University of Michigan Health System

Program and Operations Analysis

University of Michigan Hospital:

Analysis of Inpatient Unit Clerk Workload

Final Report

To: Rosemary Sieracki, Staff Development Coordinator
   Jackie Lapinski, Management Engineer
   Dr. Richard Coffey, Director Programs and Operations Analysis

From: IOE 481 Project Team, Programs and Operations Analysis
   Kimika Edwards
   Pramod Kakarala
   Kerry Raschke
   Priya Sehgal

April 15, 2004
# Table of Contents

**Executive Summary**
- Qualitative data 2
- Quantitative data 3
- Recommendations 4

**Introduction** 6

**Background** 6

**Approach and Methodology**
- Literature search 6
- Observation 6
- Clerical surveys 7
- Clerical interviews 7
- Data collection 7

**Findings, Recommendations, and Action Plan**
- General findings 8
- Admissions 11
- Telephone 13
- Physician’s orders 14
- Ordering Supplies 15
- Redesign of unit 5A 16

**Appendices**
- Appendix A: Clerical Survey 17
- Appendix B: Clerical Interview 20
- Appendix C: Work sampling sheet 22
- Appendix D: Time study sheet 23
Executive Summary

The University of Michigan Hospital has expressed concerns regarding the volume of workload placed on the Inpatient Unit Clerical Staff and the processes the clerical staff uses to complete each task. The purpose of this study was to analyze the processes used to complete the tasks and multi-tasks in order to improve efficiency. The main objectives of this project were to identify processes where inefficiencies can be improved, and recommend methods to maximize efficiency in these processes. To achieve these goals, the student team collected qualitative and quantitative data by administering interviews, and conducting work sampling and time studies of clerical tasks.

The clerical tasks include processing physician’s orders, medical supply orders, transfers, discharges and admissions. The staff is also responsible for recording bed changes, and maintaining a census of the unit and an updated patient chart. These tasks may be completed simultaneously to manage the workload. Because the clerical tasks are nearly uniform throughout the University Hospital as determined by the Staff Development Coordinator, Rosemary Sieracki, the results based on the quantitative and qualitative data collected from the surgical Orthopedic (5A) and medical Cardiology (7C) units can be applied to the entire Inpatient Unit Clerical Staff. The clerical staff includes unit-based and float clerks. Unit-based clerks are stationed at the same unit every shift, whereas a float clerk is assigned a unit at the beginning of each shift. Unit 7C has two clerks for the day and evening shift, and is assigned an additional clerk for a mid-shift, which is from 11:30am-8:00pm. Unit 5A has at least one clerk for the day and evening shift and is assigned an additional clerk for a mid-shift, which is from 8:30am-7:00pm. Both units are assigned one clerk during the midnight shift that is responsible for all tasks on all units of that floor.

Qualitative Data

Qualitative data were obtained from observations, clerical surveys and clerical interviews. The student team conducted observations in order to assess the current state of the clerical units. The following tasks occurred most frequently during observation and were examined:

- Census
- Admissions
- Transfers in and out
- Discharges
- Processing medical orders
- Referrals/Diagnostic orders
- Operation Room charts
- Chart maintenance
- Answering phone
- Talking to patient/family

Clerical surveys were used to identify the least efficient processes according to the clerks’ perspective. Out of the 152 surveys, 50% were returned, and of these, 13% of the clerks rated the diet order entry system the least efficient while 8% and 5% of the surveys showed that the equipment ordering and shift and bed changes respectively were also areas of inefficiency. After interviewing 15 unit-based and float clerks, 60% of interviewees suggested that the duration of time to process labs and physician’s orders, and the timing of arrival of admissions are the longest processes and thus are main areas of concern. It was also noted that the illegibility of physician handwriting increased the duration of processing medical orders for admissions.
Quantitative Data
To examine the findings of the observations, clerical surveys and interviews, quantitative data collection: work sampling and time studies were implemented. A total of 476 hours of actual work sampling hours were recorded. Work sampling assessed that the clerical tasks of the largest volume were: 31%-processing physician’s orders, 17%-answering the phone, and 14%-admissions (Figure A). Each unit had one beeper that was programmed to beep six times an hour. When the beeper vibrated, the clerk noted the task that he/she was performing at that instance on the work sampling log sheet.

