contents

1. Introduction ..............................................................................................................................1

2. Background ..............................................................................................................................1
   2.1 Key Issues .......................................................................................................................1
   2.2 Goals and Objectives ......................................................................................................2
   2.3 Project Scope ..................................................................................................................2

3. Project Methodology ................................................................................................................2
   3.1 Data Collection ...............................................................................................................2
      3.1.1 Perform Literature Search and Extract Historical Data .......................................3
      3.1.2 Observe Clerical Tasks and Interview Clerical Staff ...........................................3
      3.1.3 Perform Workload Sampling Study .....................................................................3
      3.1.4 Perform Time Study .............................................................................................4
      3.1.5 Calculate Man Hours to Propose FTEs .................................................................4
   3.2 Data Analysis and Findings ............................................................................................4
      3.2.1 Unit Clerical Staff Observation Analysis .............................................................4
      3.2.2 Workload Sampling Study Analysis ....................................................................5
      3.2.3 Time Study Analysis ............................................................................................5
   3.3 Unit Data Analysis ..........................................................................................................5
      3.3.1 6C Analysis: Workload Sampling Study and Time Study ...................................5
      3.3.2 5 East: Workload Sampling Study and Time Study .............................................8
      3.3.3 5 West: Workload Sampling Study and Time Study ...........................................12
   3.4 Data Validation ...............................................................................................................16
      3.4.1 Validated and Evaluated Data ..............................................................................16
      3.4.2 Workload Sampling Study and Time Study .........................................................17
   3.5 FTE Analysis ..................................................................................................................17
      3.5.1 6 C: FTE Analysis ................................................................................................17
      3.5.2 5 East: FTE Analysis ............................................................................................18
      3.5.3 5 West: FTE Analysis ..........................................................................................19

4. Conclusions and Recommendations ........................................................................................21
   4.1 Conclusions ....................................................................................................................21
      4.1.1 6 C: Conclusions ..................................................................................................21
      4.1.2 5 East: Conclusions ............................................................................................21
      4.1.3 5 West: Conclusions ..........................................................................................21
   4.2 Recommendations ..........................................................................................................22
      4.2.1 6 C: Recommendations .......................................................................................22
      4.2.2 5 East: Recommendations ...................................................................................22
      4.2.3 5 West: Recommendations ...................................................................................22

References: Previous Studies and Reports ..............................................................................23

Appendix A: Overall Workload Sampling Results ...................................................................24
Appendix B: 5B Workload Sampling Results .................................................................25
Appendix C: 5C Workload Sampling Results .................................................................26
Appendix D: 5 East Workload Sampling Results ............................................................27
Appendix E: 5 West Workload Sampling Results ............................................................28
Appendix F: 6B Workload Sampling Results .................................................................29
Appendix G: 6C Workload Sampling Results .................................................................30
Appendix H: 8C Workload Sampling Results .................................................................31
Appendix I: 6C Comparison of Workload Sampling Data to Time Study Data for 8 Hours ....32
Appendix J: Initial Clerical Staff Interview Data Collection Sheet .................................33
Appendix K: Workload Sampling Task Sheet .................................................................34
Appendix L: Time Study Collector© Computer Application ............................................35
List of Figures

Figure 1: 6C Workload Sampling Study Results ................................................................. 6
Figure 2: 6C Workload Sampling and Time Study Comparison (11:30am-7pm) ............... 8
Figure 3: 5 East Workload Sampling Study Results ......................................................... 9
Figure 4: 5 East Comparison of Workload Sampling Data to Time Study Data ............. 12
Figure 5: 5 West Workload Sampling Study Results ..................................................... 13
Figure 6: 5 West Workload Sampling and Time Study Comparison (9am-5pm) ............ 16
Figure 7: 6C FTE as a Function of Peak Times (11am-7pm) .......................................... 18
Figure 8: 5 East Total Hours of Work ............................................................................ 19
Figure 9: 5 West FTE Values in relation to Staff Hours ................................................. 20

List of Tables

Table 1: Initial Observations from Hospital Units ......................................................... 3
Table 2: 6C Time Study Results ....................................................................................... 6
Table 3: 6C Comparison of Workload Sampling Data to Time Study Data .................. 7
Table 4: 5 East Time Study Results ............................................................................... 10
Table 5: 5 East Comparison of Workload Sampling Data to Time Study Data .......... 11
Table 6: 5 West Time Study Results .............................................................................. 14
Table 7: 5 West Comparison of Workload Sampling Data to Time Study Data .......... 15
Table 8: 6C FTE Analysis ............................................................................................... 17
Table 9: 5 East FTE Analysis ......................................................................................... 18
Table 10: 5 West FTE Analysis ....................................................................................... 20
1. Introduction

Nursing Administration manages the clerical staff for each unit within the University of Michigan Health System (UMHS). The clerical staff perform duties such as processing patient care orders, handling daily admissions, transfers, and discharges, and facilitating communication between various parties at the hospital. Nursing Administration has been assigning the number of clerical staff to hospital units based on perceived need, reported to them from the nursing managers overseeing the units. The current system however has become inadequate, and a more scientific approach is needed to reach the unit staffing goals of the administration. Nursing Administration would like to know the most common tasks of the clerical staff in UMHS’s units, discover areas where clerical work can be standardized, and create a central repository of clerical staff for surge support. According to Nursing Administration, surge support is defined as temporarily assigning additional clerical staff to a unit in order to reduce the current workload for the pre-assigned number of clerical staff stationed at the unit. The IOE senior design team was tasked with quantifying the full time equivalent (FTE) hours required to handle the clerical workload of certain units within UMHS.

