Project Title: Decreasing Chemotherapy Administration Delays in Electively Admitted patients to a Hematology-Oncology Unit

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Institution: UT Health San Antonio / Mays Cancer Center

Date: 06/18/21
Institutional Overview

UT System

15 Institutions
• 9 Academic Institutions
  – 3 with Medical Schools
• 6 Health Institutions

We are 69% Hispanic:
• 4.9 M people (31% NHW, 4% AA)
• Catchment Area: 38 Counties
• 4200 new oncology cases per year
• NCI Cancer Designated Center
• Unique population characteristics:
  – Age (40% < 25 years of age)
  – Language (41% speak Spanish as primary language)
  – Income (24% in poverty; $30,135 per capita personal income)
  – Education (26% No HS education)
  – Military veterans (9%)
Enrique Diaz, MD, MSc
Assistant Professor of Medicine
Hematology-Oncology
Team Leader

Jeremy Viles, DNP, MBA, RN
Chief Nursing Officer
Team Member

Mary Salazar, DNP, MSN, RN
Director of Oncology Patient Experience
Team Member

Nikos Papanikolaou, PhD
Professor Radiation Oncology.
Chair Radiation Physics
Team Member

Geary Delgado, MSN, RN
Patient Care Coordinator UHS
Team Member

Enrique Diaz, MD, MSc
Assistant Professor of Medicine
Hematology-Oncology
Team Leader

Valorie Harvey, BSN, MBA
QTP Coach
An average of 20-25 patients were electively admitted to UHS per month in 2019 for inpatient chemotherapy administration. The median time between the patient is admitted to UHS and chemotherapy is started is 19.1 hours. This delay results in an increased LOS and resource utilization along with decreased patient satisfaction.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>Measure:</td>
<td>Time from admission to UHS to time of chemotherapy initiation.</td>
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<tr>
<td>Patient population:</td>
<td>Patients seen at MCC and electively admitted to UHS for chemotherapy. 18 y.o and older</td>
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<td>Calculation methodology:</td>
<td>(Time of administration of chemo – Time of arrival to hospital) on each elective admit / # of patients</td>
</tr>
<tr>
<td>Data source:</td>
<td>EMR</td>
</tr>
<tr>
<td>Data collection frequency:</td>
<td>March of 2019 / Pre COVID-19 era / Weekly</td>
</tr>
<tr>
<td>Data limitations:</td>
<td>Limited sample Manual abstraction</td>
</tr>
</tbody>
</table>
Baseline Data
March 2019
X Chart

- Minimum 3.28h
- Maximum 110h
- Median 19.4h

Patient presented with acute illness and needed proper eval prior to chemo start.
Aim Statement

- AIM STATEMENT
  A decrease by 10% in the current 19.4 hours as median time of chemotherapy start is projected by June 1\textsuperscript{st} 2021
Process map

1. Outpatient evaluation at MCC
2. Decision to admit patient to UHS
3. Chemotherapy consent obtained and therapy plan placed in EPIC
4. Phone call to UHS to initiate admission process
5. UHS calls back Oncologist to confirm demographics, reason for admit and estimated LOS
6. Authorization process of elective admission starts
7. Phone call to UHS to initiate admission process
8. Patient is contacted on the day of the admission and asked to head over UHS
9. Bed is secured
10. MD notified and officially admits patient
11. Lab needed Y/N
12. MD from admitting team assesses patient
13. MD from admitting team alerts inpatient Heme-Onc team
14. MD reviews labs and coordinates care with Heme-Onc team
15. Patient arrives to chemotherapy unit at UHS
16. OK to treat? Y/N
17. Y: PharmD reviews
18. N: Reassess in 12-24h
19. If questions, HemOnc team contacted
20. Orders clarified
21. MD reviews labs and coordinates care with Heme-Onc team
22. PharmD alerts RN in the floor that chemotherapy is ready
23. RN Coordinates pick up and delivery
24. Chemo is transported to floor
25. RN receives chemo
26. PharmD prepares chemo
27. RN verifies chemo and patient
28. RN administers chemo
29. RN administers chemo
### Priority / Pay-off Matrix

**Countermeasures**

<table>
<thead>
<tr>
<th>High Impact</th>
<th>Low Impact</th>
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<tr>
<td><strong>Easy</strong></td>
<td><strong>Difficult</strong></td>
</tr>
<tr>
<td>- Extend the utilization of working days of the week</td>
<td>- Ability to reserve beds</td>
</tr>
<tr>
<td>- Notes available to facilitate treatment</td>
<td>- Pharmacy hours</td>
</tr>
<tr>
<td>- Avoiding duplicated labs</td>
<td>- Patient transportation</td>
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<tr>
<td>- Have chemo orders signed</td>
<td>- Patient arrival</td>
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</table>