![Figure A: Work Sampling Data (5A & 7C)](image)

Findings: Work Sampling (5A & 7C)
February 9 - March 7, 2004

A total of 75.3 hours of time study data was collected; 36 hours of the total time were collected on 7C and the remaining 39.3 hours were collected on 5A. From the time study we concluded that the three main tasks that significantly contribute to clerical workload are processing physician’s orders, answering the phone, and processing admissions (Figure B). These results are congruent with the results from the work sampling. Thus, recommendations that can reduce this workload should be implemented.
Findings: Time Studies (5A & 7C)
February 23 - March 22, 2004

Recommendations
Because both work sampling and time studies indicated that admissions and physician orders comprised nearly half of the clerical workload, recommendations are as follows. The qualitative data showed that the ordering supplies system and the layout for unit 5A should be improved.

Admissions
We determined that the clerks on unit 7C and 5A spent 25% and 30%, respectively of the total work time on admissions from the time study (Figure B). Obtaining an admission card, a red card containing patient information used for stamping all medical forms, expedites the admission process, by allowing the clerks to pre-stamp medical forms. However, if the card is not tubed to the unit, the clerk must walk an average of 10 minutes to unit 6B to obtain the card. This increased non-value added time to the admission process can be reduced by increasing the number of card embossers. The DataCard 275, the card embosser, is widely available for $10,000. (Diversified Business Machines, Largo, Florida)

Time study data indicated that admission orders processing measured approximately 36.8% and 37.3% of the admissions process time in units 7C and 5A, respectively. Work sampling data showed that admission orders processing comprised 17% of the workload, the 3rd most frequent task (Figure A). To increase efficiency, an automated process so the physicians and nurses can input orders themselves should be implemented. In

Total Sample hours = 75.3 hrs, 5A = 39.3 hrs, 7C = 36 hrs

Answering phone
Time study data indicated that clerks answer the telephone approximately 20 calls per shift. Answering the phone was 24% of the total time multi-tasking (Figure C). Work sampling indicated that answering the phone comprised 17% of the clerical workload, the 2nd most frequent task (Figure 1). To decrease the amount of telephone calls, a menu to direct incoming calls and a separate phone line located in the nurses’ office for personal calls should be installed.

![Percentages of Frequently Multitasked Elements (5A)](chart)

**Figure C: Multi-tasking Data (5A)**

Processing physician’s orders
Processing flagged orders was the most time-consuming task within physician’s orders for both 7C and 5A utilizing 73% and 68% of the total physician order time, respectively, the process should become automated. The doctors and nurses can then input the orders themselves. Also, a new physician’s order form with a check box for the most common orders to reduce illegibility concerns and decrease the time to process the orders should be implemented.

Further Recommendations
Time study data indicated that 6% of the clerk’s time was spent ordering supplies for both units. Interviews also confirmed this as an opportunity for improvement. Out of the 50% of surveys returned, 8% rated the supply ordering process as inefficient. We recommend that the 2-step ordering supplies process should be streamlined to 1-step by creating an online database and an order form. In addition, to reduce the overall workload of the clerks it is recommended that Unit 5A should be redesigned so that each clerk gets and uses his/her own computer. On unit 7C, 36% of the clerk’s work is done on the computer. On unit 5A, 32% of the work time is spent on the computer. Comparative data shows that both units spend nearly equal amounts of time using the computer to complete necessary tasks. However, the two clerks in unit 7C utilize one computer per clerk whereas the two clerks in unit 5A share one computer, even though 5A has 2 computers. Thus, it is recommended that the Riverside computer on unit 5A should be used by a clerk.