2. Background

In the University of Michigan Health System, clerical staff are responsible for the administrative functions that are necessary for patient care. The Health System is divided into different units that perform duties that patients require during their stay. The two categories of units are surgical and medical units. Surgical units care for patients before and after surgery. The patients in these units typically have longer stays and low turnover rates. Medical units provide general health care, and therefore tend to have a higher turnover rate. In units where there is a high patient turnover, a large amount of paperwork is generated. This paperwork tends to make the clerical staff in these units typically have a busier schedule than units with lower turnover rates. From this, the team has determined the clerical workload is a factor of the type of patients in the unit, the turnover of patients, and number of patients the unit services.

Previous studies have been conducted on the workload of clerical staff of various units. However, the hourly workload has not been previously quantified and documented. In order to propose a central surge support staffing model, a study was needed to determine the times units required additional clerical staff than the pre-assigned personnel. The team has been asked for a clerical staff workload breakdown, time spent per task, and proposed man hours for units that are in the greatest need for surge support.

2.1 Key Issues

The following key issues were driving the need for the project:
- A better understanding of the unit clerical staff daily workload is needed to better schedule clerical staff in the future
- Creation of a central repository of additional clerical staff for surge support for the health system units
2.2 Goals and Objectives

The goals of this project were to:

• Allocate staff to individual units

The objectives of this project were to:

• Allocate sufficient resources (FTEs) to provide surge support of increased activity
• Provide measurable data points to evaluate the effectiveness of the staffing model
• Construct a model for future planning for program long-term objectives
• Recommend how to calculate the number of clerical staff based on FTEs

2.3 Project Scope

This project included an examination of the clerical workload in:

• University Hospital units:
  o 5B, 5C, 6B, 6C, 8C
• Mott Children’s Hospital units:
  o 5 East, 5 West

The scope of this project excluded:

• A workload analysis of any hospital staff other than clerical staff from the list of units above
• Method to standardize all work done by the clerical staff in the units.

3. Project Methodology

This section details the methodology used by the team throughout the project. The methodology used is divided into the following sections:

• Data Collection and Validation
• Data Analysis
• FTE Calculation

3.1 Data Collection

The team spent 11 weeks, from September 14, 2009 to December 2, 2009 collecting data on for the project. The collection of data can be divided into the following sections:

• Perform literature search and extract historical data
• Observe clerical tasks
• Perform workload sampling study
• Obtain and extract CareLink data
• Perform time study
3.1.1 Perform Literature Search and Extract Historical Data

The team performed a literature search of previous reports on the clerical workload in UMHS, before and after the introduction of CareLink. These previous studies were conducted to assess the effectiveness of CareLink on the clerical staff workload. In addition to providing insight into the operation of UMHS units, these studies aided the team with validation of the results obtained in the current study. The studies cited are listed in the “Work Cited” section at the end of this report.

The historical data extracted from the CareLink studies will provide the team with the time clerical staff spent on each task before and after the implementation of CareLink. Other sources of historical data come from the medical order system UMHS uses, and the record of admits and discharges for patients in the current studies’ selected units.

3.1.2 Observe Clerical Tasks and Interview Clerical Staff

The team observed the unit clerical staff by visiting each clerical unit. The team recorded their initial observations on the business processes of the clerical staff, and gave each clerical staff person a preliminary interview to collect first-party in-depth knowledge. Table 1 is a select compilation of the most critical issues that have been further analyzed.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Least Busy Times</th>
<th>Most Busy Times</th>
<th>Tasks with Longest Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5B</td>
<td>7pm – 11pm</td>
<td>2pm – 7pm</td>
<td>Admits</td>
</tr>
<tr>
<td>5C</td>
<td>8am – 9:30am</td>
<td>11am – 3pm</td>
<td>Discharges</td>
</tr>
<tr>
<td>6B</td>
<td>8am – 9:30am, 7pm – 11:30pm</td>
<td>1pm – 7pm</td>
<td>Admits</td>
</tr>
<tr>
<td>6C</td>
<td>7:15am – 12am</td>
<td>11:30pm – 7pm</td>
<td>Admits</td>
</tr>
<tr>
<td>8C</td>
<td>10:30am – 12:30am</td>
<td>7:30am – 9:30am, 2:30pm – 4:30pm</td>
<td>Discharges</td>
</tr>
<tr>
<td>5 East</td>
<td>8am – 10am</td>
<td>10am – 3pm</td>
<td>Appointment Scheduling</td>
</tr>
<tr>
<td>5 West</td>
<td>8pm – 4pm</td>
<td>2:30pm – 7pm</td>
<td>Admits and Discharges</td>
</tr>
</tbody>
</table>

3.1.3 Perform Workload Sampling Study

The team performed a workload sampling study from October 23, 2009 to October 30, 2009 to determine the distribution of the tasks the clerical staff complete daily. One pager and a task list was created by the team, and distributed to one clerical staff person per unit for all 7 units in the study. The workload sampling study took place on each unit, every day for every shift during the 1-week time period. The pager was set to signal at random intervals, approximately 4 times per hour. Each time the pager signaled, the clerical staff were told to make a tick mark in the
correct time box of the task on which they were currently working. The team collected the data obtained from the workload sampling study and entered the results into an Excel spreadsheet. The count of each task on the work log sheets were calculated, as well as the percentage per task of total workload for each unit. In addition, the team utilized pivot tables to calculate the frequency of activities during the day, evening, night, weekday, and weekend shifts.