- PICC vs Port
- Different EPIC platform (no interface)
Cause and Effect diagram

**Human Factor**

**Patient**
- Late arrival
- Patient Transportation unavailable
- Patient unaware of admission

**Staff**
- Admitting MD Availability
- RN availability
- Inpatient hemato team available
- Consent not obtained in advance

**Pharmacy**
- Hours of operation, cut off time to start prepping chemo is 7:30pm
- Short staffed

**Bed Availability**
- Unable to reserve
- Late discharges
- 8th floor closed due to COVID
- Days of the week
- Room not clean

**Orders**
- No orders in EPIC
- Orders not signed
- Note from inpatient team to ok chemo
- 2 EPIC systems w/o interface

**Diagnostics / Ancillary Services**
- IV lines (PICC vs PORT)
- Duplicated labs
- Phlebotomist not available
- Admitting team unsure about labs to order

**Delay in Administration of Chemotherapy**

**Institutional Factor**
Process Measure
Diagnostic Data

Defects
- Utilization of day of the week
- Ability to reserve beds
- Note available to facilitate Rx
- Inpatient pharmacy hours
- Chemotherapy orders signed
- Patient arrival to UHS
- Patient transportation
- PICC vs Port
- Duplicated Labs
- Different EMR platform

Causes

Barriers

Vital Few
Useful Many
Cumulative%
Cut Off %

Cumulative %

0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

0
10
20
30
40
50
60
70
80
90
100

0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

ASCO Quality Training Program

American Society of Clinical Oncology
Knowledge Conquers Cancer
## Process Measure
### Diagnostic data summary

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<td><strong>Data collection frequency:</strong></td>
<td>2021 data on monthly basis</td>
</tr>
<tr>
<td><strong>Data limitations:</strong></td>
<td>Manual abstraction</td>
</tr>
<tr>
<td></td>
<td>Limited sample</td>
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# Test of Change
## PDSA Plan

<table>
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<tr>
<th>Date</th>
<th>PDSA Cycle</th>
<th>PDSA Description</th>
</tr>
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<tbody>
<tr>
<td>03/12/21 – 03/31/21</td>
<td>1</td>
<td>Reserve beds for elective admits on Mondays and Tuesdays</td>
</tr>
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</table>
| 04/01/21 – 04/30/21 | 2          | • “OK” note from inpatient to give chemotherapy  
• Distribute patients uniformly throughout all working days of the week |
Change Data
PDSA 1 / March 2021
X Chart

- Minimum 3.3h
- Maximum 40.2h
- Median 8.5h
Outcome Measure

Baseline / X Chart

PDSA 1 / X Chart
Change Data
PDSA 2 / April 2021
X Chart

- Minimum 1.52h
- Maximum 71 h
- Median 7.03h

Patient needed emergent and staging procedures prior to chemo start
Outcome Measure

PDSA 1 / X Chart

PDSA 2 / X Chart
Outcome Measure / March 2019 – April 2021 / X Chart

**Reserving Beds**

- Ok note and admitting patients on all working days

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**Baseline**

**PSDA 1**

**PSDA 2**

LCL

UCL

Time in Hours

Patient
## Test of Change
### PDSA Plan

<table>
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<th>PDSA Description</th>
<th>Result</th>
<th>Action Step</th>
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<td>03/12/21 – 03/31/21</td>
<td>1</td>
<td>Reserve beds for elective admits on Mondays and Tuesdays</td>
<td>Improvement</td>
<td>Adopt</td>
</tr>
<tr>
<td>04/01/21 – 04/30/21</td>
<td>2</td>
<td>• “OK” note from inpatient to give chemotherapy</td>
<td>Modest Improvement</td>
<td>Adopt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Distribute patients homogeneously throughout all working days of the week</td>
<td></td>
<td></td>
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</table>
# Next steps

## Sustainability Plan

<table>
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<th>Owner</th>
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<tr>
<td>Continue to work with UHS leadership to get the ability to reserve beds for all working days.</td>
<td>Enrique Diaz / Kate Lathrop</td>
</tr>
<tr>
<td>Approach pharmacy leadership to work on more flexible / late cut-off time for chemotherapy mix.</td>
<td>Enrique Diaz / Gary Hill</td>
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Conclusions

• Over a 3-month period, we achieved our goal by reducing the median time from patient arrival to initiating chemotherapy from 19.4 hours to 7.3 hours.

• The biggest impact was achieved by the ability to reserve beds for elective admissions.

• Meaningful improvements in chemotherapy delays can only be achieved by the coordinated work of a multidisciplinary team and investment of key stakeholders.
Thank you