University of Michigan Health System

Program and Operations Analysis

Inpatient Tracking Analysis and Process Standardization at

Mott Children’s and Women’s Hospital

Final Report

Team 6

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Date: December 1, 2009
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Executive Summary

In a children’s hospital, the security of patients is the responsibility of the hospital. Therefore, tracking the whereabouts of admitted patients is an important security function for a children’s hospital. The inpatient tracking process at Mott Children’s and Women’s Hospital is not standard. When a patient needs to leave the floor, the process each unit uses to track the location of inpatients is subject to great variation. This variation and lack of standardization can lead to miscommunication and a decrease in overall patient safety. An IOE 481 team was asked to capture and analyze the current inpatient tracking process used at Mott Hospital, and to then develop recommendations to standardize and improve the transportation process.

Mott Children’s and Women’s Hospital currently has 198 inpatient beds. Children under the age of two years old, along with patients labeled as high risk, are banded with a bracelet called a Hugs tag. This tag activates an alarm if the patient is taken off the floor. Patients who do not have a Hugs tag are not being tracked. The team looked at the inpatient tracking process for both Hugs tag patients as well as patients who did not have a Hugs tag. The project scope encompasses all units in Mott Hospital except for the Child Adolescent Psychiatric Hospital (CAPH) unit.

The key issues driving this project were the high number of Hugs nuisance alarms (371 in the past 13 months), the seriousness of patient security in a children’s hospital, and the free flow between inpatient floors that will be implemented in the new Mott Hospital, opening in 2012. The goals and objectives for the team included creating a snapshot of the current inpatient tracking process and developing a standardized inpatient tracking process.

The team approached this project in four phases:
- Observations, interviews, and data collection
- Current state value stream mapping
- Root cause analysis
- Final recommendations

The first phase involved collecting as much information about patient tracking as possible. The current state value stream mapping phase entailed analyzing the information collected from the first phase to develop a snapshot of the current process. The team then identified the areas of process deficiency in the root cause analysis phase. The final recommendations phase involved creating a future state value stream map and developing recommendations that could be implemented.

From the observations, interviews, and data collection phase the team concluded:
- Eight different transportation forms are being used
• Multiple tracking logs are being used to keep track of a patient's location
• Patient transportation arrival time has great variation
• Family members set off the most Hugs nuisance alarms

The current state map phase highlighted the great variation between different unit's tracking processes as the team developed six different current state value stream maps outlining these different hospital functions. These trips included patient transportation, operating room, MRI, SWAT, radiology, and parent trips. The root cause analysis phase used the lean Five Why’s method to drill down causes of the variation. This involved asking “why” multiple times to find what truly caused a process deficiency. Based on this analysis, the team concluded that the unclear roles and responsibilities of the staff, the lack of parent training, the lack of communication between hospital personnel, the self concern of departments, the evolved transportation process, and the focus on the small picture seem to be the causes of the majority of the problems with the current tracking process.

Based on these findings the team developed an Impact vs. Effort diagram to find the recommendations that would have the highest impact but require the least amount of effort. From this analysis the team looked to focus on standardizing clerk/nurse responsibilities, standardizing transportation forms, and developing family security training. A future state value stream map was developed to help with the recommendation. The team recommends to clearly define roles and responsibilities, develop a tracking “sign out /in” log for inpatient units, standardize a portion of the transportation forms, and create a parent Hugs information card.
Introduction

Mott Children’s and Women’s Hospital is part of the University of Michigan Health System. With 198 beds, one of the biggest concerns of the hospital staff is knowing the location of each patient at all times. The current process of tracking inpatients in Mott Children’s and Women’s Hospital is not standardized, leading to decreased patient safety when the patients move from department to department. In addition, the Manager of Security Operations for the hospital has reported that the current tracking method results in too many false (or nuisance) alarms that alert hospital staff even though the locations of the patients are known. The Manager of Security Operations would like a uniform, efficient tracking process for all inpatient floors that increases the safety of the patients. The Manager asked an Industrial and Operations Engineering 481 team to create a current state value stream map of the tracking process and identify opportunities for improvement. This work has been completed. From the team’s conclusions, a standard process for tracking inpatients being checked into and out of new departments at Mott Children’s and Women’s Hospital has been recommended. This report presents the team’s analysis and recommendations of the inpatient tracking process at Mott Children’s and Women’s Hospital.

Background and Current Situation

When caring for children in a hospital, high security measures must be followed to create a safe environment for both patients and families. There have been many advances in hospital security systems recently, including the Hugs system that is currently in place at Mott Children’s and Women’s Hospital. With the Hugs program, children 24 months and younger wear a bracelet on either their ankle or their wrist. The bracelet activates an alarm if the patient is taken past a door sensor, if the patient is standing by an exit for more than 15 seconds, or if the bracelet is cut. However, Mott Children’s and Women’s hospital has experienced 371 false alarms in the past 13 months, decreasing the vigilance of the hospital staff and distracting visitors and patients. In addition, children over two years old do not have any form of tracking device unless they are labeled as high risk by the Child Protection Team or hospital staff.

The Manager of Security Operations has indicated that there is room to improve the current tracking process by eliminating the inconsistencies. Most inconsistencies occur when patients are moved from one department to another and when family members take the patient off the floor for various reasons. This project created a standardized method for tracking all Mott Children’s and Women’s Hospital inpatients, making the tracking more efficient and increasing patient safety.

The team found many variations and complexities in the patient tracking process. The amount of variation in the current system is a product of the different needs patients have, but it is also the product of an evolved system. Roles and responsibilities are not well defined, which was evident
from talking with staff members. After reporting the team’s findings and conclusions the team will make recommendations to combat this variation and formalize the patient tracking process.

**Key Issues**
The following key issues compelled the need for this project.
- In the past 13 months, 371 infant security alarms have been set off at the Mott Children’s and Women’s Hospital. This data has been tracked by the Hugs security software, which records each alarm.
- The seriousness of child security and tracking within Mott has led to increased pressure on the hospital to ensure the safety of its patients.
- The free flow between floors allowed at the new Mott Children’s and Women’s Hospital exacerbates the patient tracking problem that the hospital is currently facing.