Implementing these recommendations will result in an increase in the ability for clerks to better prioritize, perform key tasks faster, and thus an overall increase in value-added time and patient care.
Introduction

The University of Michigan Hospital expressed concerns regarding the workload placed on the Inpatient Unit Clerical Staff and the processes the clerical staff uses to complete each task. The purpose of the study was to analyze the processes used to complete tasks and recommend methods to maximize efficiency in these processes. To achieve these goals, the student team collected qualitative and quantitative data by interviewing University of Michigan Hospital clerks, conducting time studies, and implementing work sampling of clerical tasks. Data was collected from the surgical Orthopedic (5A) and medical Cardiology (7C) units. Because the clerical tasks are nearly uniform throughout the University Hospital, the results based on the collected data from the 5A and 7C units can be applied to the entire Inpatient Unit Clerical Staff. This report presents findings, conclusions, and recommendations from the study. In order to implement the proposed recommendations, an action plan is also presented in the report.

Background

The clerical staff includes unit-based and float clerks. Unit-based clerks are stationed at the same unit every shift, whereas a float clerk is assigned a unit at the beginning of each shift. Unit 7C has two clerks for the day and evening shift, and is assigned an additional clerk for a mid-shift, which is from 11:30am-8:00pm. Unit 5A has at least one clerk for the day and evening shift and is assigned an additional clerk for a mid-shift, which is from 8:30am-7:00pm. Both units are assigned one clerk during the midnight shift that is responsible for all tasks on all units of that floor. The clerical staff on all units process physician’s orders, medical supply orders, transfers, discharges and admissions. Other tasks include recording bed changes, and maintaining a census of the unit and an updated patient chart. These tasks may have to be completed simultaneously to manage workload.

Approach & Methodology

To identify an approach and methodology for the project, we performed literature searches, observed the units, conducted surveys, interviewed the clerks, and collected data.

Literature Search

A literature search was conducted to gather information from previous and published studies concerning this problem. The literature search also helped to determine the approach and methodology used to collect quantitative data. The Westinghouse Study was used to assign pace ratings by evaluating skill, effort, consistency, and conditions. A pace rating is a multiplier used to normalize time study data for skill and effort displayed on a given day based on criteria set by the observer.

Observations

All members of the student team observed both units for two weeks. During the observations, the team identified three processes that either utilized an excessive amount of the clerks’ time or had inefficiencies.
**Clerical Surveys**
The student team distributed 152 surveys to all clerical staff and 78 were completed and returned, totaling a 50% rate of return. (See Appendix A.) These surveys gathered information regarding:

- type of clerk (unit-based or float)
- daily schedule
- definition of heavy workload
- frequency of discharges and admissions per shift
- experience in examined procedures

**Clerical Interviews**
Interviews were used to qualify concerns that were not addressed on the survey. (See Appendix B.) Fifteen unit-based and float clerks, from various units were interviewed on February 25th.

**Data collection**
Data was collected using two methods: work sampling and time studies. Data collection was conducted on units 5A and 7C only. Collection days were Monday – Friday during the morning and afternoon shifts (7am – 12am). Data was not collected on the midnight shifts or the weekends because a clerk may not have been on these units for their entire shift.

The student team used work sampling to assess how often during a workday each task is performed. A total of 476 person hours of data was collected. A work sampling sheet listing main tasks a clerk performs was located at the clerk’s workstation. At the beginning of each shift, the clerk put on a beeper that was programmed to beep an average of five times randomly per hour. Each time the beeper went off, the clerk placed a check in the box on the log sheet that corresponded to the task(s) that he/she was performing at that moment. (See Appendix C.) These beepers were used for each shift.

