Reducing Delays in Chemotherapy Administration in the Therapeutic Medicine Center at New York-Presbyterian Queens

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Institutional Overview

• A community teaching hospital in Queens, New York, affiliated with Weill Cornell Medicine.
• Tertiary care facility with approximately 535 beds
• Specialties provided range from labor and delivery, pediatric/pediatric specialties, internal medicine/ with all subspecialties, general surgery/surgical subspecialties are provided.
• Therapeutic Medicine Center (TMC) has 9 chairs approximately 80% occupied by medical oncology patients for which the majority are solid tumor patients.
Team members

Project Lead: Lauren Elreda (NYP-Queens)
Adam Hines (NYP-Queens)
Phyu Thin Naing (NYP-Queens)
Jorge Monge Urrea (NYP-Cornell)
Arif Kamal (Duke Cancer Institute)
Carolyn Hendricks (Johns Hopkins Cancer Institute)
Problem Statement

During the last six months, patients with an oncologic diagnosis scheduled for outpatient chemotherapy in the Therapeutic Medicine Center at NewYork-Presbyterian/Queens experienced a median time from registration to treatment initiation of 112 minutes. This led to decreased patient satisfaction.
# Outcome Measure

## Baseline data summary

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure:</td>
<td>Time from patient registration to treatment initiation</td>
</tr>
<tr>
<td>Patient population:</td>
<td>Patients with solid tumor malignancies receiving chemo infusion therapy at the Therapeutic Medicine Center at NYP/Q (N=20)</td>
</tr>
<tr>
<td>Calculation methodology:</td>
<td>Median time from registration to chemotherapy infusion</td>
</tr>
<tr>
<td>Data source:</td>
<td>Manual data collection by clinic staff</td>
</tr>
<tr>
<td>Data collection frequency:</td>
<td>4 days over 2-week period</td>
</tr>
<tr>
<td>Data limitations:</td>
<td>Small sample size, limited time period of data collection</td>
</tr>
</tbody>
</table>

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*ASCO Quality Training Program*
Outcome Measure

Baseline data

TIME DIFFERENCE FROM REGISTRATION to CHEMO DELIVERY

MEAN: 105.3 (RED LINE)
MEDIAN: 112 min (GREEN LINE)
Aim Statement

By September 2020, we aim to decrease the median time from patient registration to start of treatment infusion at the TMC in NYP/Q to less than 90 minutes.
Cause and Effect diagram

Process
- Registration delay
- Chair delay
- Chemo order delay
- Delay in treatment preparation
- Pharmacist workflow

People
- Sample delivery time
- Difficult venous access
- Pharmacist Short Staffed
- Complex compounding machine
- Pharmacy shortage
- Lack of bullet to send labs

Material
- Laboratory location
- Time to lab delivery
- Treatment unit location
- CBC result turnaround time
- Pharmacy Location

Environment
- Lack of onsite cell counter

Measurement
- Chemotherapy Delivery Time

Delay in therapy administration
### Priority / Pay-off Matrix

#### Countermeasures

<table>
<thead>
<tr>
<th>High Impact</th>
<th>Easy Implementation</th>
</tr>
</thead>
</table>
| - Staggering patients’ schedule  
- Speak with the pharmacy to better understand workflow | - Hiring a new pharmacist  
- Simplifying the steps/protocols involved with compounding machine |

<table>
<thead>
<tr>
<th>Low Impact</th>
<th>Difficult Implementation</th>
</tr>
</thead>
</table>
| - Getting accurate height and weight as soon as patients register  
- Getting prior authorization forms ready at least 48 hrs before infusion day  
- Getting chemotherapy orders 48 hrs in advance | - Hiring additional runner  
- Having a satellite pharmacy close to the infusion center |
### Process Measure

#### Diagnostic Data summary

<table>
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<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Measure:**                | Patient Registration Time  
|                             | Time in Chair                  
|                             | Labs Drawn                    
|                             | Time Labs Sent                
|                             | Time Labs Resulted            
|                             | Time Chemotherapy Delivered   
|                             | Infusion Start Time           |
| **Patient population:** (Exclusions, if any) | Solid tumor malignancy patients receiving chemotherapy at Therapeutic Medicine Center at NYP/Q (N=20) |
| **Calculation methodology:** (i.e. numerator & denominator) | Median time difference of labs sent to resulted  
|                             | Median time difference of labs resulted to chemotherapy infusion |
| **Data source:**            | Manual data collection by clinic staff                                      |
| **Data collection frequency:** | 4 days over 2-week period                                                   |
| **Data limitations:** (if applicable) | Small sample size, limited time period of data collection                  |
Process Measure
Diagnostic Data

Pareto chart for time differences

TIME DIFF A: Lab sent to lab result
TIME DIFF B: Lab result to chemo delivery
TIME DIFF C: Time of registration to chair time
TIME DIFF D: Chair time to lab drawn
TIME DIFF E: Chemo delivery to infusion time
### PDSA Plan

<table>
<thead>
<tr>
<th>Date</th>
<th>PDSA Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/1/2020</td>
<td>- Speaking with pharmacy team, staggering patients’ schedule strategically so that patients don’t have to wait during the pharmacists’ lunch time</td>
<td>-N= 18 (Total time from registration to chemo infusion; Mean= 125, Median=126)</td>
</tr>
</tbody>
</table>
Post intervention data summary

- Time diff A: lab sent to result
- Time diff B: lab result to chemo delivery
- Time diff C: registration to chair
- Time diff D: chair to lab drawn
- Time diff E: chemo delivery to infusion
Outcome Measure

Change Data

Comparison of previous and current median time

Time diff A
- Before: 15
- After: 19

Time diff B
- Before: 56
- After: 62

Time diff C
- Before: 6
- After: 5

Time diff D
- Before: 8
- After: 7

Time diff E
- Before: 8
- After: 14

Legend:
- Blue: Before
- Red: After
- Green: Proportion of current to previous

ASCO Quality Training Program
## Next steps

### Sustainability Plan

<table>
<thead>
<tr>
<th>Next Steps</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue close-loop communication between pharmacy and infusion center staff in staggering patients’ schedule, getting prior authorization</td>
<td>Pharmacy and nursing staff</td>
</tr>
<tr>
<td>Encouraging physicians to place chemotherapy orders before infusion date</td>
<td>Oncologists</td>
</tr>
<tr>
<td>On-going discussions with stakeholders to expand the pharmacy staff</td>
<td>Division chiefs</td>
</tr>
</tbody>
</table>
Conclusion

Results

• We spoke with the pharmacy team to better understand their workflow and staggered patients’ schedule strategically for the first PDSA cycle

• We found that there is no improvement in time difference between lab sent to result (A) or time difference between lab result to chemo delivery (B)

Limitations:

• Sample size is smaller with for post-implementation data
NEXT STEPS

- Having a satellite pharmacy close to the infusion center
- Simplifying the steps/protocols involved with compounding machine
- Acquiring a new pharmacist
THANK YOU!