**Goals and Objectives**
The student team worked to achieve the following goal: Develop and recommend a standardized inpatient tracking process for all units in Mott Children’s and Women’s Hospital. This goal has led to the following objectives:
- Allow all staff and parents to know where patients are at all times
- Decrease risk of abduction
- Decrease nuisance alarms

**Project Scope**
This project included inpatient tracking in all units within Mott Children’s and Women’s Hospital except one. The proposed standardized process included an inpatient tracking process for all Mott inpatients. This planned process accounts for patients leaving the unit for tests, procedures, and family visits.

The project does not include the Child Adolescent Psychiatric Hospital (CAPH) unit in Mott. The team did not study tasks or activities associated with units outside of Mott Children’s and Women’s Hospital, patients not admitted to Mott, and issues not dealing with patient security.

**Expected Impact**
The team performed and analyzed various studies of the current process. Upon completion, the team provided recommendations to standardize the current process. The recommendations will result in:
- Improved tracking process
- Increased patient safety
- Improved quality of patient care
- Decreased staff and patient complaints
Approach and Methodology

With increasing patient security as the primary project goal, the team performed our analysis of the project in four phases:

1. Observations, interviews, and data collection
2. Current state value stream mapping
3. Root cause analysis
4. Final recommendations

Phase One: Observations, Interviews, and Data Collection
For the first phase of the project, the team collected observations, interviews and data from sources within Mott Hospital, other area hospitals, Mott parents, and other sources connected to patient security.

Interviews
The team interviewed over 20 nurses and unit clerks from all of the inpatient floors. The team also interviewed with patient transporters, and SWAT (nurses for high risk patients concerning patient transportation). The team interviewed transporters, nurses, and administration staff from these groups. Information was gathered on security perceptions, understanding of the current tracking processes, roles and responsibilities, and suggestions for streamlining inpatient tracking.

Interviews were also conducted with possible destination sites of inpatients. A destination site is anywhere that a patient may be transferred to when they leave their unit floor. Examples of destination sites included Post Anesthesiology Care Unit (PACU), Radiology, Operating Room (OR), and Physical Therapy. Unit clerks, nurses, and administration staff were interviewed from these sites. Questions for destination sites consisted of their role in patient tracking, their current processes, and suggestions for the future.

Observations
For the observation portion of this phase, the team started by observing the interactions between staff on the inpatient floors. The team observed nurses and clerks on the 5th and 6th floors for a total of 20 hours. The team also shadowed “pick-ups” by patient transporters observing 10 “pick-ups”. The observations were used to validate the knowledge the team had learned from interviews, and to find discrepancies in perception about the process and what actually is done.

Data Collection
The team conducted a literature search to assist in gaining background knowledge of the problem. The team searched topics involving patient and hospital security, process standardization, and value stream mapping. The team compiled literature from books, online sources, and past IOE 481 final reports. A list of sources can be found in Appendix A.
Mott security staff provided the team with historical data of the Hugs security system. The data was compiled from June 2009 through September 2009.

The team received data from patient transport which was summarized and collected from January 2009 to September 2009. The data contained information for average times of jobs and volume of jobs by location, and can be found in the Findings section of this report. The team also collated eight transporting and tracking forms used by different departments within the hospital; these forms are in Appendix B.

Survey requests were sent to different audiences. One request was sent to other area children’s and women’s hospitals concerning security systems they have in place. The other request was a survey sent to inpatient families asking for information on hospital security training they received while at Mott. The team received three responses for the security systems survey, and 53 responses for the parent survey. The data compiled from the parent survey can be found in the Findings section of this report.

**Phase Two: Current State Value Stream Mapping**
After interviews and observations, the team analyzed the information and data collected to form a current process value stream map of the patient tracking process. The team completed a rough timeline of the process outlining the roles and responsibilities of key stakeholders to start the mapping of the current state. The team then constructed current state value stream maps of the inpatient tracking process within Mott Hospital. First time quality (FTQ) metrics were developed for key process steps. FTQ estimates how often a process step is done correctly the first time it is performed.

**Phase Three: Root Cause Analysis**
Once the team documented the current state through value stream mapping, root causes of the deficiencies in Mott’s inpatient tracking process were identified. The team looked at the FTQ metrics as well as performed a “Five why’s” analysis to determine root causes of the problem. The groups responsible for the most Hugs alarms were determined by looking at the Hugs data.

**Phase Four: Final Recommendations**
In the team’s final recommendations, a future state value stream map was constructed to outline proposed changes, and provide a snapshot of the new standardized process. From this future state value stream map, the team developed final recommendations for Mott Children’s and Women’s Hospital inpatient tracking process. An Impact vs. Effort diagram was constructed to determine what proposed changes would have the greatest impact and require the least amount of effort to implement. The team’s final recommendations were based off of a combination of improving the patient tracking process and implementing reasonable goals for Mott Children’s and Women’s Hospital.
Findings and Conclusions

This section of the report contains the team’s findings after completing interviews, observations and data collection at Mott Children’s and Women’s Hospital. The following were the most significant findings:

- Number of transportation forms being used is excessive
- Number of sign out/in logs being used to keep track of patient’s location is excessive
- Patients are experiencing long wait times at their destination because a transporter is not available
- Radiology Department has recently launched a new transportation program with their own personal transporter
- Alarms occur most often on the 6th floor and are caused by parents and clerks
- Process for training parents in the Hugs system is unclear
- Seventy percent of parents with children not on the Hugs system received no training

By analyzing these findings, the team completed a current state value stream map and root cause analysis of the current state. Through the use of these tools, the following conclusions were made:

- Current transportation process causes extra work and confusion for personnel
- Long wait time for transporters causes variability in the transportation of patients
- Variations in the training of parents are caused by different staff members presenting the information to parents
- Lack of standard training material for parents

A more detailed description of the team’s findings and conclusions follows, including the data that was collected, findings from interviews and observations, and results from surveys that were collected.

Interviews and Observations

The team interviewed nurses and clerks from all inpatient floors. In addition, the team interviewed patient transporters, SWAT, PACU, Radiology, OR, PT/OT, Echo, EKG, and MRI. Questions focused on the current inpatient transport process, roles and responsibilities of the personnel, and suggestions for improvements. A sample of the interview questions is included in Appendix C.

In addition to these interviews, observations of the 5th floor, 6th floor, Radiology, MRI, Patient Transportation, and SWAT were conducted. The team observed patients leaving their unit for procedures in Radiology and MRI by shadowing patient transportation and SWAT for 20 hours.
From these interviews and observations, the team identified four key findings regarding the current inpatient tracking process in use at Mott.