The second form of data collection was a time study. A total of 75.33 hours of time study data was collected, of which 36 hours were on 7C and 39.33 hours were on 5A. A stopwatch was used by the student team to measure the time required for a clerk to complete a task. To validate the timing method and ensure rater reliability, the student team observed the units in pairs, discussed start and stop times, consulted about the occurrence of a multi-task, and compared assigned pace ratings. A multi-task occurs when an additional task begins before the first is completed. The time studies and work sampling helped quantify how the multi-tasks contributed to the efficiency and the functionality of the clerical unit. The times were recorded on a data sheet that lists the elements of each task. (See Appendix D.) Due to the variance in each clerk’s rate in completing a task, pace rating was necessary to normalize the data. Due to the variance in each observer, the student team discussed how each member assigned a pace rating and what constitutes a 100% pace. As defined by [Management, Planning, Design, and Control 1422], the purpose of pace rating is to determine, from the time actually taken by the operator being observed, the standard time that can be maintained by the average worker and that can be used as a realistic basis for planning, control, and incentive plans. Pace ratings were assigned to a clerk every time a member of the student team conducted a time study. These assignments occurred on a day-to-day basis.
Findings, Recommendations and Action Plan

General Findings

A total of 476 person hours of work sampling data was collected from both units. Combined work sampling data indicated that processing physician’s orders, answering the phone, and processing admissions were the three most frequent tasks. Figure 1 displays this data.

![Work Sampling Data (5A & 7C)](image)

When work sampling data from units 5A and 7C was analyzed separately, the three most frequent tasks were processing flagged orders (physician’s orders), answering the phone, and answering nurse orders and questions. Figures 2 and 3 display this data.
Findings: Time Studies (5A & 7C)  
February 23 - March 22, 2004

Figure 2: Time Study Data

Figure 3: Time Study Data (7C)

Total Sample hours = 75.3 hrs, 5A = 39.3 hrs
A total of 75.33 hours of time study data was collected, of which 36 hours were on 7C and 39.33 hours were on 5A. Time study data indicated that the two most time consuming tasks were processing admissions and processing physician’s orders (Figure 4). The findings validate the work sampling. Although answering the phone was not one of the most time consuming tasks, it occurred frequently.

Multi-tasking was used during a clerk shift to balance the workload. Figure 5 shows the percentage of total multi-tasking time spent performing a particular task.
Percentages of Frequently Multitasked Elements (5A)

- 6% - Update database
- 4% - timing/dating orders
- 9% Nurse Orders
- 16% - Assembling Charts
- 24% - Answering Phone
- 61% - processing flagged orders

Total Sample hours = 75.3 hrs, 5A = 39.3 hrs

Figure 5: Multi-tasking Data (5A)

Admissions

Card Embosser

According to our time study analysis, retrieving patient cards measured an average of ten minutes occurring 8 times during our 4 weeks of data collection. Currently, there is only 1 card embosser located on unit 6B. Cards are not consistently tubed to the units; therefore, the clerk must physically get them. This is inconvenient and is non-value-added time. The DataCard 275 costs roughly $10,000. (Diversified Business Machines, Largo, Florida)

Recommendation 1:
Use a volunteer during peak hours to run or tube the cards.

Benefits:
- Time will be saved doing more value-added tasks
- Workload will not get backed-up
- Stress will be reduced
- Labor cost will not increase

Drawbacks:
- Availability of a volunteer may be inconsistent
- Training will be required

Action Plan:
Train a dependable volunteer(s) on the DataCard 275. This should only require one or two days of training. The volunteer(s) should be available for approximately ten minutes, to retrieve the cards from 6B and deliver the cards to the corresponding units, Monday – Friday between the hours of 11am-5pm.
Recommendation 2:
Purchase more embossers (1 per floor).

Benefits
- Availability of the embosser will be increased
- Time will be saved
- Stress will be reduced
- Training will not be required

Drawbacks:
- Cost may be incurred by the University Hospital
- Travel to the unit with the embosser will be necessary

Action Plan:
The DataCard 275 is widely available. It can be bought on-line and delivered the next day. The DataCard 275 weighs 80lbs, but can fit on the table next to a printer in any unit. The fax machine will have to be relocated to the desk that runs along the wall. Buying more than 1 embosser at a time could reduce the total cost.

One way to raise the money could be to collect pop cans and return them for their $0.10 deposit. Many people on the unit drink soda, so they could save cans to raise the necessary funds and receive the embosser as their reward. This could allow the clerks to become more proactive and show some initiative. Also, if the floor raises a portion of the cost, the University Hospital could offer to pay the proportionate amount.