3.1.4 Perform Time Study

Following the workload sampling study, the team conducted a time study to determine the amount of time the clerical staff spent on each task for 5 East, 5 West, and 6C. The team developed a computer application using Visual Basic.Net to allow the team to record the time the clerical staff spent on each task. After completing the time study, the team conducted a detailed analysis to find the average time required to complete clerical tasks. This analysis served two purposes:
- The results allowed the team to calculate man hours for each unit
- The time study results served as a validation tool for the previous workload sampling study and initial observations

3.1.5 Calculate Man Hours to Propose FTEs

To calculate the proposed FTE’s, the team combined the data from the workload sampling study, time study, CareLink order system data, and hospital admit, discharge, and transfer records. From the workload sampling study, CareLink order system data, and hospital admit, discharge, and transfer records, the team determined the percentage of a normal day that the clerical staff spend on each task. From the time study, the average time of each task was calculated from the electronic time study data, which the team collected. The team multiplied the frequency of each task per hour by the average time the task took to complete, to determine the man hours for each task. By adding the man hours for each task, the proposed FTEs can be determined.

3.2 Data Analysis and Findings

3.2.1 Unit Clerical Staff Observation Analysis

Based on the team’s initial observations, the clerical staff’s busiest times were in the afternoon, while the least busy times were generally in the morning. Also, the admit, discharge, and transfer tasks seemed to take the longest. For these processes, the clerical staff prepared binders or flowboards with packets of forms to be filled out during the patient’s stay.

Another significant process for the clerical staff is the paging system, which the clerical staff and the nurses use for communication with each other and for other, and contacting other business units within the University of Michigan Health System. The team found that one unit, 6B has a non-standard process for answering the paging system.
3.2.2 Workload Sampling Study Analysis

There were many seemingly time-consuming tasks from the initial observations that yielded unexpected results to the team. The two largest tasks as discovered from the workload sampling study were CareLink and the paging process. The team initially thought the largest reported tasks would be the admits, discharges, and transfers.

- **CareLink**
  From the workload sampling study, the largest amount of clerical time (18%) was spent on CareLink. Every unit reported CareLink to be the most frequent task, with percentages ranging from 9.2% to 30.4%.

- **Paging**
  The next most frequent task after CareLink was the paging task. Paging represented 8.4% of the overall clerical shift duties. In 4 out of the 7 selected units, paging was less than half of the percentage of time spent on CareLink.

- **Admit, Discharge, and Transfer**
  While these tasks were reported to be the most time consuming in the initial clerical staff observations, as well as interviews, these tasks were 5th, 17th, and 19th respectively in comparison to the other 27 tasks on the Workload Sampling task sheet distributed to the clerical staff.

3.2.3 Time Study Analysis

From the time study the team performed on the selected units, CareLink, phone communication, and staff assistance were the most frequently occurring tasks. The team’s expectations of similarity between the workload sampling study and time study was met, with 2-3 of the most frequent tasks being in the top five tasks performed in all the study’s units. There were a large number of interruptions per hour, lengthening the required time for a clerical staff person to complete their current task.

3.3 Unit Specific Data Analysis

3.3.1 6C Analysis: Workload Sampling Study and Time Study

Figure 1 shows the breakdown of tasks as determined from the workload sampling study the team conducted on 6C.
Table 2 is a compilation of the time study analysis the team conducted on 6C. Since the initial observations and interviews with the clerical staff indicated that they were most busy during 11:30am-7pm, the team observed 6C for 8 hours during this time.

### Table 2: 6C Time Study Results (seconds)

(*Data source: Time Study, IOE 481 Team 10, Sept. – Dec 2009, N=236*)

<table>
<thead>
<tr>
<th>Task</th>
<th>Total (N=236)</th>
<th>Avg</th>
<th>Median</th>
<th>Max</th>
<th>Min</th>
<th>Std Dev</th>
<th>50% tile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Assistance</td>
<td>96.48</td>
<td>78</td>
<td>282</td>
<td>12</td>
<td>73.32</td>
<td>96.48</td>
<td></td>
</tr>
<tr>
<td>Ordering (N=29)</td>
<td>119.41</td>
<td>124</td>
<td>228</td>
<td>23</td>
<td>45.88</td>
<td>119.41</td>
<td></td>
</tr>
<tr>
<td>Discharges (N=13)</td>
<td>208.78</td>
<td>153</td>
<td>417</td>
<td>108</td>
<td>113.19</td>
<td>208.78</td>
<td></td>
</tr>
<tr>
<td>Admits (N=12)</td>
<td>438.5</td>
<td>381</td>
<td>988</td>
<td>305</td>
<td>188.321</td>
<td>438.5</td>
<td></td>
</tr>
<tr>
<td>Charts/Binders (N=9)</td>
<td>53.88</td>
<td>54</td>
<td>97</td>
<td>13</td>
<td>24.47</td>
<td>53.88</td>
<td></td>
</tr>
<tr>
<td>Transfers (N=9)</td>
<td>343.33</td>
<td>389</td>
<td>543</td>
<td>154</td>
<td>131.688</td>
<td>343.33</td>
<td></td>
</tr>
<tr>
<td>Patient (N=7)</td>
<td>91.71</td>
<td>54</td>
<td>212</td>
<td>25</td>
<td>73.78</td>
<td>91.71</td>
<td></td>
</tr>
<tr>
<td>Board (N=5)</td>
<td>55.8</td>
<td>60</td>
<td>89</td>
<td>18</td>
<td>26.41</td>
<td>55.8</td>
<td></td>
</tr>
</tbody>
</table>
According to the team’s initial observations, and interviews with the clerical staff, the greatest perceived amount of time spent on a task for 6C was the admission process. Similarly, this conclusion was further supported and validated by the team’s time study results. As shown in Table 2, the average time the clerical staff spent on one admission process was 438.5 seconds, which far exceeded any other task. The second most time consuming task the clerical staff perform was the transfer process, which took 343.33 seconds to complete. The least time consuming task was board work; however, for this unit, the clerical staff do not perform work on the boards, but rather the board work was the nurses’ responsibility.