- Number of transportation forms being used is excessive
- Number of sign out/ in logs being used to keep track of patient’s location is excessive
- Patients are experiencing long wait times at their destination because a transporter is not available
- Radiology Department has recently launched a new transportation program with their own personal transporter

Based on these findings, the team was able to make conclusions about the current process. Eight different transportation forms were collected and can be seen in Appendix B. When a patient is transported from the unit to a test or procedure, an inter-hospital transportation form is used. Although this form is the most common, the team found that the destination units frequently have their own transportation forms. This lack of consistency in forms was observed to cause extra work for the transporters, confusion among personnel, and complacency.

Inpatient units in Mott currently use very different methods for tracking the location of their patients. Several units use forms to keep track of their patient’s appointments for the day as can be seen in Appendix D; however, the units have no way of knowing the location of patients who have left the unit with a parent for a reason other than an appointment. This lack of standardization leads to confusion on the unit, especially with floating unit clerks.

The transporters cover the entire University Hospital in addition to Mott. As a result, long travel times add up to ten minutes to the existing 30 minute wait time. Through root cause analysis, the team found that this long wait time was the leading cause of variation in patient transporter. When a patient waited for a significant amount of time, parents, nurses, clerks, and other personnel were more likely to transport the patient to their unit.

As a result of the long wait times, the Radiology Supervisor for Mott Children’s and Women’s Hospital started a pilot program for her unit. Radiology has their own patient transporter used only to transport inpatients to and from their unit. Although the Radiology Supervisor did not have any data available at the time of the report, she did report significant decreases in wait time, increases in patient and family satisfaction, and decreases in transporter variability.

**Data Collection**
The team collected data from the Hugs security system, patient transportation, parent surveys, and area hospital surveys. This data was used to determine the quantity and causes of the Hugs alarms, gain parent feedback on the current inpatient tracking process, and make comparisons with other children’s hospitals.
Hugs Security Data

Mott Children’s and Women’s Hospital currently uses the Hugs system to tag children under two years of age. When a child with a Hugs tag is transported off the unit, the patient must be checked out of the Hugs system by the unit clerk. When the child is not properly checked out before leaving the floor, an alarm will sound. An alarm will also sound if a Hugs patient stands by a door or if a door is opened while the patient is within a certain distance of the door. The team used hospital data from Hugs alarms to draw several conclusions about the current process. The findings are following in Figures 1 and 2.

Figure 1: Hugs Alarms Locations

![Hugs Alarm by Floors](image)

Hugs Data: Security Staff Hugs Data, sample= 371, collected from June 1, 2009 – September 30, 2009

The team found that 44.2% of the Hugs alarms reported occurred on the 6th floor. Stair 1 on the 6th caused 46.4% of the alarms on the 6th floor. The team concluded that this occurs because the playroom on the floor is located next to stair 1 and the alarms are caused when a door is opened while a child is passing to enter the playroom. Through interviews and observations, it was determined that most of these alarms were accidental.
The highest contributing causes of the Hugs alarms are parents and clerks who cause a total of 60.2% of the Hugs alarms. Through interviews and observations of the units, the team concluded that parents cause Hugs alarms frequently because of the inconsistencies in the training material that is presented to them at the beginning of their child’s stay. The responsibility of training parents falls on a combination of unit clerks, nurses, and volunteers. In addition, clerks are ultimately responsible for deactivating the Hugs tag when a patient is leaving the floor. The team found that lack of communication between the nurses, patient transporters, and unit clerks causes the clerk to not properly check out a Hugs patient who is leaving the floor.

**Patient Transportation Data**

For the majority of procedures, inpatients are taken to their appointments by patient transportation. Patient transportation is shared between University Hospital and Mott Children’s and Women’s Hospital, but is dispatched out of University Hospital. The transporters are required to call into a computer system when they are beginning and completing a job. The data that was collected can be found in Figure 3. The patient transport data was analyzed to develop the following conclusions about the patient transportation process.
The team concluded that before the Radiology pilot program was started, the majority of trips by patient transportation were to that destination. The destinations that frequently use patient transportation also experience more variability in who returns the patient to their unit. When a patient is forced to wait for a transporter, it was observed that a person from that destination was more likely to transport the patient.

**Parent Surveys**
The team administered internet surveys to a sample of Mott parents to obtain information on the training program they received when their child was admitted to an inpatient floor. Figures 4-6 represent the information that was collected.
The survey indicates that 40% of the parents found that the Hugs training was not at all comprehensive. Based on this finding, the team concluded that the current program that is used to train parents on the rules of Hugs is not a sufficient amount of information. There is no standardized training material, which leads to the high number of Hugs alarms that are caused by parents or family members.
The survey results show that 75% of parents have very high expectations of their child’s security while admitted in Mott Children’s and Women’s Hospital. While no issues have occurred under the current process to endanger a patient; inconsistencies and lack of standardization of the process have the potential to cause security breaches. Therefore, security should be a high priority for Mott.
The parent survey indicates that 60% of parents received no information or guidelines for moving their child from the floor. Through interviews and observations, the team concluded that the lack of defined nurse and unit clerk roles and responsibilities for relaying this information leads to this problem.

**Area Hospital Surveys**
The team distributed surveys to area hospitals to gain insight into other inpatient tracking processes. The team inquired about a standardized process for tracking pediatric patients, a standardized process for tracking infants, the strengths and weaknesses of the system, and the age of their current processes. The team received responses for the survey from Beaumont Hospital in Royal Oak, MI; The University of Missouri Health Care; and The University of Iowa. All three hospitals currently use tags for infants in their hospitals; however, none have a standardized process for tracking patients who are not tagged.

**Current State Map**
The team created maps of the current state for patient tracking at Mott Children’s and Women’s Hospital. Based on these maps, the team found that there were significant differences in how the patient was transported based on the destination. The team found different processes for the
Operating Room, MRI, MRI with an anesthetized patient, Radiology, SWAT, procedures that use University Hospital Patient Transportation, and parent trips with patients. The current state value stream maps for these different processes are shown in Figures 7-13. Full scale figures are shown in Appendix E.