Admission orders
The time study indicated that the clerks on unit 7C and 5A spent 26% and 30% respectively of the total work time on admissions (Figure 4). Within admissions, admission orders processing measured approximately 37.3% of the admissions process. Work sampling data revealed that admissions ranked the 3rd highest in frequency completed 163 times (Figure 1). According to 60% of the interviews, a major area of concern was clerical frustration involving the admission arrival rates because most admits seemed to arrive all at once and mainly during shift change (3:30pm - 3:45pm). After interviews with Debra Vasher, Advisor, UMH Admissions and Business Services and Kim Barker, Assistant Manager, Environmental Services, we determined that this problem is out of our project scope. However, the same recommendations as those expressed for processing physician’s orders can be applied to admission orders processing.

Recommendation 1:
Automate the process so the doctors and nurses can put the orders in themselves.

Benefits:
- Increase in value-added time
- Increase in time-saving for both doctors, nurses and clerks
• Increase in patient care and satisfaction
• Increase in patient throughput
• Decrease in order errors
• Decrease in the time spent stamping

Drawbacks:
• Increase in initial cost to automate system
• Increase in initial cost to train employees
• Increase in initial frustration of doctors and nurses

Recommendation 2:
Make a new physician’s order form with a check box for most common orders to address the legibility problem.

Benefits:
• Increase in patient care and satisfaction
• Increase in value-added time for clerks
• Decrease in errors
• Decrease in the time doctors spend writing the orders

Drawback:
• Increase in cost to de-standardize the paperwork may occur

Telephone
Results from out time study data indicated that clerks on unit 7C spend 5% of the time answering the phone with an average duration of 39 seconds per call. Clerks on unit 5A spend 4.45% of the time answering the phone with an average duration of 31.9 seconds. On both units 7C and 5A, there are approximately 20 calls per shift. Answering the phone represented 11% of the total time multi-tasking (Figure 5). Work sampling indicated that the task of answering the phone ranked 2nd highest out of all tasks with 207 times (Figure 1). Upon observation and clerical surveys and interviews, it was noted that several of these calls were for transfer calls where the majority of time spent was trying to locate a nurse or doctor. Another noted problem was the frequent occurrence of personal calls.

Recommendation 1:
A transfer call should go directly into an automated menu.

Benefits:
• Increase in value-added time
• Decrease in the number of phone calls
• Decrease in time spent looking for staff
• Decrease non-inventoriable work
• Decrease in interruptions

Telephone
Drawbacks:
- Increase in initial implementation cost
- Increase in confusion or annoyance for customers is possible

Action Plan:
When a caller calls the UH, the caller will be sent to an automated system with a menu to choose from. For instance, if the caller is trying to locate a patient, he/she can enter the first letter of the last name in the Patient’s Menu. An employee can be located by typing the first 3 letters of the last name. If there is more than 1 person with the last name, the first 2 letters of the first name can also be entered. An extension can be connected automatically from there. If a menu option is not selected, an operator will be able to assist the caller. A similar menu is in place at Ford’s Dearborn Plant.

Recommendation 2:
Install another phone or line for personal calls.
Install a phone in the nurse’s conference room.

Benefits:
- Increase in clerk’s value-added time
- Increase in patient care
- Decrease in interruptions

Drawbacks:
- Cost for installation
- Decrease in the assurance that someone to answer the phone

Action Plan:
Notify employees that the unit phone number is not to be given out to the general public for private use. It may be used as a contact in emergency situations only. Install another phone line in the nurses’ area for personal calls.