Table 3 compares the results gathered from the workload sampling study and the time study.

Table 3: 6C Comparison of Workload Sampling Data to Time Study Data
(*Data source: Workload Sampling Study/Time Study, IOE 481 Team 10, Sept. – Dec 2009)

<table>
<thead>
<tr>
<th>Workload Sampling Data</th>
<th>Time Study Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Observations</strong></td>
<td><strong>Proportion</strong></td>
</tr>
<tr>
<td>136</td>
<td>11.61%</td>
</tr>
<tr>
<td>191</td>
<td>16.31%</td>
</tr>
<tr>
<td>160</td>
<td>13.66%</td>
</tr>
<tr>
<td>59</td>
<td>5.04%</td>
</tr>
<tr>
<td>168</td>
<td>14.35%</td>
</tr>
<tr>
<td>158</td>
<td>13.49%</td>
</tr>
<tr>
<td>39</td>
<td>3.33%</td>
</tr>
<tr>
<td>86</td>
<td>7.34%</td>
</tr>
<tr>
<td>125</td>
<td>10.67%</td>
</tr>
<tr>
<td>36</td>
<td>3.07%</td>
</tr>
<tr>
<td>13</td>
<td>1.11%</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Both the workload sampling and time study data determined one of the most frequent tasks the clerical staff perform was checking and ordering via CareLink. While the workload sampling data determined that the distribution of discharges and admits was 3.33% and 7.34% respectively, the time study results determined that the frequency of discharges and admits was 10.26% and 19.89% respectively. This discrepancy can be attributed to number of observations for admits in the time study being substantially higher than the number of observation of for admits in the workload sampling data. Also, from the team’s observations and interviews of the clerical staff, more admissions occur during earlier times of the day while some of the discharge paperwork does not have to be immediately completed.

Therefore, an analysis between peak times was compared between the workload sampling data and the time study. Figure 2 illustrates the distribution of work between 11am-7pm.
One of the most frequent tasks for the clerical staff was checking and ordering through CareLink. There is less variance between admits and discharges in Figure 2, because as hypothesized, narrowing the range of hours of the workload sampling study, specifically for peak times would have a greater accuracy of the analysis. However, there are still discrepancies between the data, and this could be because the time study and workload sampling study were conducted on different days. For example, the frequency of “other” is particularly high in the workload because the tasks that consists of the category “other” include searching for personnel, census, mat services, reception, break, lunch, call light, other, and count of blood. When conducting the time study, the team observed the clerical staff eating lunch while working on other tasks, such as paging the staff simultaneously. Consequently, as Figure 2 demonstrates, there is a larger distribution of paging use than the distribution gathered from the workload sampling study.

### 3.3.2 5 East Analysis: Workload Sampling Study and Time Study

The data collected from the units for the workload sampling study was entered into an Excel workbook and further analyzed. The analysis produced a percentage of work spent on specific tasks and the frequency of tasks for 7 days, 24 hours per day. The distribution of the workload for 5 East can be seen in Figure 3 below.
The tasks that used the highest proportion of time were CareLink, the call light, and paging. Once the proportion of time spent on each task was formulated, the team performed a time study to discover the time it took to complete each task.

Because of initial observations and interviews, the team determined that the least busy times were between 8am – 10am, and the busiest times were between 10am -3pm. Therefore, the team observed 5 East for eight hours during this time. Table 4 is a compilation of the time study results the team conducted on 5 East.
As shown in Table 4, the tasks with the greatest duration on average were admits, discharges, and work performed on charts. The tasks with the smallest duration on average were patient/family visitor, paging, and Hugs. After researching past studies, this analysis further supports and validates those studies as well as the initial observations regarding admits and discharges of this study. Once the workload sampling study and the time study were complete, a comparison was generated between the two, which can be seen in Table 5.
Table 5 demonstrates the comparison between the workload sampling study results and time study results for 5 East. Both workload sampling and time study data show that the most frequent tasks were staff assistance, phones, and CareLink. There was a discrepancy between admits and discharges from the two studies. This could be a result due to the difference in the number of observations between the two studies. Initial observations and interviews indicate that more admissions occur during the day for the studied units, while some of the paperwork for discharges does not need to be immediately completed. Figure 4 illustrates this comparison.
3.3.3 5 West Analysis: Workload Sampling Study and Time Study

