ASCO Quality Training Program

Time to Blood Repletion for Stem Cell Transplant Patients

Abigail Keller and Paul Yoder

UVA Health System

December 2019

Institutional Overview

- UVA Health is a 612 bed academic medical center in central Virginia.
- UVA Cancer Center is one of only two NMDP/Be The Match programs in Virginia
- Approved member of Bone Marrow Transplant-Clinical Trials Network (BMT-CTN), Eastern Cooperative Oncology Group (ECOG) and the Center for International Blood and Marrow Transplant Research (CIBMTR).

  - The inpatient Stem Cell Transplant Unit is 14 beds
  - FACT accredited (Foundation for Accreditation of Cellular Therapy)
  - More than 500 transplants given in program's history

Team members

Project Sponsor:	Michael Keng, MD
Core team Members:	Paul Yoder, RN
	Abigail Keller, RN
	Tanya Thomas, RN
	Jason Adams, MSDS
	Sumner Abraham, MD
	Jenna Ally, NP
Coaches:	Holley Stallings, RN
	Adam Binder, MD

Problem Statement

In May-September 2019, 55% of blood repletion orders took greater than 60 minutes to be placed for SCT patients. This led to frustration of nursing staff due to imbalanced workload, cluster of orders, and delayed care in treatments.

Outcome Measure

Baseline data summary

Item	Description
Measure:	Time stamp data from EMR
Patient population: *(Exclusions, if any)*	Patients in the Stem Cell Transplant Unit
Calculation methodology: *(i.e. numerator & denominator)*	-Time of CBC collection -Time of CBC result -Time of blood product order placement -Time of blood product administration
Data source:	EPIC EMR
Data collection frequency:	Once baseline May-September Once after PDSA cycle
Data limitations: *(if applicable)*	

Outcome Measure

Baseline data

Process	Average	Median	Range
Lab collect to lab result	26 min	23 min	4 min to 132 min
Lab result to order placed	139 min	74 min	1 min to 3081 min
Order placement till product hung	157 min	119 min	1 min to 6400 min
Total time from lab collect till product hung	321 min	263 min	35 min to 6493 min

Percentage of time order placement >60 minutes	55 %
Percentage of time product hung by day shift	71.7 %

Outcome Measure

Baseline data summary

Item	Description
Measure:	Nursing survey regarding stress level
Patient population: *(Exclusions, if any)*	Nurses who work in the stem cell transplant unit
Calculation methodology: *(i.e. numerator & denominator)*	-Stress levels at different parts of the shift -Perceived workload balance of shifts (day/night) -Utilization of breaks -Staying late to chart after shift completion -Perceived availability of time to provide holistic care
Data source:	Qualtrics survey
Data collection frequency:	Once baseline September Once after PDSA cycle in November
Data limitations: *(if applicable)*	Self selection of participants Lack of single comparative factor or summary

Baseline-RN Stress Survey

	1 Never	2 Rarely	3 Sometimes	4 Most times	5 Always
Q1 How often do you take a full 30 minute lunch?	4%	36%	40%	12%	8%

Q8 Do you feel that work load is evenly divided between Day and Night shift?	Yes	No
	33%	67%