Physician’s Orders
According to our time study data, processing physician’s orders occurred 20% of the total work time for unit 7C and 23% of the time for 5A (Figure 4). However, processing flagged orders was the highest task within physician’s orders for both 7C and 5A utilizing 74% and 68% of the total physician order time respectively. The clerks’ process between 10 and 12 flagged orders per shift, with each order averaging 159 seconds for 7C and 118 seconds for 5A. Work sampling data also indicated that clerks spent the most amount of time on processing physician’s orders with 375 times as compared with all other tasks (Figure 1). One major area of concern expressed by 60% of interviewees was the duration to process physician’s orders due to the illegibility of the writing. Another problem occurred when the doctor who placed the order could not be located or failed to respond to the call. This was most frequent after their one month rotation: doctors are rotated to another unit. For example, if an order was filled on the last day before a rotation, and the clerk either cannot read the order or has a question about it, it is hard to locate the doctor. If the doctor is located, he may not return the call. Therefore, the order must either be cancelled, or carried out based the understanding of unit staff.
Recommendation 1:
Automate the process so the doctors and nurses can put the orders in themselves.

Benefits:
- Increase in value-added time
- Increase in time-saving for both doctors, nurses and clerks
- Increase in patient care and satisfaction
- Increase in patient throughput
- Decrease in order errors
- Decrease in writing in of materials
- Decrease in the time spent stamping

Drawbacks:
- Increase in initial cost to automate system
- Increase in initial cost to train employees
- Increase in initial frustration of doctors and nurses

Recommendation 2:
Make a new physician’s order form with a check box for most common orders to address the legibility problem.

Benefits:
- Increase in patient care and satisfaction
- Increase in value-added time for clerks
- Decrease in errors
- Decrease in the time doctors spend writing the orders

Drawback:
- Increase in cost to de-standardize the paperwork may occur

Action Plan:
Determine the most frequent physician’s orders by analyzing data from the past year. Get doctors, nurses and clerk’s opinions on what the form should have. Create the form and get it approved by Medical Information Services (MIS). Commence implementation of forms.

Ordering Supplies
Time study data concluded that 6% of the clerk’s time was spent ordering supplies for both units. The clerk ordered supplies on average 8 times per shift and 7 times per shift for units 7C and 5A, respectively. Interviews also confirmed this as a source for improvement. Out of the 50% of surveys returned, 8% rated the supply ordering process as inefficient. First a clerk must look up
the product on-line, and search for the correct item. Then, the clerk has to call Materiel Services and place the order.

Recommendation:
This 2-step process can be streamlined by automating it. The new process should be only 1-step.

Benefits:
• Increases value-added time
• Increase in patient throughput and satisfaction
• Increase in information flow through instant feedback on product availability
• Increase in the efficiency of inventory control
• Increases the ability to measure turn around time for material ordering
• Increase in documentation on what supplies were ordered
• Decrease in errors
• Decrease in writing in of materials

Drawbacks:
• Increase in cost to further develop site

Action Plan:
The program is already on-line. A database would need to be added and linked to Materiel Services database to control the inventory. This would allow a notice to be sent if the product ordered was unavailable and name an alternative option. The final step would be to add an order form to the current site.

Redesign of Unit (5A)
On unit 7C, 36% of the clerk’s work is done on the computer. On unit 5A, 32% of the work time is spent on the computer. The tasks performed on the computer include: sending alphanumerical pages, processing diet orders, supply orders, transfer in, and transfer out orders, medical orders, and flagged orders, checking email, scheduling return appointments, and updating the census, and database.

Comparative data shows that both units spend nearly equal amounts of time using the computer to complete necessary tasks. However, the two clerks in unit 7C utilize one computer per clerk whereas the two clerks in unit 5A share one computer, even though 5A has 2 computers. Although both clerks on 5A sit next to each other on Courtside and share 1 computer, the entire unit is for clerical use.

Recommendation:
One clerk should sit on Courtside and 1 clerk should sit on Riverside.

Benefits:
• Increase of access to a computer during entire shift
• Increase in productivity
• Increase in clerical accessibility to patients and patient family
• Increase in satisfaction of patient care
• Increase in value-added time
• Decrease in waiting time

Drawbacks:
• Increase of inconvenience for other unit staff

Action Plan:

The Head Nurse has the authority to ensure that the clerks use both sides. Implementing these recommendations will result in an increase in the ability for clerks to better prioritize, perform key tasks faster, and thus an overall increase in value-added time and patient care.