Figure 5 below shows the results obtained from the workload sampling analysis. As with the other units in the time study, 6C and 5 East, CareLink, staff assistance, and Paging take up larger proportions of time when compared to other clerical staff tasks.
Table 6 is a summary of the time study data the team collected on 5 West, in Mott Children’s Hospital. For the team’s consultation with the clerical staff in the unit, the busiest time of the unit was reported to be between 2:30pm and 7pm. From this, a time study observation schedule was set up to record between 9am and 5pm to document the variance of work being performed by the clerical staff.
Table 6: 5 West Time Study Results (seconds)
(*Data source: Time Study, IOE 481 Team 10, Sept. – Dec 2009, N=381)

<table>
<thead>
<tr>
<th>Task (N=381)</th>
<th>Average</th>
<th>Min</th>
<th>Max</th>
<th>Proportion of Total Time</th>
<th>50th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>CareLink (N=24)</td>
<td>600.3</td>
<td>45</td>
<td>1717</td>
<td>47%</td>
<td>405</td>
</tr>
<tr>
<td>Admits (N=15)</td>
<td>211.4</td>
<td>34</td>
<td>529</td>
<td>10%</td>
<td>161</td>
</tr>
<tr>
<td>Other (N=14)</td>
<td>173.2</td>
<td>3</td>
<td>938</td>
<td>8%</td>
<td>122.5</td>
</tr>
<tr>
<td>Discharge (N=15)</td>
<td>87</td>
<td>13</td>
<td>246</td>
<td>4%</td>
<td>82</td>
</tr>
<tr>
<td>Charts (N=24)</td>
<td>63.1</td>
<td>6</td>
<td>233</td>
<td>5%</td>
<td>39</td>
</tr>
<tr>
<td>Boards / Binders (N=19)</td>
<td>61</td>
<td>5</td>
<td>309</td>
<td>4%</td>
<td>29</td>
</tr>
<tr>
<td>Ordering (N=16)</td>
<td>58</td>
<td>3</td>
<td>279</td>
<td>3%</td>
<td>35</td>
</tr>
<tr>
<td>Staff Assistance (N=52)</td>
<td>40.9</td>
<td>2</td>
<td>213</td>
<td>7%</td>
<td>26.5</td>
</tr>
<tr>
<td>Paging (N=34)</td>
<td>40.8</td>
<td>3</td>
<td>142</td>
<td>5%</td>
<td>33.5</td>
</tr>
<tr>
<td>Phones (N=34)</td>
<td>36.2</td>
<td>5</td>
<td>188</td>
<td>4%</td>
<td>31</td>
</tr>
<tr>
<td>Patient / Family Visitor (N=19)</td>
<td>30.2</td>
<td>2</td>
<td>88</td>
<td>2%</td>
<td>20</td>
</tr>
<tr>
<td>Hugs (N=6)</td>
<td>29.0</td>
<td>2</td>
<td>73</td>
<td>1%</td>
<td>22.5</td>
</tr>
<tr>
<td>Interruptions (N=110)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

From the team’s initial observations, the admit process was thought to take the longest amount of time to complete. This perceived perception from the clerical staff can be seen in the high average duration of 211 seconds for each patient. Based on the time study data, the most important task to the clerical staff was the use of CareLink, with an average usage time of 600 seconds. The amount of work processed through this system was a large portion of the record keeping of patient care, as perceived by the team. Also, the proportion of the time spent on the system in each working shift, 47%, far exceeded other tasks. The least time consuming task was the Hugs system, with only 1% of a clerical staff’s day being dedicated to its usage. The “Other” category in this unit entails managing the nurse paging list, as well as collecting food sales and donations from patients, their families, and the staff.

Table 7 shows the correlation of the workload sampling proportions to the time study proportions.
Table 7: 5 West Comparison of Workload Sampling Data to Time Study Data
(*Data source: Workload Sampling Study/Time Study, IOE 481 Team 10, Sept. – Dec 2009)

<table>
<thead>
<tr>
<th>Workload Sampling Data</th>
<th>Major Tasks</th>
<th>Time Study Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Observations</td>
<td>Proportion</td>
<td>Number of Observations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion</td>
</tr>
<tr>
<td>76</td>
<td>17%</td>
<td>Staff Assistance</td>
</tr>
<tr>
<td>71</td>
<td>16%</td>
<td>Paging</td>
</tr>
<tr>
<td>61</td>
<td>14%</td>
<td>CareLink</td>
</tr>
<tr>
<td>54</td>
<td>12%</td>
<td>Other</td>
</tr>
<tr>
<td>48</td>
<td>11%</td>
<td>Phones</td>
</tr>
<tr>
<td>36</td>
<td>8%</td>
<td>Charts</td>
</tr>
<tr>
<td>34</td>
<td>8%</td>
<td>Ordering</td>
</tr>
<tr>
<td>25</td>
<td>6%</td>
<td>Admits</td>
</tr>
<tr>
<td>16</td>
<td>4%</td>
<td>Patient/Family Visitor</td>
</tr>
<tr>
<td>10</td>
<td>2%</td>
<td>Discharges</td>
</tr>
<tr>
<td>8</td>
<td>2%</td>
<td>Boards / Binders</td>
</tr>
<tr>
<td>0</td>
<td>0%</td>
<td>Hugs</td>
</tr>
</tbody>
</table>

The two independent data sets validate the team’s findings, since the highest proportion tasks are similar for both studies. Table 7 shows that the most frequently occurring task in both studies was staff assistance. This is important when considering the time clerical staff take to complete other necessary functions of their job. Also, from Table 6, the number of interruptions experienced during the time study period, 110 events, contributes to the other task’s increased duration times. From the clerical staff’s input, even though admits and discharges were the most time consuming tasks, the workload sampling and time studies show the actual number of events is low. This can be attributed to fewer patients entering or leaving the system each day, while other tasks occurred more frequently per day.