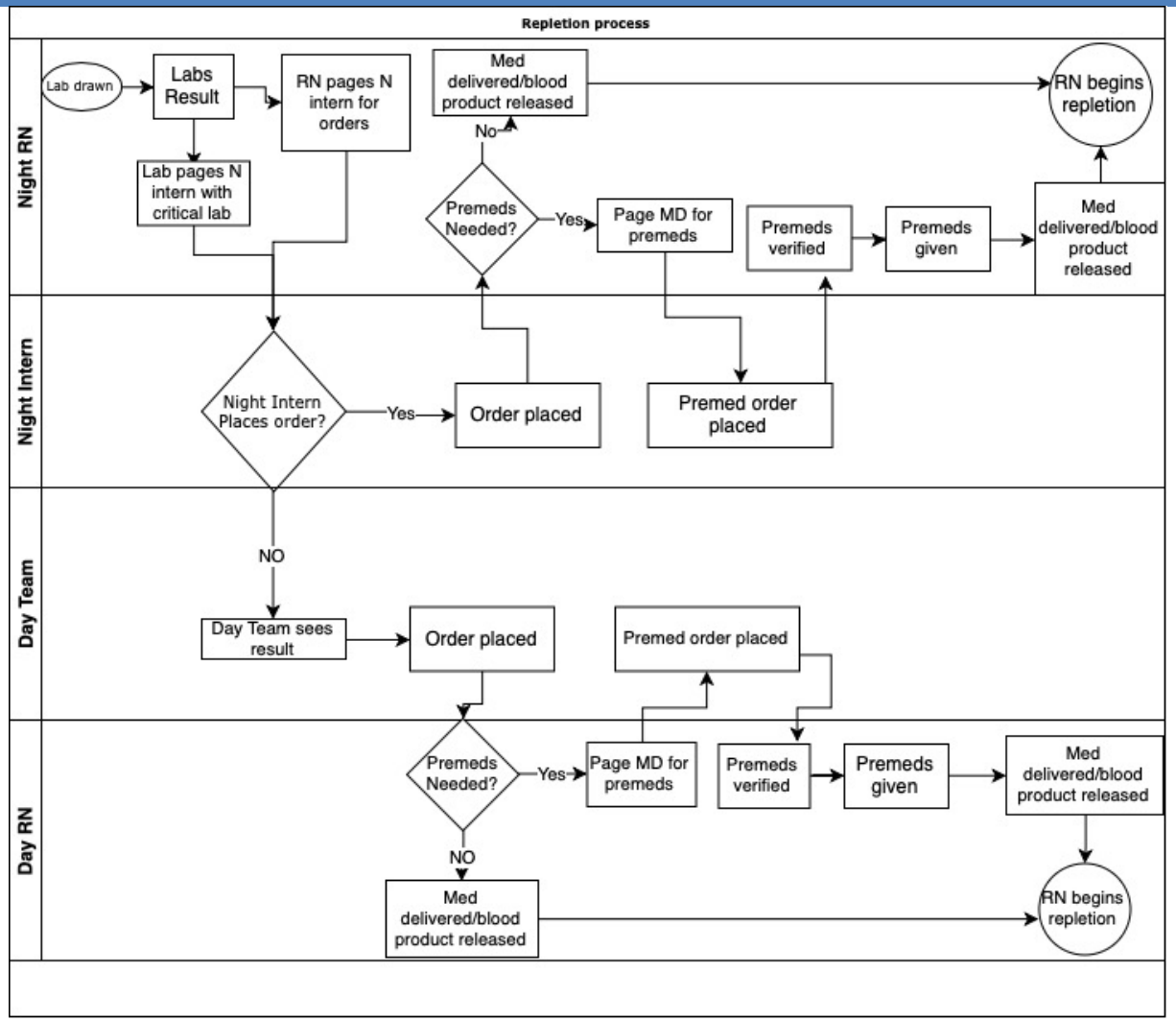
Baseline-RN Stress Survey

	1 No stress	2 Mild	3 Moderate	4 Significant	5 Severe
Q5 Stress in the first 4 hrs of shift.	0%	0%	48%	52%	0%
Q6 Stress in last 4 hrs of shift.	0%	12%	68%	20%	0%