Implementing these recommendations will result in an increase in the ability for clerks to better prioritize, perform key tasks faster, and thus an overall increase in value-added time and patient care.
Appendix A: Clerical Survey

Inpatient Clerical Unit Staff Survey

This survey is being conducted by a student team from the Industrial and Operations Engineering Department at the University of Michigan. We are working in conjunction with Central Staff Resource. We are currently working on a project that analyzes inpatient unit clerical workload and task processes. This survey will gather information regarding volume of workload. All feedback is greatly appreciated and will help to ensure in the success of the project.

All information will be kept confidential and you do not have to put your name on the survey. Any questions or concerns may be directed to Rosemary Sieracki, Staff Development Coordinator.

Thank you for taking time to complete this survey – Kimika Edwards, Pramod Kakarala, Kerry Raschke, and Priya Sehgal.

1) Are you: Circle One
   float       unit-based

2) If you are unit-based, please answer the following:
   Which unit do you work on? _________

3) If you are a float, please answer the following:
   Which units do you work on? ______________________

4) How long have you been employed at UHS? (in years) _________

5) Have you worked as a clerk in another hospital system?
   Circle       Yes   No
   If so, where? ___________________________________________

6) Do you get to take your required breaks?
   Yes          No
   If No, Why?  __________________________________________

7) Circle which time(s) you feel are the busiest?
   Morning shift   Afternoon shift   Mid shift   Evening shift   Midnight shift

8) On average, how many of the following do you process per shift?
   1. Admissions? _______
   2. Discharges? _______
   3. Transfers? _______
   4. Physicians’ orders? _______
Circle One answer for each of the following questions

9) Efficiency of the admissions process
   Excellent = 5 4 3 2 1 = poor

10) Efficiency of the discharge process
    Excellent = 5 4 3 2 1 = poor

11) Efficiency of the transfer process
    Excellent = 5 4 3 2 1 = poor

12) Efficiency of the processing physicians’ orders
    Excellent = 5 4 3 2 1 = poor

13) Efficiency of the ordering supplies and equipment
    Excellent = 5 4 3 2 1 = poor

14) Efficiency of the bed change process
    Excellent = 5 4 3 2 1 = poor

15) Efficiency of the shift change process
    Excellent = 5 4 3 2 1 = poor

16) With regards to the shift change process, do you receive the required info to start your shift: Circle Yes No

Please answer the following questions based on your experience with the computer system and programs: Circle One

17) How efficient is the diet order entry system?
    Excellent = 5 4 3 2 1 = poor

18) How efficient is the paging system?
    Excellent = 5 4 3 2 1 = poor

19) How efficient is the supplies and equipment ordering program?
    Excellent = 5 4 3 2 1 = poor

20) How would you rate the current computer system?
    Excellent = 5 4 3 2 1 = poor

22) How would you rate your comfortability level in using the computer system?
Excellent = 5   4   3   2   1 = poor

23) Of the following list of simultaneous tasks, which combination is the most difficult to manage? **Please Circle One**

On Phone / Pulling Orders
On Phone / Closing Patient Chart
On Phone / Probing Computer
Pulling Orders / Answering Nurse Requests
Closing Chart / Answering Nurse Requests
Transfer Process / Notify R.N. of Inpatient Appointments

24) Below are 9 clerical processes performed on a typical shift. Please rank the processes:

Most Time Consuming 1   2   3   4   5   6   7   8   9 Least Time Consuming

______ Admission Process
______ Transfer Process
______ Discharge Process
______ Processing Physicians/TPN orders
______ Referral Process
______ Inpatient Appointments Process
______ Maintaining Medical Records
______ Order Supplies/Equipment/Services
______ Diet Order Entry System
Appendix B: Clerical Interview

Interview Questions
This interview will be used only for the purposes of gathering information regarding Clerical task processes and clerical workload.