Figure 7: Current State Value Stream Map of Patient Transport

![Patient Transportation - 12.9%](image)

Figure 8: Current State Value Stream Map of Radiology

![Radiology - 9.5%](image)
Figure 9: Current State Value Stream Map of SWAT

Figure 10: Current State Value Stream Map of Operating Room
Figure 11: Current State Value Stream Map of MRI (No Anesthesia)

MRI (No Anesthesia) - 1.0%

Doctor
- Order Procedure

MRI
- Call Nurse; note if patient needs Anesthesia
- Patient Transport
  - Place Patient Transport Form
- If Hills, use wheelchair Tag
- Sign Transport Form
- Call Transport Wait 30 min
- Sign Transport Form

Unit Clerk
- Check Patient
- Place Patient
- Transport to Unit
- Locate Patient

Nurse
- Prep Patient
- PTG 50%
- Transport Patient

Patient Transport
- Obtain Chart
- PTG 75%
- Transport Patient

Figure 12: Current State Value Stream Map of MRI (Yes Anesthesia)

MRI (Anesthesia) - 1.5%

Doctor
- Order Operation

MRI
- Call Nurse; note if patient needs Anesthesia
- Call PACU to Schedule
- Sign Transport Form
- MRI
- Transport Patient to Pre-Op
- Transport patient to MRI
- Transport patient to PACU
- Transport patient to Unit
- Locate Patient

OR Patient Transport
- Obtain Chart
- PTG 75%
- Transport patient to Pre-Op
- Transport patient to MRI
- Transport patient to PACU
- Transport patient to Unit
- Locate Patient

Nurse
- Prep Patient
- PTG 50%
- Place Patient
- PTG 50%
- If Hills, use wheelchair Tag

Unit Clerk
- Place Patient
- Transport to Unit
- Locate Patient
- Sign Transport Form

Pre-Op PACU
- Notify OR Patient Transport
- Time in PACU
The team concluded that the variability in the transportation process is causing problems with the current tracking system. Nurses, unit clerks, transporters, and destination unit clerks do not have clearly defined roles and responsibilities in the tracking process. This lack of standardization causes confusion, longer wait times for transporters, and an increased safety risk for the patients.

**Root Cause Analysis**

Root cause analysis and the current state maps were used to analyze the current state. The team used the Five Why’s method and an Impact vs. Effort Matrix to look into the root causes of the problems and to develop recommendations.

*Five Why’s Method*

The team focused on the excessive number of Hugs alarms, the various transportation forms, and the lack of communication between the hospital personnel. A flowchart was used as a visual tool for the team to complete the Five Why’s analysis. This involved asking “why” multiple times to find what truly caused a process deficiency. These flowcharts follow in Figure 14.
Figure 14: Five Why’s Analysis

**Excessive Hugs Alarms**

- **Miscommunication**
  - Unclear roles and responsibilities

- **Problems with Hugs Software**

- **Parents don’t know rules**
  - Lack of training
  - Communication with staff

- **Coincidence**

**Various Transportation Forms**

- **Serve different departments with different needs**
- **No communication between departments**
  - Focus on small picture and use Band-Aid fixes
Based on this analysis, the team concluded that the unclear roles and responsibilities of the staff, the lack of parent training, the lack of communication between hospital personnel, the self concern of departments, the evolved transportation process, and the focus on the small picture seem to be the causes of the majority of the problems with the current tracking process. These causes are highlighted in Figure 14.

**Impact vs. Effort**
To develop recommendations for Mott Children’s and Woman’s Hospital, the team used an Impact vs. Effort matrix to prioritize the possible fixes to the problems. This diagram compares the impact of a possible change to the effort that would be required to implement this change. The matrix follows in Figure 15.
Figure 15: Impact vs. Effort

The Impact vs. Effort matrix shows that the changes in the upper right quadrant will be the easiest to implement and will create the highest impact. Based on the comparison of impact and effort, the team determined to focus on standardized clerk and nurse responsibilities, standardized transportation forms, and patient family training. The following sections will focus on the team’s recommendations and plan for implementation.

**Recommendations and Implementation**

The following represent recommendations for implementing the results reached during analysis of the Mott Children and Women’s Hospital inpatient tracking system. Attempting to reduce the number of Hugs detector alarms while increasing patient safety and knowledge of patient location, the team created:

- An ideal process map for patient transportation
- A parent information card
- A standardized tracking form
- A new sign out/sign in log
- A matrix clarifying the roles and responsibilities of personnel involved in the transportation process
**Future State Map**

To ensure that all patients in the hospital are being transported in a safe and secure way, the team created a future state map of an ideal inpatient transportation process. The sequence of events laid out on this map is the process that should be followed every time a patient needs to leave the floor. This future state map can be seen in Figure 16. A full size version of this map can be seen in Appendix E.

**Figure 16: Future State Map**

<table>
<thead>
<tr>
<th>Future State Map</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Patient</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Notify Clerk and Nurse of need to leave</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Destination</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Prep patient to leave floor</td>
</tr>
<tr>
<td>Fill out transportation form</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Nurse</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Print Patient Transportation form</td>
</tr>
<tr>
<td>Pages Nurse</td>
</tr>
<tr>
<td>Deactivate Hugs tag</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Unit Clerk</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Arrives and picks up transportation form</td>
</tr>
<tr>
<td>Sign out patient</td>
</tr>
<tr>
<td>Gets patient from room</td>
</tr>
<tr>
<td>Transport to destination</td>
</tr>
<tr>
<td>Sign patient into Hospital Destination</td>
</tr>
<tr>
<td>Sign Patient out of Destination</td>
</tr>
<tr>
<td>Transport back to unit</td>
</tr>
<tr>
<td>Sign patient in with Clerk</td>
</tr>
<tr>
<td>Take patient to room/Wait for Nurse</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Parent Information Card**

The team created a 3x5 index card highlighting all Hugs portal exciter alarm locations and key information about the Hugs alarm system and transporting the patient. The cards will be passed out to all parents who have a child staying in Mott. This index card will have a map of the child’s floor on one side, and the key information about the alarm system and transportation process on the other side. The front side of the card can be seen in Figure 17.
The back of the card will read:

- Alarms will sound if you take any Hugs patient near the areas highlighted on the flip side of this card.
- Please make sure to carefully note these locations and remain a good distance from all of these stairwells and elevators.
- Please do not disband, cut, or tamper with a Hugs band as this will set off the alarm.
- If you would like to remove your child from the floor, please speak with a unit clerk or nurse.
- Make sure to also sign your child out from the unit upon leaving.

