Quantifying Nursing Workload to Optimize Staffing on an Adult Inpatient Leukemia Unit to Improve Patient Care

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1 Background

In January of 2015 the staffing model was changed at a National Cancer Institute (NCI) designated Comprehensive Cancer Center on an adult inpatient leukemia unit for budgetary frugality and the fact the unit was no longer providing critical care. To date no one has studied staffing models and nurse workflow on an acute leukemia research unit.

A literature review indicates that nurse workflow impacts both patient and nurse satisfaction. Patients report better satisfaction with care when nurses are able to provide psychosocial support[1], and nurses report higher job satisfaction when they feel they have adequate time to provide quality care[2].

2 Objectives

Our goal is to quantify leukemia nursing workload to improve efficiency in a setting where nursing double checks are mandatory for many tasks. By quantifying the leukemia nursing workload, we will optimize nurse assignments that are based on nurse workload as opposed to patient acuity.

3 Methods

We are using a time and motion study designed specifically for leukemia nurses. Through collaboration with the Armstrong Institute for Patient Safety and Quality, a tablet based application was developed to time the various tasks a leukemia nurse completes during a designated time period. Timing categories range from general nursing tasks such as patient assessment, to care coordination with the interdisciplinary team, to leukemia nursing specific tasks such as blood product administration and research chemotherapy regimens.
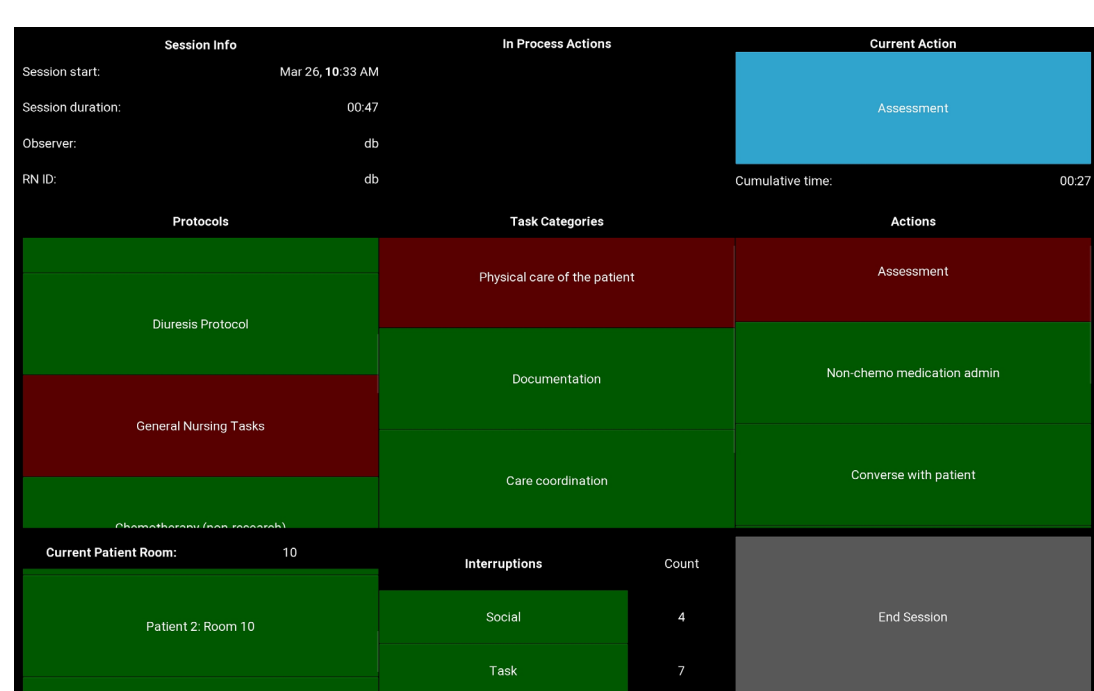

Interface of the timing app

Data collection sessions typically began at the start of shift. The observer shadowed a single nurse and timed all patient care, care coordination, and miscellaneous tasks performed by this nurse over a period of 3 to 4 hours. Additionally, the observer kept count of the number of times the nurse was interrupted from the task she was focused on.

Additional data collection shifts took place to time multiple instances of a specific task, such as drawing blood for lab tests or administering chemotherapy.