From Figure 6, a distribution of the clerical workload is shown, separated by task. The discrepancy in the data can be explained by the difference in definition of a task by the team and by the clerical staff’s own viewpoint, among other reasons which contribute to the distributions not being equal.
As shown by Table 7 and Figure 6, the largest proportion of clerical staff workload was Paging, Staff Assistance, Phones, and CareLink. These tasks show the areas where a small improvement in the system will have a great effect on the clerical workload. Of particular note, through observations and meetings with the Senior Training Staff Specialist, the phones and their associated number lists were the task most easily improved. Also, from the team’s experience, admission and unit checklist paperwork were the most likely candidates for standardization.

3.4 Data Validation

3.4.1 Validated and Evaluated Data

The team validated the data collected during the workload sampling and time studies, both with other members of the team, as well as past data. This information gave the team an accurate view of the clerical staff workload, and allowed a formula to be derived to quantify the number of FTEs to allocate to different units. Through the data, the team was able to accurately model the work of the clerical staff throughout the day, and identify the vital times when the need for clerical surge support is greatest.
3.4.2 Workload Sampling Study and Time Study

The workload sampling study and time study data were validated together, along with the data obtained from the Health System order records. The total time per task, based on the workload sampling data was calculated. The team used these values to check the average time that the time study calculations yielded. The frequency of orders from the Health System electronic records were correlated to the time study frequency. The close relationship of the data increased the confidence in the team’s calculations of the man hours per unit.

3.5 FTE Analysis

An FTE analysis was conducted to determine man hours and times most needed for surge support. The FTEs were calculated by first determining the percentage of each task per hour. The team found the frequency of each task per hour, which was then multiplied by the average time per task in the time study results. This yielded the man hours per task per hour, which was added together to determine the FTEs per hour.

3.5.1 6C: FTE Analysis

The resulting FTE calculations by hour for 6C are shown below:

<table>
<thead>
<tr>
<th>Time</th>
<th>FTE</th>
<th>FTE (rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11am-12pm</td>
<td>1.339805556</td>
<td>1</td>
</tr>
<tr>
<td>12-1pm</td>
<td>1.381027778</td>
<td>1*</td>
</tr>
<tr>
<td>1-2pm</td>
<td>1.407161111</td>
<td>1*</td>
</tr>
<tr>
<td>2-3pm</td>
<td>1.823363889</td>
<td>2</td>
</tr>
<tr>
<td>3-4pm</td>
<td>1.062983333</td>
<td>1</td>
</tr>
<tr>
<td>4-5pm</td>
<td>1.118897222</td>
<td>1</td>
</tr>
<tr>
<td>5-6pm</td>
<td>1.087594444</td>
<td>1</td>
</tr>
<tr>
<td>6-7pm</td>
<td>0.571313889</td>
<td>1</td>
</tr>
</tbody>
</table>

*Indicates a time when more than one FTE is greatly suggested

As shown in Table 8, the times most needed for surge supposed are during 12pm-3pm. The FTEs rounded to the nearest digit, from 12pm-1pm, 1pm-2pm, and 2pm-3pm is 1, 1, and 2 respectively. This result is further supported by the team’s initial observations of the clerical staff, who had determined that afternoon hours were particularly busy.

Figure 7 shows the FTE trend over 11am to 7pm timeframe.
Figure 7 demonstrates a particular hour (2pm-3pm) in which surge support is needed. According to Table 8 and Figure 7, the greatest number of FTEs required as a function of the team’s initial observations, workload sampling, and time studies is 2.

### 3.5.2 5 East: FTE Analysis

The resulting FTE calculations by hour for 5 East are shown below:

#### Table 9: 5 East FTE Analysis

(*Data source: FTE Analysis, IOE 481 Team 10, Sept. – Dec 2009, N=269)

<table>
<thead>
<tr>
<th>Time</th>
<th>FTE</th>
<th>FTE (Rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8am-9am</td>
<td>0.950254</td>
<td>1</td>
</tr>
<tr>
<td>9am-10am</td>
<td>1.239825</td>
<td>1*</td>
</tr>
<tr>
<td>10am-11am</td>
<td>1.718383</td>
<td>2</td>
</tr>
<tr>
<td>11am-12pm</td>
<td>0.732571</td>
<td>1</td>
</tr>
<tr>
<td>12pm-1pm</td>
<td>0.439467</td>
<td>1</td>
</tr>
<tr>
<td>1pm-2pm</td>
<td>0.669796</td>
<td>1</td>
</tr>
<tr>
<td>2pm-3pm</td>
<td>0.525242</td>
<td>1</td>
</tr>
<tr>
<td>3pm-4pm</td>
<td>0.459679</td>
<td>1</td>
</tr>
<tr>
<td>4pm-5pm</td>
<td>0.468367</td>
<td>1</td>
</tr>
</tbody>
</table>

*Indicates a time when more than one FTE is greatly suggested
As shown in Table 9, surge support is needed the most between 9am and 11am. The FTEs rounded to the nearest digit, from 9am-10am and 10am-11am is 1 and 2 respectively. This result is further supported by the team’s initial observations of the clerical staff, who determined that morning hours were particularly busy for this unit.