To implement the use of this card, cards will be given to the unit clerks of each floor. The unit clerks will then give a card to each family upon check in. The parents will be able to refer to this card through the entirety of their stay at the hospital.

**Standardized Portion of Patient Tracking Form**

Based on analysis of the various patient transportation forms, the team created a standardized portion of the form hoping to eliminate variability in transportation forms. The standardized portion can be seen in Figure 18.
Figure 18: Standardized Transportation Form

<table>
<thead>
<tr>
<th>Check Patient ID Bracelet</th>
<th>Hugs Tag? Y / N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Name: ____________</td>
<td>Appointment Time: ______________</td>
</tr>
<tr>
<td>Registration #: __________</td>
<td>Actual Arrival Time: ______________</td>
</tr>
<tr>
<td>Bed #: _________________</td>
<td>Actual Drop Off Time: ______________</td>
</tr>
<tr>
<td>Patient Unit: ______________</td>
<td>Destination Unit: ______________</td>
</tr>
</tbody>
</table>

This portion was compiled based on analysis of each of the eight current transportation forms collected throughout Mott. Information common to each form was included in the standardized portion. Destination units and inpatient floors will add this standardized portion to their current form. The separate units and floors can then add any missing information that is necessary to their specific unit. The forms will be used in the same way that the current transportation forms are used.

**Patient Sign-Out/Sign-In Log**

The team also created a sign-out/sign-in log that should be used every time a patient leaves and returns to the floor. The destination units will also have a copy of this form. When a patient arrives and leaves the destination unit, this log should also be filled out. The log gives accountability to whoever is moving the patient at all times. The Sign-In/Sign-Out log that the team drafted can be seen in Figure 19.

Figure 19: Sample Sign-Out/Sign-In Log

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Unit</th>
<th>Destination</th>
<th>Time Out</th>
<th>Transporter</th>
<th>Time In</th>
<th>Transporter</th>
<th>Hugs (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

This log will be implemented by placing a copy at the front of each unit clerk desk as well as at all destination unit desks. Unit clerks must ensure that every employee and parent does not remove a patient from the floor without completing the sign out log. Whenever a patient returns to the floor it the transporter must sign the patient back in immediately upon arrival.

**Clarification of Roles and Responsibilities**

Based on observations and interviews conducted throughout Mott, the team created a matrix clarifying the roles of the unit clerk, unit nurse, transporter, and destination site clerk throughout the transportation process. Assigning one person to the responsibility of the patient throughout each step ensures that the patient is never alone and is always safe. This matrix can be seen in Figure 20.
**Figure 20: Responsibility Matrix**

<table>
<thead>
<tr>
<th>Role</th>
<th>Unit Clerk</th>
<th>Unit Nurse</th>
<th>Transporter</th>
<th>Destination Site Clerk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clerk that resides on patient's unit</td>
<td>RN assigned to patient</td>
<td>Person who travels with / transports the patient to and from the destination</td>
<td>Only used if patient is transported to another Hospital Unit</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>-Confirm appointment time -Print transportation form -Give completed transportation form and chart to transporter -Track sign in / out log for unit -Notify unit nurse of trip -If Hugs tag: deactivate</td>
<td>-Prep patient for transportation before transporter arrives -Fill out transport form -Know patient destination and cause of trip -<strong>Ultimately responsible for patient safety</strong></td>
<td>-Notify unit nurse and clerk of arrival -Arrive on time for appointment -Receive patient chart and completed transport form -Check for Hugs tag, if found ask unit clerk to deactivate -Sign out patient from floor</td>
<td>-Notify unit clerk and nurse of trip</td>
</tr>
<tr>
<td><strong>Before Trip</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enroute to destination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>At destination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enroute back to unit</strong></td>
<td>-Page unit nurse -Handle patient chart -Handle sign in / out log for floor -Activate Hugs if necessary</td>
<td>-Check on patient -Have exchange with transporter -<strong>Ultimately responsible for patient safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Back at unit</strong></td>
<td></td>
<td></td>
<td></td>
<td>-Perform trip function -<strong>Ultimately responsible for patient safety</strong></td>
</tr>
</tbody>
</table>
This matrix should be distributed to all personnel employed in one of these four roles at Mott. The matrix will remind each employee of Mott’s expectations and reinforce when each role is responsible for the patient.

**Out of Scope Recommendations**

Outside of the scope of this project, the team developed ideas to further improve patient security at Mott. Although the team did not finalize these recommendations, with more time and information the ideas could be pursued at a later date. These recommendations include:

- Assigning patient transporters to transport to and from a specific destination
- Incorporating travel time into the expected arrival time of the patient transporters to the patient floor

The zoning of patient transporters would help keep the transporters on track throughout their daily schedule. The addition of travel time to the expected arrival time of the patient transporter would reduce the amount of time nurses waited for the transporters and reduce the amount of time transporters waited for the nurse to prepare the patient.
Appendix A: Literature Search References
Former IOE 481 Team Projects
1. University Hospital Operating Room Instrument Room Process Improvement
   http://umich.edu/~ioe481/ioe481_past_reports/F0807.pdf
2. Assessing Nursing Time Spent Tracking Equipment University of Michigan Health System (UMHS)
   http://umich.edu/~ioe481/ioe481_past_reports/F0809.pdf
3. Orders Management Project
   Post-CareLink Analysis of Clerical Workload
   http://umich.edu/~ioe481/ioe481_past_reports/W0901.pdf
4. C.S. Mott Children’s Hospital Operating Room Surgery Turnover Time Analysis Final Report
   http://umich.edu/~ioe481/ioe481_past_reports/f0302.pdf
5. Nursing SWAT Patient Transport Analysis Regarding Workload and Tasks
   http://umich.edu/~ioe481/ioe481_past_reports/f0603.pdf
6. Analysis of Patient Discharge Delay in Mott Children’s Hospital
   http://umich.edu/~ioe481/ioe481_past_reports/f0408.pdf
Appendix B: Patient Transportation Forms

Inpatient Unit Patient Handoff Form

University of Michigan Hospitals and Health Centers
Intrahospital Handoff Form

Unit Location: FADM-2320-02 (Mott Pre-Post)