4 Results

The data below represent close to 20 hours of observation following 9 different nurses. Tasks were sorted into broader sub-categories for analysis.

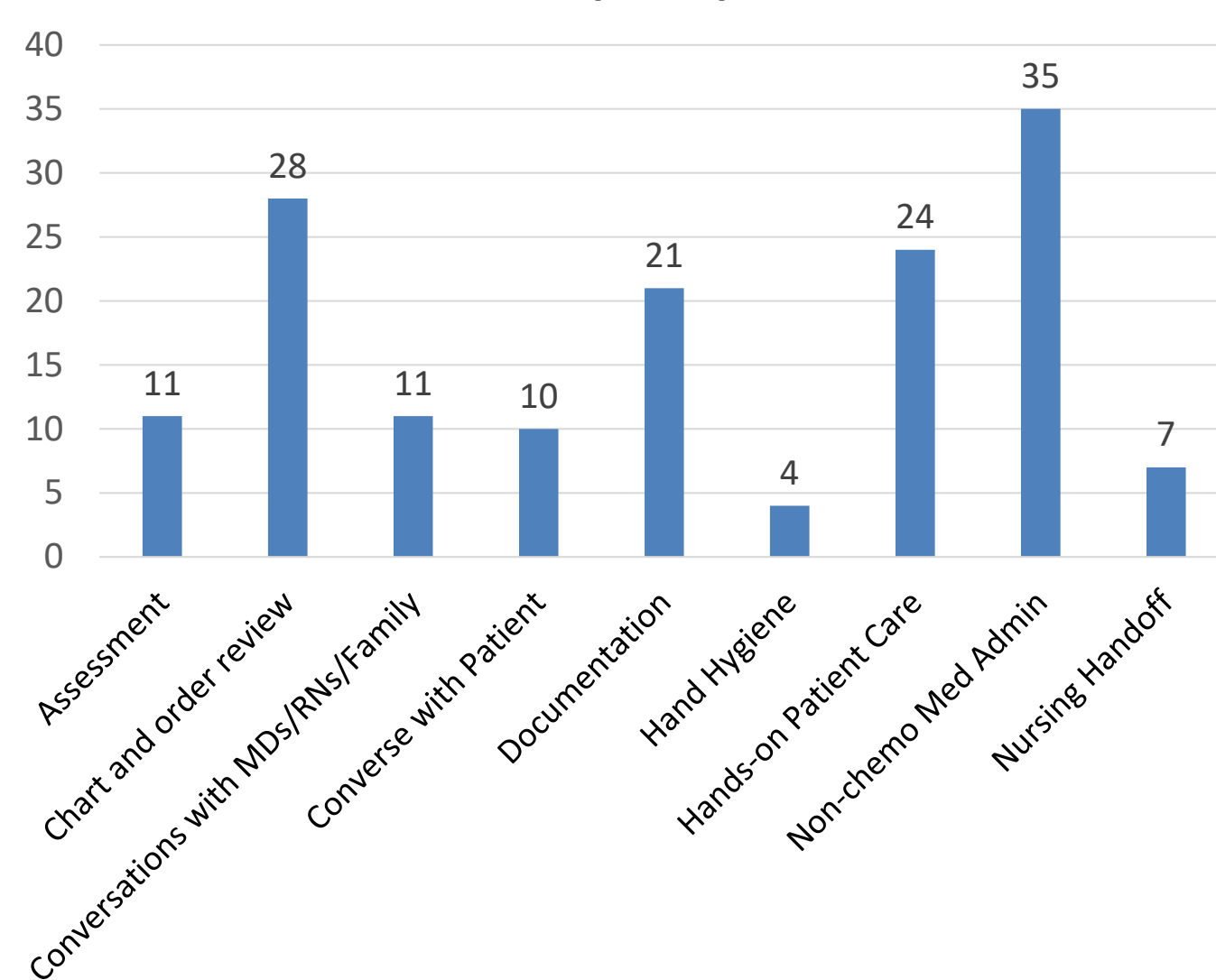### Percentage of Time Spent per Task Category

