

# 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

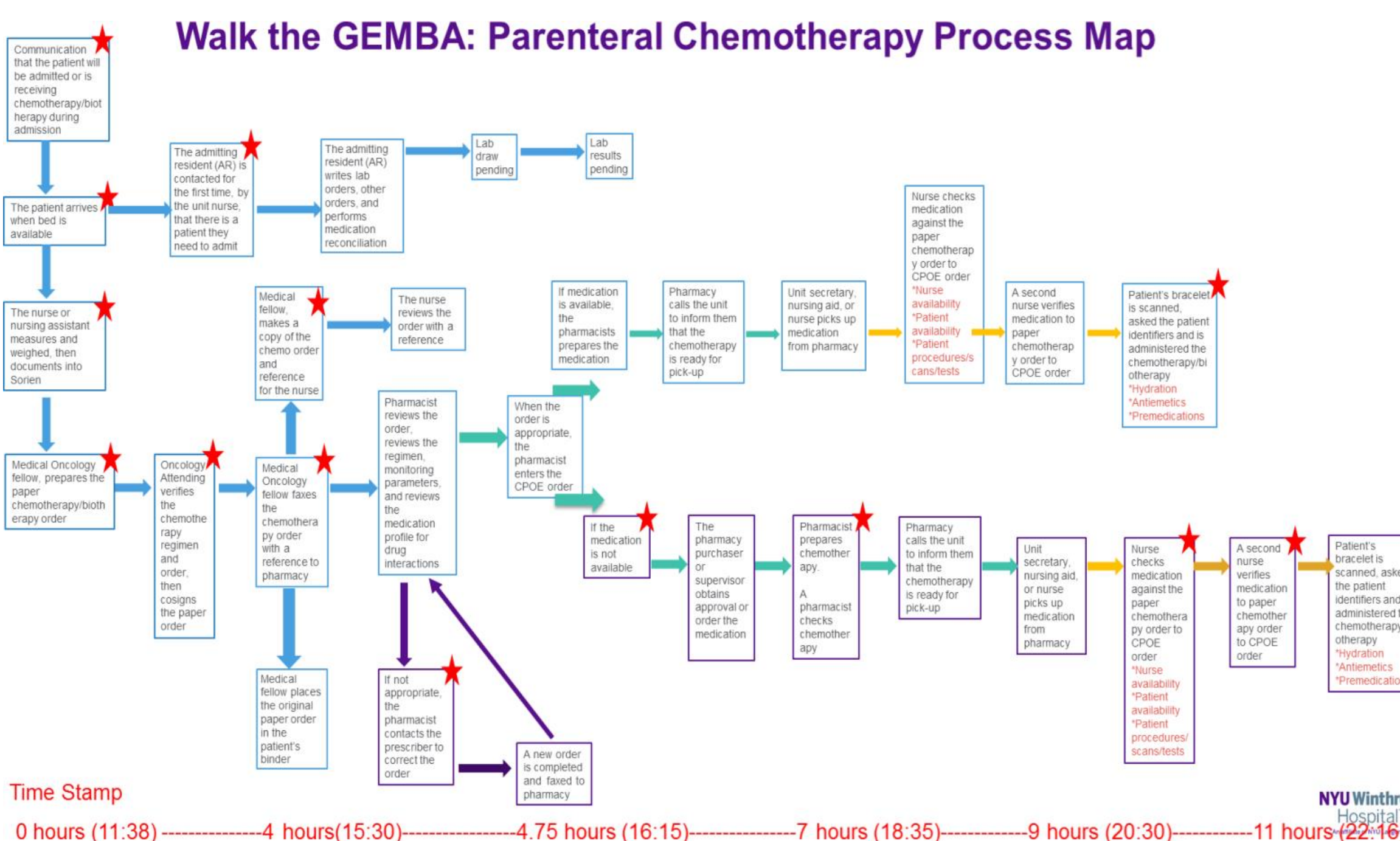
## PURPOSE

- 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

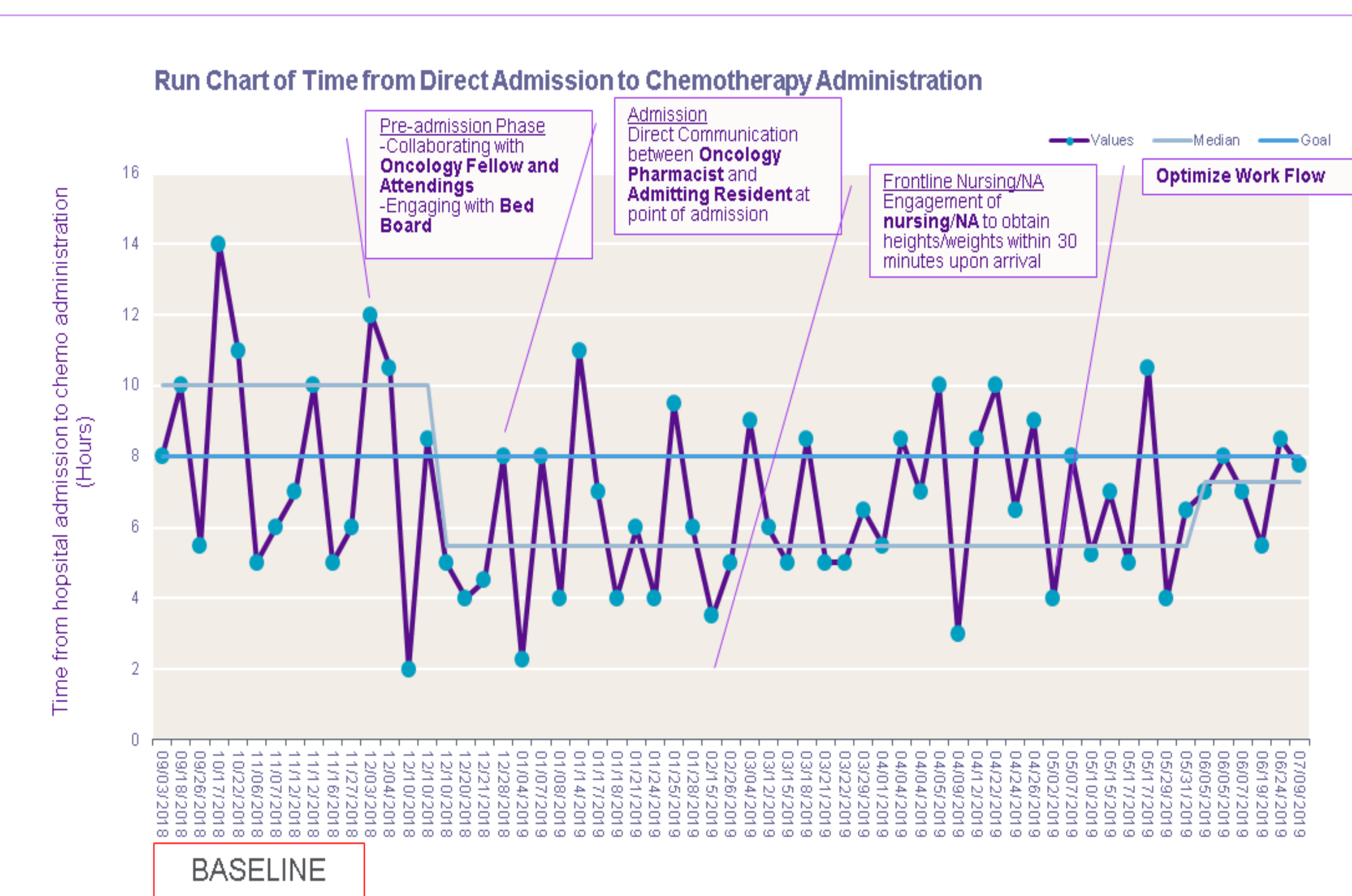


Figure 2 : PDSA Cycle of Interventions