Figure 8 shows the number of FTEs as a function of time for 5 East.

![Total Man-Hours of Work](image)

**Figure 8: 5 East FTE as a Function of Peak Times (8am-5pm)**

(*Data source: FTE Analysis, IOE 481 Team 10, Sept. - Dec 2009, N=269)

Figure 8 shows that the busiest times for 5 East are from 9am – 12pm. 10am – 11am has a value of 1.7, which represents on average that clerical staff have more work to complete during this hour, or that clerical staff are working on tasks with greater durations of completion. As a result, surge support should be considered during this peak time.

### 3.5.3 5 West: FTE Analysis

Table 10 summarizes the FTE calculations for 5 West.
Table 10: 5 West FTE Analysis
(*Data source: FTE Analysis, IOE 481 Team 10, Sept. - Dec 2009, N=381)

<table>
<thead>
<tr>
<th>Time</th>
<th>FTE</th>
<th>Rounded FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>9am - 10am</td>
<td>0.717777778</td>
<td>1</td>
</tr>
<tr>
<td>10am - 11am</td>
<td>1.0475</td>
<td>1</td>
</tr>
<tr>
<td>11am - 12pm</td>
<td>1.324444444</td>
<td>2</td>
</tr>
<tr>
<td>12pm - 1pm</td>
<td>1.618333333</td>
<td>2</td>
</tr>
<tr>
<td>1pm - 2pm</td>
<td>1.284212963</td>
<td>2</td>
</tr>
<tr>
<td>2pm - 3pm</td>
<td>0.938796296</td>
<td>1</td>
</tr>
<tr>
<td>3pm - 4pm</td>
<td>1.201064815</td>
<td>1*</td>
</tr>
<tr>
<td>4pm - 5pm</td>
<td>1.177407407</td>
<td>1</td>
</tr>
</tbody>
</table>

*Indicates a time when more than one FTE is greatly suggested

As shown in Table 10, the greatest need for clerical staff support is during the 12pm to 4pm timeframe. This supports the clerical staff’s opinions, and also the team’s conclusions from the initial observations. During this time period, the lunch period, as well as patient admits, discharges, and transfers occur in short succession, making the need for clerical staff support important.

Figure 9 below shows the calculated man hours in Table 10 as a function of time from 9am-5pm.
Figure 9 shows the need for clerical staff starts at one man hour at 9am, and increases as the day progresses towards 12pm. After the 12pm to 2:30pm timeframe, the need for clerical staff diminishes, making the surge support model for clerical staff valid. The peak need for clerical staff occurs twice; at 12pm-1pm for the lunch period, and between 2:30pm-3:30pm, during the day to evening shift transition. Extra support during these periods will alleviate the perceived need of clerical staff in 5 West.

4.0 Conclusions and Recommendations

4.1 Conclusions

4.1.1 6C: Conclusions

The team’s workload sampling results determined the task most frequently conducted is checking and ordering from CareLink. From the time study results, the team determined that admissions take the longest, with a mean of 438.5 seconds. The team’s observations of the clerical staff determined that the peak hours are from 11:30am-7pm. The team concluded that while initial interviews of the clerical staff indicated that the times most needed for surge support were from 11am-7pm, the completed analysis on the unit shows the hours most needed for surge support are from 12pm-3pm. An especially important timeframe for surge support is 2pm-3pm.

4.1.2 5 East: Conclusions

After analyzing the studies on 5 East, the team has found that peak hours range from 9am – 12am, and the time most suitable for surge support would be between 10am – 11am. This is the time when large amounts of orders occur and chart work for admits and discharges is filled. The team’s workload sampling results determined that the most frequently conducted tasks are CareLink, staff assistance, and paging. From the time study, the task that had the greatest duration was admits, with an average of 437.1 seconds. The task with the smallest duration was interaction with patients’ family or visitors with an average of 13.25 seconds.

4.1.3 5 West: Conclusions

The team concluded that man hours for the unit exceed the pre-assigned number of clerical staff, and a new surge support staffing model is required to meet the workload requirements. The greatest times of need were from 12pm to 4pm, when large amounts of patient traffic occur, in addition to the lunch and shift changes of the clerical staff. The FTE analysis shows that two local maximums occur in the FTE unit calculations. One maximum is the lunch hour period, while the other is the day-to-evening shift transition. Both of these times showed increased effort by the clerical staff to fulfill their duties.
4.2 Recommendations

4.2.1 6C: Recommendations

After analyzing observations, performing a workload sampling study, collecting clerical time study data, and calculating of FTEs, the team recommends:

- The greatest time in need of surge support for 6C is during 2pm-3pm
- The least need for surge support is between 6pm-7pm.
- The team’s time studies indicate that the admission process is most time consuming, and as a result, more of the processes should be automated and standardized.

4.2.2 5 East: Recommendations

After analyzing every detail of this study, the team has decided to recommend the following for 5 East:

- Surge support should be used between the hours of 9am – 12pm when the unit is the busiest.
- Since the team’s findings show that admits, discharges, and chart work take the longest, a standard method for these tasks should be developed to minimize the time and work spent on these tasks.

