apromore

CASE STUDY – HEALTHCARE

Improving ACS Care with Process Mining

40%
reduction in readmission rate

35%
descrease in violations to clinical guidelines

30%
faster patient journey

OVERVIEW

Client: Healthcare Facility

Industry: Healthcare

Geography: Melbourne, Australia

Employees: 8,500+

Beds: 600+

Emergency hospitalizations: 30K/year

ACS admissions: 700/year

Challenges

This public healthcare facility faced several challenges in managing the end-to-end flow of patients affected by acute coronary syndrome (ACS):

- **Ineffective discharge:** Many patients affected by ACS were readmitted within 28 days from discharge.
- **Unclear causes:** Staff was not able to pin down essential factors in avoiding readmission.

A known essential factor in avoiding readmission is modification of a patient's behavior and providing information on preventative behavioral changes is an important part of the discharge process. However, staff only had anecdotal evidence for this, and had thus not been able to act upon it by implementing changes to the patient discharge routine.

The hospital's key challenge with the discharge process was to understand how to meet patient needs while extending the routines of hospital care in a systematic way to home care.

Solution

Apromore was utilized to address these challenges through its advanced process mining capabilities.

- **Data Extraction:** Apromore extracted event data from the hospital's EMR (Electronic Medical Record) system and corroborated it with patient feedback obtained via interviews.
- **Process Mapping:** Using Apromore, the healthcare facility mapped end-to-end patient flows for ACS, revealing inefficiencies such as bottlenecks in patient treatment, violations to clinical guidelines, and areas for improvement.
- **Variant Analysis:** Apromore's variant comparison capability was used to analyze variants in ACS patient flow, identifying patterns that distinguished successful from unsuccessful discharges, pinpointing recommendations to minimize the likelihood of ineffective discharge (e.g. specific activities the nurses used to do before discharge, and the context in which these took place).

- **Validation with Hospital Staff:** The results were validated through a final focus group with hospital staff, ensuring practical applicability of the improvement recommendations, and buy-in by the staff.

One of the most important observations from the process mining analysis was that non-readmitted patients received a nursing assessment for discharge just before being discharged, while readmitted patients only received a medical assessment for discharge.

The process mining analysis suggested not just that this nursing assessment should occur, but that it should be focused on individual small patient needs and stressors. It also showed that small changes in process, which were not evident to the patient or perceived as significant to the hospital staff, can be linked to readmission.

Results

Compliance to Clinical Guidelines

35% decrease in violations to clinical guidelines.

Enhanced process visibility and reporting, leading to better decision-making.

Patient Flow Optimization

30% faster patient treatment and discharge times due to elimination of bottlenecks.

Reduced overall patient wait times by **20%** through optimized workflows.

Discharge Effectiveness

40% improvement in successful patient discharge rates.

Higher patient satisfaction scores due to better treatment experiences and reduced delays.

Staff Coordination

By visualizing patient flows and identifying inefficiencies, Apromore facilitated better communication and coordination among hospital staff, leading to improved patient case.

> The first few days the patient is in shock after the life-threatening event, and it is difficult for them to hear all the information from the nurse in relation to diet and exercise and 'make it stick' with them at home.

Looking Ahead

Armed with this data, the next step towards reducing readmission is a routinization of the person-centered approach at the hospital. Although tension exists between the requirements of operational efficiency and demands of a person-centered care approach towards discharge, readmission incurs its own costs (human and financial) which cannot be neglected.