

IWK: Optimization of Resource Utilization in a Mental Health Unit

1. Problem Definition

The Garron Centre has been open since 2014, but in recent years has experienced a gradual increase in patient Average Length Of Stay (ALOS). The 2017/18 fiscal year saw a 14.9 day ALOS for patients, 60% greater than the national average*. Nursing staff have reported an increasing number of overtime hours, which has been the most significant factor contributing to their burnout and employee turnover.

2. Project Scope

This process improvement project will focus on:

- Documentation completed by staff
- Role perception
- All procedural operations from admission to discharge
- Staff scheduling

3. Initial Conditions

Work Processes & Procedures

Duplication of or delay in work due to:

- Unclear role definition
- Undefined work transfer procedure
- Excessive manual documentation

Nurse Scheduling Adjustments

1. Observe mismatch between perceived nurse requirements and scheduled nurse levels for near future (several hours to several days in advance)
2. Work through call-in list to meet nursing needs
3. Repeat step 2, offering higher overtime until all nursing requirements are met

4. Methods & Analysis

Process Map



Sample portions of process map

- Pictorial representation of staff involvement with patients from admission to discharge
- Identify proportion of value added vs non-value added tasks
- Use to make process recommendations

Electronic Kardex

- Designed in Microsoft Access
- Transform paper Kardex into electronic version to overcome loss of information
- Reduce amount of time spent on data entry & retrieval

Paper

IWK Health Centre Inpatient Mental Health Unit Kardex

Admission Date _____ Psychiatrist _____ Resident _____
 Name _____ Clinical Clerk _____ MSW _____
 Gender Identity _____ Psychologist _____ PFCC _____
 Preferred pronoun _____ Age _____ TSW Teacher _____ OT _____ RT _____ RTA _____
 Hometown _____ Other _____
 Current Status ☐ Voluntary ☐ Capacity ☐ No Capacity ☐ ALC ☐ DCS Involved

Electronic

IWK Health Centre Inpatient Mental Health Unit Kardex

Admission Date: 2019-03-02 Psychiatrist: Jonathan Brake Resident: Daniel Craig
 Patient Name: Brandon Young Clinical Clerk: Brenda Long MSW: Jim Craig
 Gender Identity: Male Psychologist: Olivia Wilde PFCC: _____
 Preferred Pronoun: Mr Age: 32 TSW Teacher: Marie Poppin OT: _____ RT: _____ RTA: _____
 Hometown: Dartmouth Room: 323
 Current Status: Voluntary Other: _____

Forecasting Model

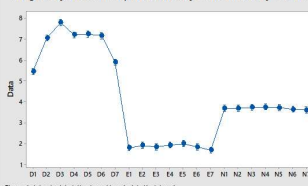
Created seasonal trend model using payroll data

- Predicts average nursing requirements for 4-week periods
- Broken down to a shift-day basis
- Accounts for trends in the month, day and shift

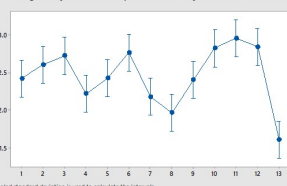
Full-Time Shifts

- Day (D): 07:00-19:00
- Evening (E): 11:00-23:00
- Night (N): 19:00-07:00

Avg Daily Nurse Requirements by Shift and Day of Week



Avg Daily Nurse Requirements, by 4-Week Period



Days

- 1: Sunday
- 2: Monday
- ...
- 7: Saturday

5. Results & Implementation

Process Map

Example of workflow optimization carried out for one of the roles:

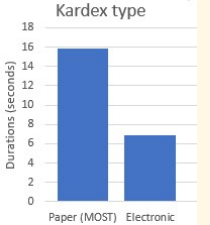


20% increase in proportion of value-added tasks by social worker.

Electronic Kardex

- Positively received by nurses
- More typing space reduces information loss
- Learning curve predicts faster data entry
- 56.3% improvement for data retrieval time.

Data Retrieval Time by Kardex type



Forecasting Model

- Verified model accuracy with 2 years of data
- Predicted correct number of nurses 55% more frequently than standard scheduling procedure
- Predicted correct number of nurses +/-1 for 90.57% of shifts
- Estimated \$85000 in savings over 2 years

Staffing Level Prediction Accuracy