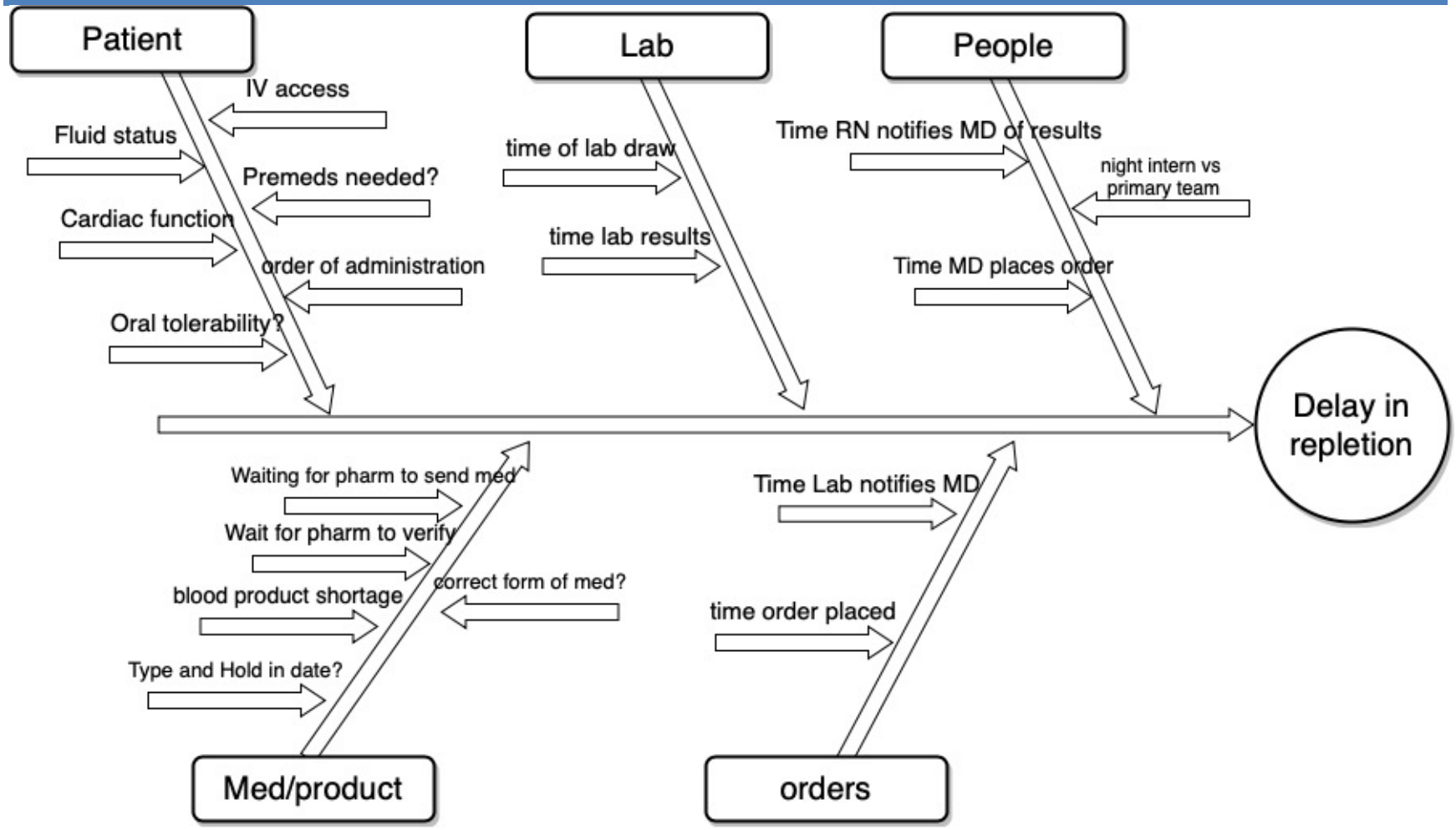
Aim Statement

We will decrease incidence in delays of repletion orders (>60 minutes) from 55% to 45% from October 2019 to December 2019.