- 25.9%
- 36.5%
- 8.0%
- 16.6%
- 12.9%
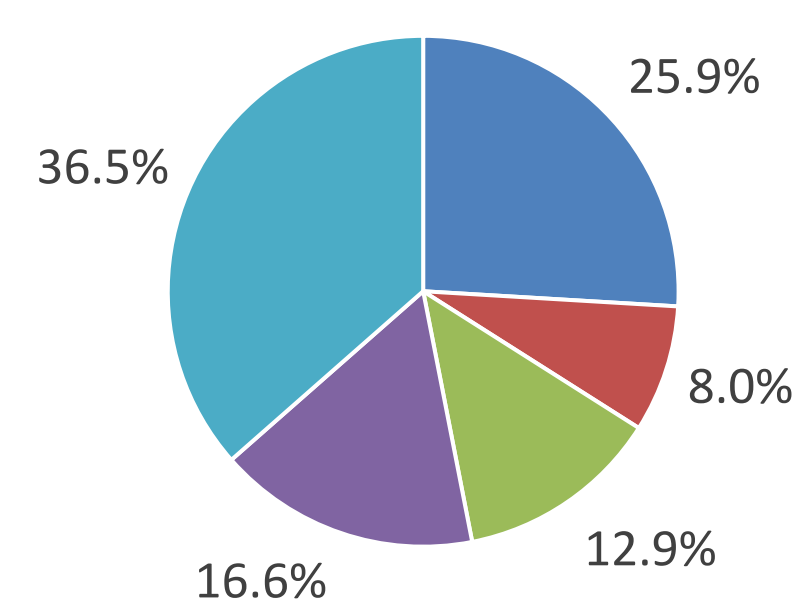
- ■ Care Coordination
- ■ Documentation
- ■ Physical Care of the Patient
- ■ Chemotherapy (Non-research)
- ■ Indirect Patient Care

On average, nurses spent the majority of their time on physical care of the patient, which includes tasks such as assessment, non-chemotherapy medication administration, and other hands-on patient care.

Care coordination and indirect patient care also claimed a significant share of nurses' time. Notable tasks in these categories include chart and order review, conversations with physicians or other nurses, and documentation of physical care of the patient. The chart below shows the breakdown of time spent per task on one 4-hour observation shift.

Minutes Spent per Task

Task	Minutes
Assessment	11
Chart and order review	28
Conversations with MDs/RNs/Family	11
Converse with Patient	10
Documentation	21
Hand Hygiene	4
Hands-on Patient Care	24
Non-chemo Med Admin	35
Nursing Handoff	7

Along with timing nursing workflow, during the data collection session observers also counted the number of times a nurse was interrupted while focusing on an unrelated task. Interruptions were categorized as either 'Task-Related,' meaning they were related to patient care, or 'Social,' meaning they were non-work related.

On average, nurses were interrupted from their patient care activities 15 times during a 4 hour period – meaning they could be interrupted up to 60 times on average across a 12 hour shift.

70% of these interruptions were 'Task-Related' while the remaining 30% were social interruptions.

5 Conclusions

As the data show, physical care of the patient required the largest proportion of a nurse's time during the observation shifts. However, the activities that took the most time from nursing shifts were task-oriented; due to other obligations, nurses spent little time in conversation with the patient. Additionally, nurses devoted significant time to coordinating with other members of the healthcare team and documentation of nursing care.

Psychosocial support of the patient is key to both patient and nurse satisfaction, and the current workflow of these nurses shows little available time for these activities.

6 Future Directions

Data collection in this phase of the project focused mostly on general nursing tasks such as care coordination and non-chemotherapy medication administration.

Most data collection sessions during this phase of the project took place between the hours of 7-11 AM; however, most leukemia-specific nursing tasks such as chemotherapy administration or blood product administration take place later in the day.

Moving forward, the project will focus on timing tasks specific to leukemia nursing by conducting data collection sessions on both day and night shifts, and at different times throughout each shift. Further data will help quantify how many hours of nursing attention per shift specific diagnoses require.

7 References

1. Kidd, M, Grove, K, Kaiser, M, Swoboda, B, & Taylor, A. (2014). A new patient acuity tool promotes equitable nurse-patient assignments. *American Nurse Today, 9*(3) 1-4.
2. Duffield, C., Diers, D., O'Brien-Pallas, L., Aisbett, C., Roche, M., King, M, Aisbett, K. (2011). Nurse staffing, nursing workload, the work environment, and patient outcomes. *Applied Nursing Research , 24*, 244-255.

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