TO BE COMPLETED BY THE SENDING AREA AND PERSONAL PHASE

<table>
<thead>
<tr>
<th>Patient Diagnosis:</th>
<th>Breath Holding Spells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Dx:</td>
<td></td>
</tr>
<tr>
<td>Allergies:</td>
<td>No Known Allergies</td>
</tr>
<tr>
<td>Weight:</td>
<td>8.390 Kg / 18 lb(s) 15 oz</td>
</tr>
<tr>
<td>CPR Status:</td>
<td></td>
</tr>
<tr>
<td>Precautions:</td>
<td>□ Suicide □ Elopement □ Seizure □ Chemo Therapy □ Falls</td>
</tr>
<tr>
<td></td>
<td>□ No blood draws □ Right arm □ Left arm □ No BP □ Right arm □ Left arm</td>
</tr>
<tr>
<td>Isolation:</td>
<td></td>
</tr>
<tr>
<td>Restraint:</td>
<td></td>
</tr>
<tr>
<td>Oxygen:</td>
<td></td>
</tr>
<tr>
<td>Special Devices:</td>
<td>□ None □ Pacemaker □ ICD (Implantable cardioverter-defibrillator)</td>
</tr>
<tr>
<td></td>
<td>□ PCA □ Epidural □ Other __________________________</td>
</tr>
<tr>
<td>NPO:</td>
<td>□ Yes □ No Last intake ______________________________</td>
</tr>
<tr>
<td>On Call meds/Prep:</td>
<td>□ No □ Yes (See EMAR)</td>
</tr>
<tr>
<td>Activity Restrictions:</td>
<td></td>
</tr>
<tr>
<td>Communication:</td>
<td>□ Cannot follow instructions □ Hard of hearing □ English □ LEP (Limited English proficiency)</td>
</tr>
<tr>
<td></td>
<td>□ Other language: ____________________ □ Unknown</td>
</tr>
<tr>
<td>Personal items with patient:</td>
<td>□ Glasses □ Dentures □ R. Hearing aid □ L. Hearing aid □ Other __________________</td>
</tr>
</tbody>
</table>

☐ Legible and correct name band on patient

Special Instructions__________________________________________________________

RN Printed Name/Signature: ___________________________________________________

Call Back Number / Pager __________________________________________ Date/Time:

TO BE COMPLETED BY PROCEDURE/OTHER TEMPORARY CLINICAL SETTING STAFF

Please review personal items listed above and indicate below they have been returned with the patient.

☐ None ☐ Glasses ☐ Dentures ☐ R. Hearing Aid ☐ L. Hearing Aid ☐ Other __________________

☐ Current Condition Stable ☐ Legible and correct name band on patient

Post-Procedural Report: _____________________________________________________________

Printed Name/Signature: __________________________________________ Procedure area call back number / pager number __________________________

Date/Time: __________________________

This Document is Part of the Permanent Medical Record

Requested By: Jones, Shalonda (Clerk) Medical Record Printed from: UM-CareLink

Printed on: 10-07-2009 13:37 Page 1 of 1

End of Report Intrahospital Handoff Form

POD-0167
Appendix B: Patient Transportation Forms
Radiology Inpatient Transportation Form

Date: ________________  Appt. Time: __________
Pt. Name: _______________________________________
MRN: __________________________________________
Unit: ________ Method of travel: w/c buggy stretcher
Precautions: No  Yes: ______________________________
Deliver Pt to: US  CT  Nuc Med  General Imaging
Start time: ______________________________________
Pt. arrival time: _________________________________
Pt. return time _____________________________ (completion of run)
Appendix B: Patient Transportation Forms
Operating Room Inpatient Transportation Form

<table>
<thead>
<tr>
<th>Operating Room Slip</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient:</strong></td>
</tr>
<tr>
<td><strong>Sched Time:</strong></td>
</tr>
<tr>
<td><strong>CPI-Visit #:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[ ] Traction [ ] IV Pumps [ ] Bed [ ] Vent [ ] VRE [ ] O2 [ ] C-Diff [ ] Sitter</td>
</tr>
<tr>
<td><strong>Shave:</strong></td>
</tr>
<tr>
<td>Notified (Name):</td>
</tr>
<tr>
<td>Time:</td>
</tr>
</tbody>
</table>

[ ] CONTACT [ ] DROPLET [ ] RESPIRATORY

<table>
<thead>
<tr>
<th>PLEASE CHECK PATIENT’S ID BRACELET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit:</strong></td>
</tr>
<tr>
<td><strong>Bed #:</strong></td>
</tr>
<tr>
<td><strong>OR #:</strong></td>
</tr>
<tr>
<td><strong>EP</strong></td>
</tr>
<tr>
<td><strong>Maize Slot #:</strong></td>
</tr>
<tr>
<td>Consent?</td>
</tr>
<tr>
<td>Transport?</td>
</tr>
</tbody>
</table>

32
Appendix B: Patient Transportation Forms
Operation Room Transportation Log

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Unit</th>
<th>Time Called</th>
<th>Talked To</th>
<th>Mazda Slot</th>
<th>Time Out</th>
<th>Time In Delay</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Appendix B: Patient Transportation Forms
SWAT Inpatient Transportation Form (Front)

UNIVERSITY OF MICHIGAN HOSPITALS & HEALTH CENTERS

SWAT FLOWSHEET

Date/Time:

Diagnosis: 

Procedure to be performed: 

Consent verified (if applicable)

Patient Unit: 

Unit Phone Number: 

Physician Name/Pager:

Brief current history (recent changes):

PMH/PSH: 

Height: 

Weight: l & kg

Code Status: 

Baseline: Time: 

SpO2: BP: MAP: RR: Temp: Rhythm: Pain Score/Scale: Sedation Scale:

A

Age: Years, Months (Peds) | Age: Day of life (Peds) 

NPO: No | No | N/A | N/A | N/A

Liquids after: AM/PM | AM/PM | Time prep completed:

Invasive Line Site & Infusing Fluid(s): N/A

Procedural Prep: Yes | No | N/A

Type of prep: 

INR: 

PT: 

PTT:

Creatinine: 

Other:

DRAINS

Chest Tube: Right | Left

Jr. 