Process map


Repletion process
Night RN
Lab drawn
Labs Result
RN pages N intern for orders
Lab pages N intern with critical lab
Med delivered/blood product released
No
Premeds Needed?
Yes
Page MD for premeds
Premeds verified
Premeds given
Med delivered/blood product released
RN begins repletion
Night Intern
Night Intern Places order?
Yes
Order placed
Premed order placed
Day Team
NO
Day Team sees result
Order placed
Premed order placed
Day RN
Premeds Needed?
Yes
Page MD for premeds
Premeds verified
Premeds given
Med delivered/blood product released
NO
Med delivered/blood product released
RN begins repletion

Cause and Effect diagram



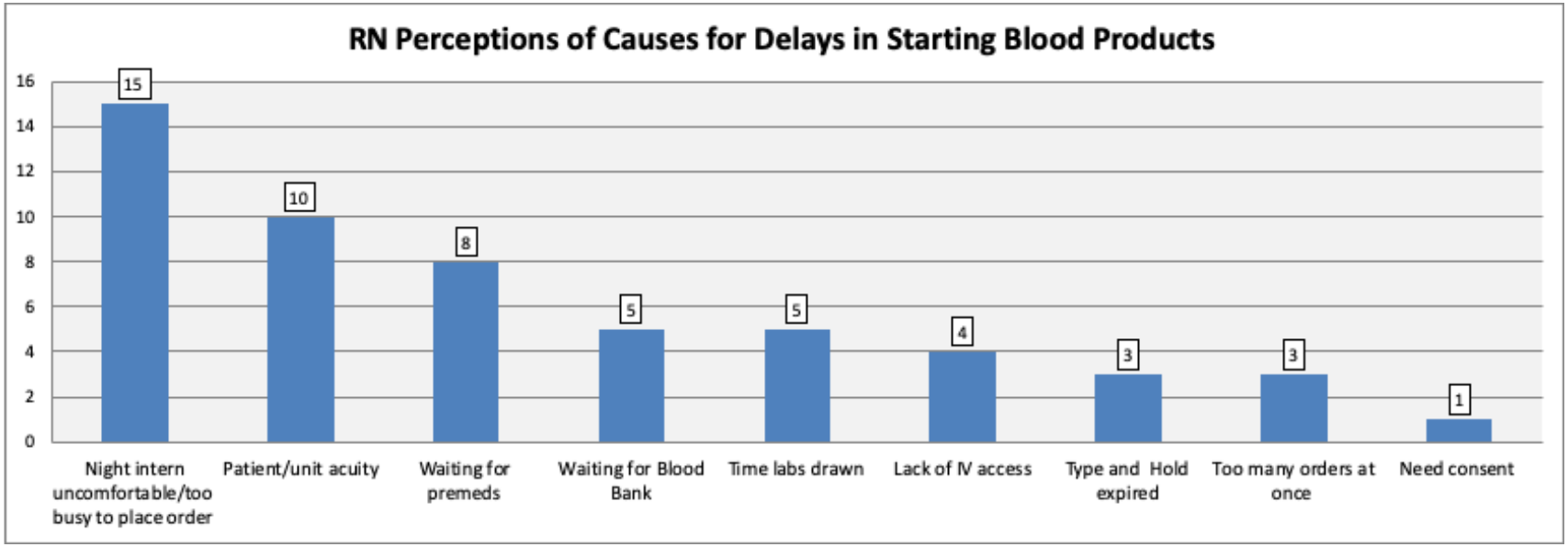
Process Measure

Diagnostic Data summary

Item	Description
Measure:	Staff RN perception for causes of delay in starting administration of blood transfusions
Patient population: *(Exclusions, if any)*	SCT nurses
Calculation methodology: *(i.e. numerator & denominator)*	Top three out of 9 possibilities
Data source:	Informal survey of SCT nurses working on the unit on days that the survey was completed.
Data collection frequency:	Once over three days
Data limitations: *(if applicable)*	Availability of nurses, no physician responses