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

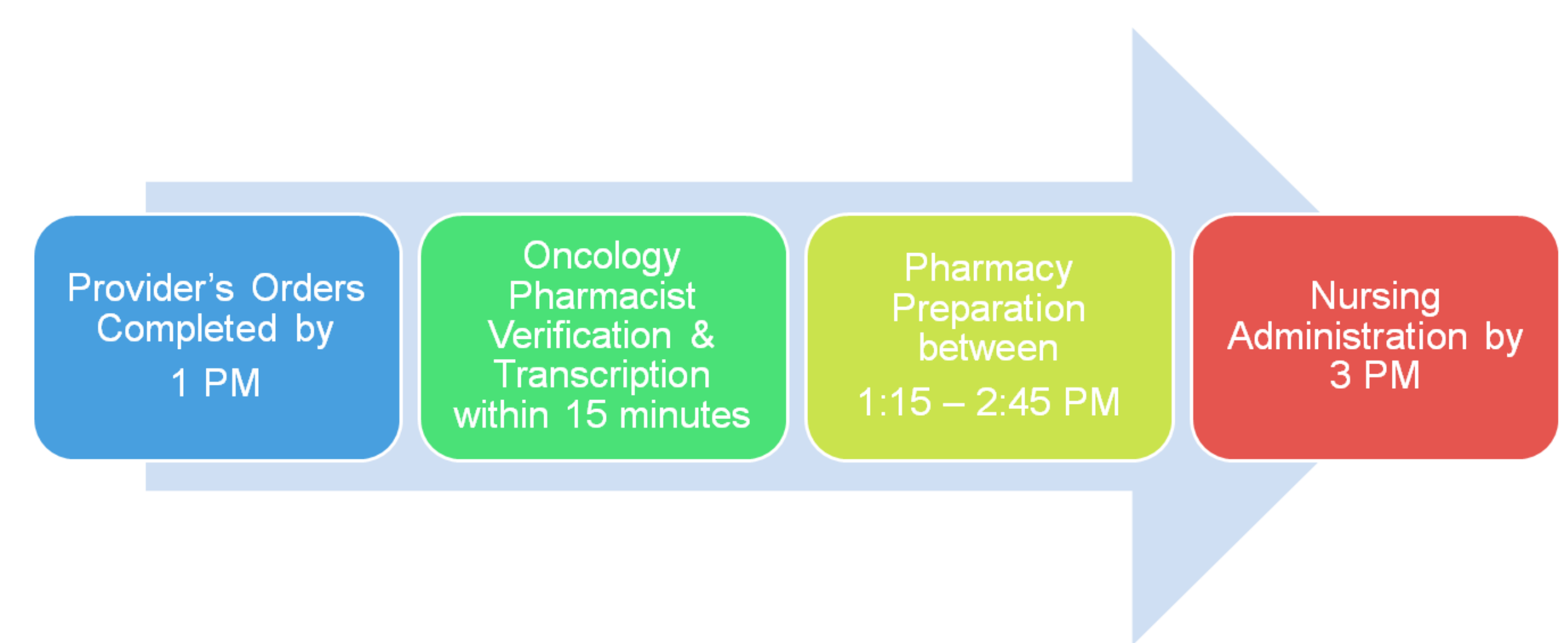


Figure 3 Model Workflow Developed by the hematology-oncology care team based on care team survey results

## 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