Hemovac: Foley

Wound VAC: 

FCD: 

Other: N/A

MENTAL STATUS: A&O: Person | Place | Time | Events

Age Appropriate: 

Other:

Isolation: Contact (ARP) | C.diff | Droplet | Respiratory | Protective

Precautions: Sepsis | Seizures | Difficult Airway | Fall | Spinal Cord Injury | No Blood draws or BP in right arm or left arm | Other

Mobility Limitation: N/A | Cane | Crutches | Restrained (See Restraint Flowsheet) | Walker | Wheelchair | Other:

Sensory Limitation/AIDS: N/A

 Auditory | Right | Left

Dental | Upper | Lower

Visual | Language | Speech

COMMENTS:

HOLDEN AIRWAY EMERGENCY TEAM: Call STAT Paging Operator at 141. (Please differentiate between HOLDEN CODE TEAM and HOLDAIRWAY EMERGENCY TEAM)

C

Line Reconfirmation | Airway Confirmation | Handoff complete. Transporting health care provider has everything they need to safely transport the patient

Report Given By: 

Report Received By:

TRANSPORTING HEALTH CARE PROVIDER: COMPLETE AREA BELOW

Test/Procedure Verified | Time out completed

Overall: 

Airway:

Spinal Precautions Maintained: 

Wheelchair: 

C-Collar: 

Backboard: 

Stretchers: 

Log roll: 

Nasal Cannula O2 liters/min: 

Non-breather Mask O2 liters/min: 

Room Air Mask: 

Face/Tracheal: 

Intubated: Nasal/Oral

ETT size: 

Tracheostomy: Type: 

Size: 

Pediatric airway suction depth: 

cm. 

CPAP/BIPAP

Monitoring Equipment:

EKG: 

NIBP: 

SO2: 

Defibrillator: 

Ventriculostomy: 

Pacer: 

Ambu Bag: 

Other:

Airway Box: 

Travel Box: 

Suction: 

Amбу Bag with mask: 

Other:

Mode: 

Rate: 

PIP: 

PS: 

Vr: 

PDo: 

PEEP: 

N/A

Signature: 

Date/Time:

2202368 REV: 06/08 HIM: 06/08 Medical Record SWAT FLOWSHEET
Appendix B: Patient Transportation Forms
SWAT Inpatient Transportation Form (Back)

UNIVERSITY OF MICHIGAN HOSPITALS & HEALTH CENTERS

SWAT FLOWsheet

Progress Note:

<table>
<thead>
<tr>
<th>VITAL SIGNS</th>
<th>MEDICATION ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Split</td>
</tr>
<tr>
<td>PRE-PROCEDURAL VITAL SIGNS</td>
<td></td>
</tr>
<tr>
<td>PROCEDURAL VITAL SIGNS</td>
<td></td>
</tr>
<tr>
<td>POST-PROCEDURAL VITAL SIGNS</td>
<td></td>
</tr>
</tbody>
</table>

Signature/Date/Time:

TOTAL OPIOID GIVEN

Signature/Date/Time:

TOTAL BENZODIAZEPINE GIVEN

☐ Line Reconciliation ☐ Airway Confirmation Unit Returned To:

Report Given By: Report Received By:

2202368 REV: 06/08 HIM: 06/08 Medical Record SWAT FLOWsheet
### SWAT Paramedic Transportation Log

#### Name
- Matt 730-1730 #1
- Cindy 7-17 #3
- Tom O’ 7-19 #9
- Andi 7-17 #11
- Bob 6-18 #6
- Jess 6-18 #4
- Carl 18-6 #4

#### Day of the Week: Wednesday

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Procedural Area</th>
<th>Nursing Unit</th>
<th>Start Time</th>
<th>End Time</th>
<th>Total Time</th>
<th>Paramedic Y/N</th>
<th>Level (H/M/L)</th>
<th>IV Drips Y/N</th>
<th>IV Start Y/N</th>
<th>Blood Y/N</th>
<th>Central Line Y/N</th>
<th>Art Line Y/N</th>
<th>Vent Y/N</th>
<th>Ventricle Y/N</th>
<th>Trache Y/N</th>
<th>O2 Req</th>
<th>Chest Tube Y/N</th>
<th>LVAD Y/N</th>
<th>Pacemaker Y/N</th>
<th>PCA/Epidural P/E</th>
<th>Monitoring Y/N</th>
<th>Pulse Ox Y/N</th>
<th>Chem Stick Y/N</th>
<th>Restraints Y/N</th>
<th>Suicide Prec Y/N</th>
<th>2 Person Y/N</th>
<th>Asst Unit RN</th>
<th>Asst SWAT RN</th>
<th>Anes Drop-off</th>
<th>Not Ready?</th>
</tr>
</thead>
</table>
Appendix B: Patient Transportation Forms

SWAT Nurse Transportation Log (Front)
### Appendix B: Patient Transportation Forms

**SWAT Nurse Transportation Log (Back)**

#### TO BE SCHEDULED

<table>
<thead>
<tr>
<th>R/P</th>
<th>SWAT NAME</th>
<th>TIME</th>
<th>NAME</th>
<th>PROC UNIT</th>
<th>NSG UNIT</th>
<th>C</th>
<th>S</th>
<th>V</th>
<th>GTTS</th>
<th>TURF REASONS</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

**PAGER # RN**

<table>
<thead>
<tr>
<th>Name</th>
<th>Pager Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andi 30500</td>
<td>30500</td>
</tr>
<tr>
<td>Kathy 31373</td>
<td>31368</td>
</tr>
<tr>
<td>Matt 9743</td>
<td>7864</td>
</tr>
<tr>
<td>Mary 33311</td>
<td></td>
</tr>
</tbody>
</table>

**PAGER # PARAMEDIC**

<table>
<thead>
<tr>
<th>Name</th>
<th>Pager Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bob 32574</td>
<td>32573</td>
</tr>
<tr>
<td>Dan 32578</td>
<td>33328</td>
</tr>
</tbody>
</table>

#### TO BE SCHEDULED NEXT DAY

<table>
<thead>
<tr>
<th>TIME</th>
<th>NAME</th>
<th>PROC UNIT</th>
<th>NSG UNIT</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

#### NON SWAT REQUESTS: (MRI/CT sedations, Retavase drop offs. OR drop offs for Nurses)

<table>
<thead>
<tr>
<th>TIME</th>
<th>NAME</th>
<th>PROC UNIT</th>
<th>NSG UNIT</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Appendix B: Patient Transportation Forms
PACU Inpatient Transportation Form