If you are unit-based, please answer the following
What are some of the most problematic or time consuming areas in your unit?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What are some changes that you would like to see incorporated to improve efficiency?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

If you are a float, please answer the following:
What are some time saving processes utilized by some units and which unit(s) are they in?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What are some inefficient processes and which unit(s) are they in?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What are some changes that you would like to see incorporated to improve efficiency?
Have you worked as a clerk in another hospital system?

If so, where, and for how long?

Based on that experience, what were some better processes in that hospital that you would like to see here?

Based on that experience, what were some processes that needed improvement?

Based on that experience, what were some processes that this hospital performs better?

Do you get to take your required breaks?

At what time during your shift do you feel busiest?

Any other comments or suggestions?
## Appendix C: Work Sampling Sheet

<table>
<thead>
<tr>
<th>Beep</th>
<th>Census</th>
<th>Admissions</th>
<th>Transfers Out</th>
<th>Transfers In</th>
<th>Discharges</th>
<th>Processing MO Orders</th>
<th>Referrals/Diagnostic Orders</th>
<th>Chart Maintenance</th>
<th>Talking to Patients/Family</th>
<th>Other</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</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>2</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>3</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>4</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>5</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>6</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>7</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>8</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>9</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>10</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>11</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>12</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>13</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>14</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>15</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>16</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>17</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>18</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>19</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>20</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>21</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>22</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>23</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>24</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>25</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>26</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>27</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>28</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>29</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>30</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>31</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>32</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>33</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>34</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>35</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>36</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>37</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>38</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>39</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>40</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>41</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>42</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>43</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>44</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>
# Appendix D: Time Study Sheet

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
<th>Start</th>
<th>Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admissions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stamping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical orders processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>File admissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assembling charts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phone(intention of admission)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discharges</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduling Return Appointment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create/Compete D/C envelope</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collect Chart to return to MIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>update census database</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>outpatient card</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>update patient locator board</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phone(intention of discharge)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Questions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse orders/questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database updates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient locator chart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone(intention of editing census)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparing Census w/Locator Board</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking Beds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order Bed Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transfers Out</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Transfer Out Order</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Transfer Checklist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notifying Sending Clerk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfers In</td>
<td>Start</td>
<td>Stop</td>
<td>Start</td>
<td>Stop</td>
<td>Start</td>
<td>Stop</td>
<td>Start</td>
<td>Stop</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>Process Transfer In Order</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process orders in chart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-label all paperwork</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Processing MD Orders         |       |      |       |      |       |      |       |      |
| Processing Flagged orders    |       |      |       |      |       |      |       |      |
| Complete lab requisition     |       |      |       |      |       |      |       |      |
| Timing/Dating/Location each Order |   |     |       |      |       |      |       |      |

| Referrals/Diagnostic Orders  |       |      |       |      |       |      |       |      |
| Referral Log                |       |      |       |      |       |      |       |      |
| Scheduling resulting appointment |     |    |       |      |       |      |       |      |
| Prep Diets or NPO orders    |       |      |       |      |       |      |       |      |

| O.R. Charts                  |       |      |       |      |       |      |       |      |
| Stamp/Complete O.R. Checklist|       |      |       |      |       |      |       |      |
| Stamp labels w/Registration Card |     |    |       |      |       |      |       |      |
| Combine charts               |       |      |       |      |       |      |       |      |

| Chart Maintenance            |       |      |       |      |       |      |       |      |
| Adding Blank forms           |       |      |       |      |       |      |       |      |
| Complete Thinned Chart Checklist |   |    |       |      |       |      |       |      |
| File Diagnostic test results |       |      |       |      |       |      |       |      |

| Answering Phone              |       |      |       |      |       |      |       |      |

<p>| Talking to Patient/Patient Family |       |      |       |      |       |      |       |      |
| In person                     |       |      |       |      |       |      |       |      |
| On phone                      |       |      |       |      |       |      |       |      |</p>
<table>
<thead>
<tr>
<th>Ordering Supplies</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet Entry System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>