

Improving the Process to Timely Administration of In-Patient Intravenous Chemotherapy

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INTRODUCTION

- About 5% of patients treated with chemotherapy are admitted in-patient for special patient monitoring, complex treatment regimens, supportive care, drug level monitoring, and multiple administration in a day and are not suitable in the ambulatory care setting.
- Our institution was finding delays in initiating chemotherapy due to process variations resulting in reduced patient, family, and care team satisfaction.
- Baseline data showed that initial administration of in-patient chemotherapy took an average of 10 hours in comparison to the national data of 7 hours. The following gaps were identified:
 - The admitting provider and care team is required to submit admission documents to bed board to facilitate the admission for treatment
 - In-patient chemotherapy prescribing follows a paper ordering system, not currently available as computerized physician order entry (CPOE), requiring prescriber re-education about the process
 - Due to the teaching hospital model, the chemotherapy orders were ordered by a team who was frequently changing, requiring re-education of the ordering process

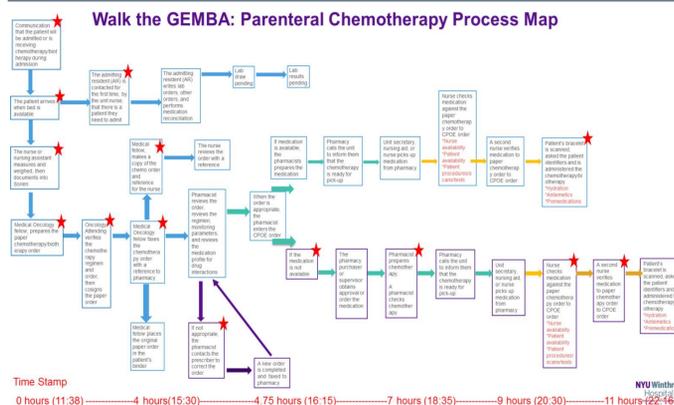
PURPOSE

- The purpose of this project was to provide timely administration of elective in-patient chemotherapy in the hospital through collaboration and process changes
- Global Aim: to improve efficiency and patient and care team satisfaction of in-patient chemotherapy administration
- Specific Aim: to reduce the time from administration of elective in-patient intravenous chemotherapy by 25%, from a baseline of 10 hours in November 2018, to 7.5 hours by June 2019

METHOD

- This quality improvement project conducted at NYU Winthrop Hospital was approved by the Institutional Review Board.
- Subjects were patients admitted to the medical oncology unit or medical intensive care unit requiring chemotherapy administration.
- An interdisciplinary team was organized and a chemotherapy process map was constructed from a patient's hospital admission to chemotherapy administration.
- The team walked the GEMBA to identify each step in the process and areas that caused significant delays. A Micro map (Figure 1) highlight steps with the most significant delays.

FIGURE 1



INTERVENTIONS

- Four key roles were identified to impact the workflow
- Hematology-Oncology Fellows and Attending physicians who order the chemotherapy
 - Bed board, who is involved in reserving and calling the patient to come to the medical oncology unit or medical intensive care unit
 - Admitting residents, who are involved with seeing the patient and entering the admitting orders
 - The nurse and nursing assistant, who measure the patient's height and weight, then input the data into the patient's profile

FIGURE 2

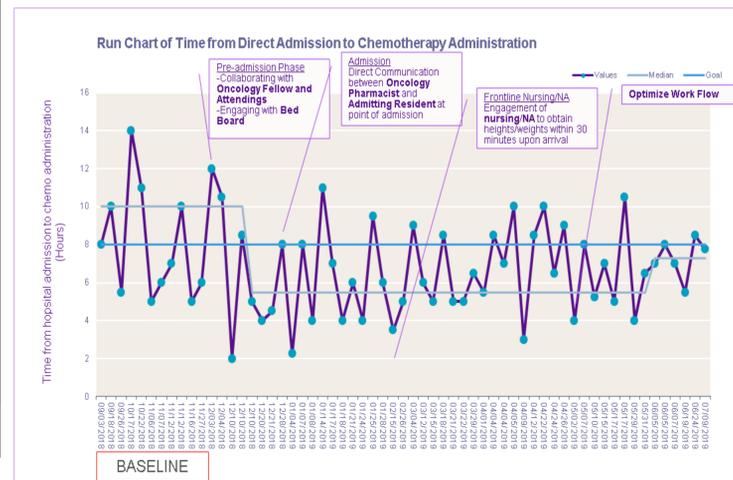


Figure 2 : PDSA Cycle of Interventions

A run chart where each point represents the time from a patient's admission to the initiation of chemotherapy. A two month baseline showed a median of 10 hours until chemotherapy administration. The first intervention shifted the median line to 5.5 hours. Subsequent interventions sustained the median line with a slight drift up to 7.5 hours.

FIGURE 3

Optimize Flow



Figure 3 Model Workflow Developed by the hematology-oncology care team based on care team survey results

DISCUSSION

- The LEAN principle was utilized to eliminate waste and create an efficient workflow
- By walking the GEMBA, a micro process map (Figure 1) was developed which identified key personnel and processes that affect the timely workflow such as bed board staff, admitting residents, and nursing/nursing assistants. Identifying these key personnel developed our interventions.
- Time stamps were collected to identify the following process. The time to the:
 - Admitting resident seeing the patient then entering the admitting orders
 - Nurse or nursing assistant to updating the measured heights and weights
 - Hematology-oncology providers submitting the completed chemotherapy orders
 - Pharmacist to verifying and transcribing the chemotherapy orders
 - IV pharmacists to preparing the chemotherapy
 - Nurse to administering the chemotherapy
- There was 100% buy in from the hematology-oncology providers, pharmacists, nursing, and supportive personnel teams, but required constant guidance from clinical oncology pharmacist to optimize workflow due to constant change of medical team composition

- The most impactful intervention that optimized the workflow was working with the hematology-oncology providers (fellows and attending physician) to write the inpatient chemotherapy orders and obtain the attending co-signature, prior to patient admission.
- Working with other team members helped to sustain improvement to the time of chemotherapy initiation.
- Team member were surveyed to understand the daily workflow and develop a model work flow for efficiency (Figure 3). The ultimate goal was to adhere to the process for timely initiation of the in-patient chemotherapy regimen to increase patient and care team satisfaction.

CONCLUSIONS

- The project's success was attributed to the teamwork, communication, and reassessment of the successes and shortcomings
- The first intervention focused on provider ordering which achieved a reduction of chemotherapy initiation by 25% (10 hours vs. 5.5 hours)
- Walking the GEMBA allowed for collaboration of ideas from our multidisciplinary team to identify key personnel that have high impact to the chemotherapy process delay to design interventions for improvement

LIMITATIONS

- Constant change of several team members rotating on and off of the service requires routine guidance throughout the workflow
- There was a change in the in-patient chemotherapy prescribing policy during this project
- There are a small number of subjects receiving in-patient chemotherapy to detect improvement or changes in the intervention

FUTURE IMPLICATIONS

- EPIC implementation with all prescription entered through CPOE, eliminates the paper order system
- With Beacon, hematology-oncology providers will be required to write a treatment plan notes and explicitly indicating the chemotherapy, pre-medications, and supportive care, through CPOE ordersets, which eliminate pharmacist transcription to providers ordering into CPOE
- Beacon, will gain us access to NYU's chemotherapy ordersets builds. Therapies that we use in addition to NYU's ordersets will need to be requested. We will also adopt NYU's hospital formulary