UNIVERSITY OF MICHIGAN HOSPITALS & HEALTH CENTERS
INTRAHOSPITAL HANDOFF

TO BE COMPLETED BY EACH AREA AND PLACED IN THE FRONT OF THE BLUE CHART

<table>
<thead>
<tr>
<th>Pt. Diagnosis:</th>
<th>Special Devices:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Dx:</td>
<td>None</td>
</tr>
<tr>
<td>Allergies:</td>
<td>ICD (Implantable Cardiovertor-Defibrillator)</td>
</tr>
<tr>
<td>Latex:</td>
<td>Manufacturer (if available)</td>
</tr>
<tr>
<td>Weight:</td>
<td>PCA</td>
</tr>
<tr>
<td>CPR Status:</td>
<td>Other:</td>
</tr>
<tr>
<td>Test / Clinic /</td>
<td>NPO:</td>
</tr>
<tr>
<td>Procedure:</td>
<td>Last Solids @</td>
</tr>
<tr>
<td>Isolation:</td>
<td>Last Liquids @</td>
</tr>
<tr>
<td>Precautions:</td>
<td>Last void or Foley @</td>
</tr>
<tr>
<td>Restraint:</td>
<td>On call meds:</td>
</tr>
<tr>
<td>Oxygen:</td>
<td>No</td>
</tr>
</tbody>
</table>

☐ Legible and correct name band on patient.

Special Instructions:

TO BE COMPLETED FOR PATIENTS GOING TO THE OR / PROCEDURE AREAS

<table>
<thead>
<tr>
<th>Transport Level:</th>
<th>Transport Method:</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>Wheelchair</td>
</tr>
<tr>
<td>Moderate Risk</td>
<td>Stretcher</td>
</tr>
<tr>
<td>Low Risk</td>
<td>Grib</td>
</tr>
<tr>
<td>Able to be consented:</td>
<td>No</td>
</tr>
<tr>
<td>Vital Signs:</td>
<td>HR</td>
</tr>
<tr>
<td>BP</td>
<td>°C T</td>
</tr>
<tr>
<td>RR</td>
<td>O2 Sat</td>
</tr>
<tr>
<td>Blood Glucose:</td>
<td>mg/dl @</td>
</tr>
<tr>
<td>Pain Score:</td>
<td>Sedation Score:</td>
</tr>
<tr>
<td>Level of consciousness/orientation baseline:</td>
<td>Other:</td>
</tr>
</tbody>
</table>

Family/Caregiver: ☐ With Patient ☐ In Room ☐ Unknown

Sensory Aids/Prostheses:

Eyeglasses: ☐ No ☐ Yes (Check appropriate box below):
Contact Lens: ☐ No ☐ Yes (Check appropriate box below):
Dentures/Bridges: ☐ No ☐ Yes (Check appropriate box below):
Hearing Aids: ☐ No ☐ Yes (Check appropriate box below):
Prostheses: ☐ No ☐ Yes (Describe / state disposition):  

RN Printed Name/Signature: ____________________________ Date/Time: ____________________________

Call Back Number/Pager: ____________________________ Date/Time: ____________________________

TO BE COMPLETED BY PROCEDURAL/OTHER TEMPORARY CLINICAL SETTING STAFF

Any change in patient status requires a phone call to the sending area.

Comments: ______________________________________

Printed Name/Signature: ____________________________ Date/Time: ____________________________ Procedure area call back number/pager number: ____________________________
Appendix C: Sample Interview Questions

Mott Children’s and Women’s Hospital Clerk Interviews
1. What are the current tracking procedures for your unit?
2. What is your role in tracking patients?
3. What are some of the tools that you use to track patients?
4. What is the biggest issue or obstacle facing patient security and tracking from your perspective?
5. How comfortable are you with the Hugs system? What is your role in the Hugs system?
6. What ideas do you have for improving this process?

Mott Children’s and Women’s Hospital Patient Transport Interviews
1. What is your role at Mott Children’s and Women’s Hospital?
2. How does this role correspond with the current process for tracking patients at Mott?
3. What are some of the tools you use to track patients?
4. What are some patient transportation methods?
5. Who are you in contact with during the patient transportation process?
6. What is the biggest issue or obstacle facing patient security and tracking from your perspective?
7. What ideas do you have for improving this process?

Mott Children and Women’s Hospital Nurse Interviews
1. What are your roles and responsibilities on this unit?
2. Specifically, what are your responsibilities regarding patient security?
3. What tools do you use to ensure patient safety?
4. Do you ever move a patient from his/her room to another unit in the hospital? If so, what process do you use to track the patient’s location?
5. What is the biggest obstacle facing patient security and tracking from your perspective?
6. What ideas do you have for improving this process?
<table>
<thead>
<tr>
<th>PATIENT NAME</th>
<th>APPOINTMENT TYPE</th>
<th>TIME OF APPOINTMENT</th>
<th>TRANSPORT CALLED</th>
<th>TYPE OF TRANSPORT NEEDED</th>
<th>CLERK</th>
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Patient Appointment Schedule
### Appendix D: Unit Sign-in / Sign-out Logs

#### 5 West Daily Referral Log

<table>
<thead>
<tr>
<th>NAME</th>
<th>REFERRAL</th>
<th>DATE SENT OR CALLED</th>
<th>SCHEDULED</th>
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<th>PREP CSTATION</th>
<th>TRANSURSE</th>
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#### Master Appointment Schedule

<table>
<thead>
<tr>
<th>UNIT</th>
<th>DATE</th>
<th>DAY</th>
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#### INSTRUCTIONS - FOLLOW UP CODES

- A = appointment
- C = call
- D = appointment delayed
- F = appointment cancelled
- G = appointment scheduled
- H = appointment
- I = isolation
- L = location
- M = isolation
- N = schedule
- P = prep
- Q = isolation
- R = location
- S = isolation
- T = schedule

<table>
<thead>
<tr>
<th>TIME</th>
<th>PREP CSTATION</th>
<th>TRANSURSE</th>
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#### Notes

- When prep is in isolation, put "in isolation" in the isolation column as the location, otherwise put the actual location.
- When scheduling a follow-up, put "follow-up scheduled" in the follow-up column.
Appendix E: Full Size Value Stream Maps
Current State - MRI (No Anesthesia)
Appendix E: Full Size Value Stream Maps
Current State - Operating Room
Appendix E: Full Size Value Stream Maps

Current State - Parent Trip
Appendix E: Full Size Value Stream Maps

Current State – Patient Transportation
Appendix E: Full Size Value Stream Maps
Current State – Radiology
Appendix E: Full Size Value Stream Maps

Current State – SWAT
Appendix E: Full Size Value Stream Maps

Future State Map