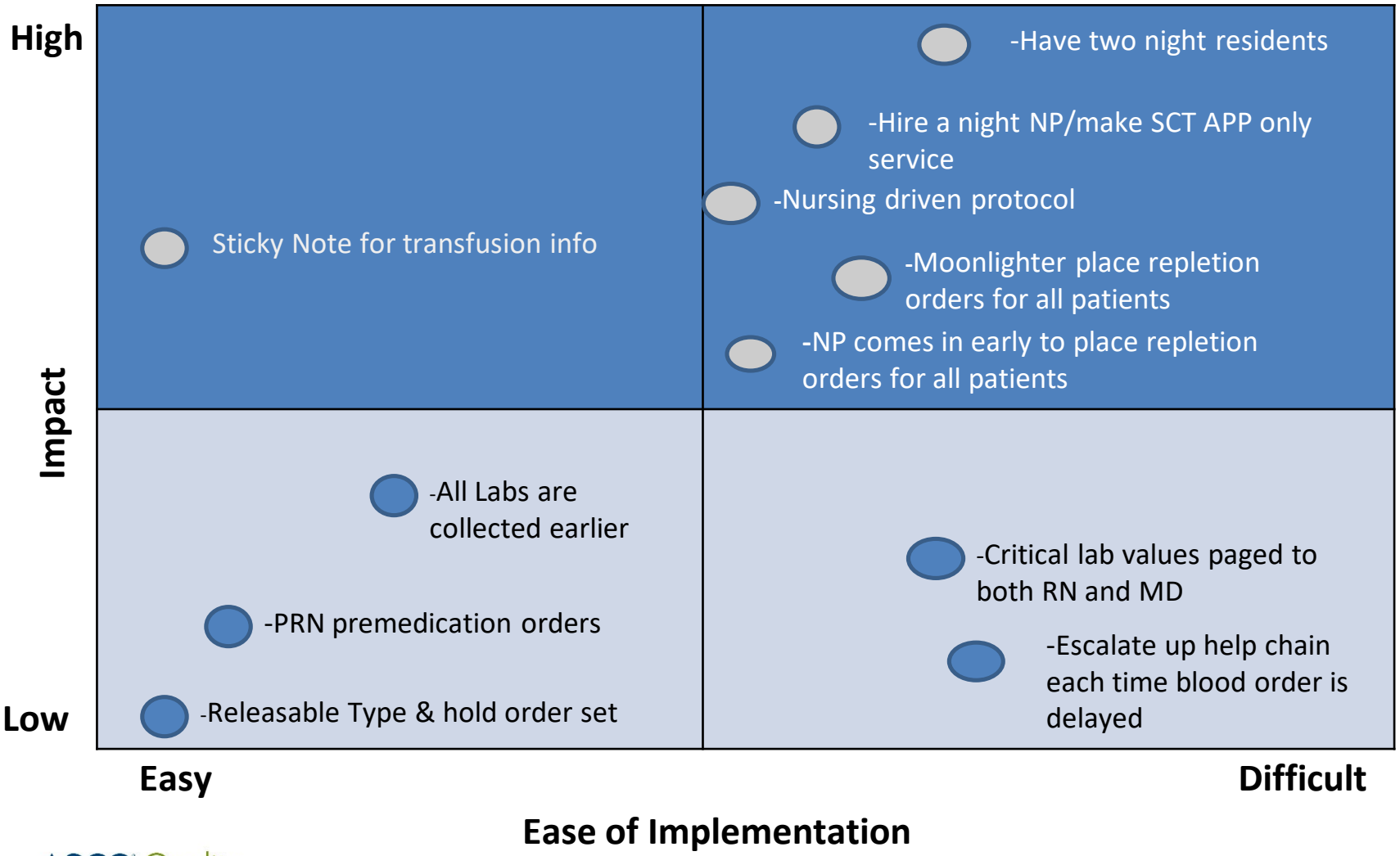
Process Measure

Diagnostic Data



Priority / Pay-off Matrix

Countermeasures



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Test of Change

PDSA Plan

Date	PDSA Description	Result
October 1-November 9	Introduction of a sticky note in each SCT patient's EPIC chart with information regarding: -Whether or not they have a history of reaction to blood products -Whether blood consent has been signed and is present in the chart -Which premedications are needed, if any.	
Future	Write a nursing driven protocol for blood repletion, seek approval from Patient Care Committee, pilot.	