4.2.3 5 West: Recommendations

The recommendations for 5 West are:

- The most likely candidates for improvement are the admission and unit paperwork, as well as the operational efficiency of the CareLink system based on the team’s experience. These changes will address the most time consuming, as well as the most frequent tasks of the clerical staff.
- Surge support for the unit is needed from 12pm-4pm, in order to alleviate the clerical staff during the lunch break, as well as the day to evening shift transition.
References


Appendix A: Overall Workload Sampling Results

Work Sampling Results (Overall)
Appendix B: 5B Workload Sampling Results

Work Sampling Results (5B)
Appendix C: 5C Workload Sampling Results

Work Sampling Results (5C)
Appendix D: 5 East Workload Sampling Results

![Bar chart showing Work Sampling Results (5E)]
Appendix E: 5 West Workload Sampling Results

Work Sampling Results (5W)

- CareLink
- Staff assistance
- Paging
- Call light
- Phone with staff
- Coordinating with staff
- Admission (patient info only)
- Other
- Reception
- Diet order
- Chart maintenance
- Edit nurse paging list
- Phone with family
- Close charts

16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
Appendix F: 6B Workload Sampling Results

Work Sampling Results (6B)
Appendix G: 6C Workload Sampling Results

Work Sampling Results (6C)
Appendix H: 8C Workload Sampling Results

![Work Sampling Results (8C)]
### Appendix I: 6C Comparison of Workload Sampling Data to Time Study Data for 8 Hours

<table>
<thead>
<tr>
<th>Workload Sampling Data (11am-7pm)</th>
<th>Major Tasks</th>
<th>Time Study Data (11:30am-7pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Observations</td>
<td>Proportion</td>
</tr>
<tr>
<td>Phones</td>
<td>49</td>
<td>10.40%</td>
</tr>
<tr>
<td>CareLink</td>
<td>37</td>
<td>7.86%</td>
</tr>
<tr>
<td>Other</td>
<td>135</td>
<td>28.66%</td>
</tr>
<tr>
<td>Ordering</td>
<td>44</td>
<td>9.34%</td>
</tr>
<tr>
<td>Staff Assistance</td>
<td>22</td>
<td>4.67%</td>
</tr>
<tr>
<td>Paging</td>
<td>77</td>
<td>16.35%</td>
</tr>
<tr>
<td>Discharges</td>
<td>8</td>
<td>1.70%</td>
</tr>
<tr>
<td>Admits</td>
<td>9</td>
<td>1.91%</td>
</tr>
<tr>
<td>Charts/Binders</td>
<td>66</td>
<td>14.01%</td>
</tr>
<tr>
<td>Transfers</td>
<td>20</td>
<td>4.25%</td>
</tr>
<tr>
<td>Patient</td>
<td>4</td>
<td>0.85%</td>
</tr>
<tr>
<td>Board</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Appendix J: Initial Clerical Staff Interview Data Collection Sheet

Information for Future Data Collection

Unit Shadowing (Circle One):
5B  5C  6B  6C  8C  5East  5West

Clerk Information
1. Name: __________________
2. Email: ________________
3. Circle One:
   a. Floating or Unit Clerk
4. Times On Duty:
5. If floating Clerk, Which units do you float? Circle:
   5B  5C  6B  6C  8C  5East  5West

Surge Support
1. When is your most busiest times? Why?
2. When is your least busy times? Why?
3. Which task do you tend to work on the longest or most time consuming? Why? What is the process for this task?
4. Do you have any ideas for improvement?

Standardization
1. Does your unit use Binders or Charts? Which do you prefer? Why?
2. Supply, Utensil Information layout/placement information:
3. Make sure you take photo of office layout & boards!!
4. Are there differences in other units that you think might help you?
5. Are there any redundant tasks that you do? How can this be improved?
6. Morning work Standardization
   a. Who does boards? Circle one.
      i. Clerks  Nurses
   b. Enters Call box
      i. Clerks  Nurses
   c. Other work?

Forms
1. Are the forms the same between units?
2. Which forms specifically are different? Can we have them?

Patient Information
1. SUA, SGU, GSE, STX?
## Appendix K: Workload Sampling Task Sheet

<table>
<thead>
<tr>
<th>Tasks:</th>
<th>7a - 8a</th>
<th>8a - 9a</th>
<th>9a - 10a</th>
<th>10a - 11a</th>
<th>11a - 12p</th>
<th>12p - 1p</th>
<th>1p - 2p</th>
<th>2p - 3p</th>
<th>3p - 4p</th>
<th>4p - 5p</th>
<th>5p - 6p</th>
<th>6p - 7p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission (patient info only)</td>
<td></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>Discharge (patient info &amp; discharge envelope)</td>
<td></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>Transfer</td>
<td></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>Phone with staff</td>
<td></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>Phone with family</td>
<td></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>Phone with other</td>
<td></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>Paging</td>
<td></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>Reception</td>
<td></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>Staff assistance</td>
<td></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>Open charts/make label(s)</td>
<td></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>Close charts</td>
<td></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>Chart maintenance</td>
<td></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>Diet order</td>
<td></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>Meds services</td>
<td></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>Patient transport</td>
<td></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>Med order</td>
<td></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>Lab order</td>
<td></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>OR form</td>
<td></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>Blood</td>
<td></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>Check/process CareLink orders</td>
<td></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>Search for personal</td>
<td></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>Edit nurse paging list</td>
<td></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>Call light</td>
<td></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>Census</td>
<td></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>Coordinating with staff</td>
<td></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>Break/lunch</td>
<td></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>Other</td>
<td></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>

**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.

**Start Time:** ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______

**Lunch/Break:** ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______

**End Time:** ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______  ______
Appendix L: Time Study Collector© Computer Application