Outcome Measure

Change Data

Process	Baseline			PDSA		
	Average	Median	Range	Average	Median	Range
Lab collect to lab result	26 min	23 min	4 min to 132 min	27 min	23 min	8 min to 118 min
Lab result to order placed	139 min	74 min	1 min to 3081 min	96 min	36 min	1 min to 747 min
Order placement till product hung	157 min	119 min	1 min to 6400 min	131 min	93 min	1 min to 1553 min
Total time from lab collect till product hung	321 min	263 min	35 min to 6493 min	254 min	196 min	39 min to 1708 min

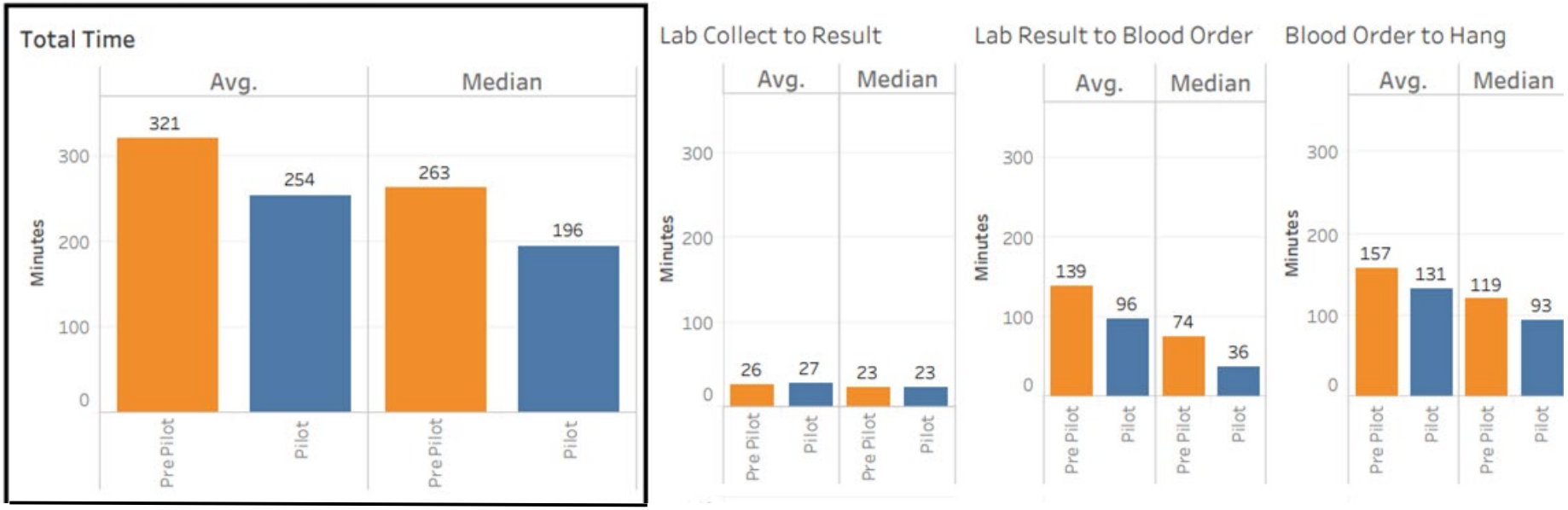
Percentage of time order placement >60 minutes	Baseline = 55 %	PSDA = 40.3 %
Percentage of time product hung by day shift	Baseline = 71.7 %	PSDA = 62.4 %

Outcome Measure

Change Data

ASCO Quality Study 8WSCT - Time from Lab Collection to Blood Administration

Pre Pilot Period: 5/1/2019 - 9/30/2019
Pilot Period: 10/1/2019 - 11/09/2019



Baseline	
PDSA	

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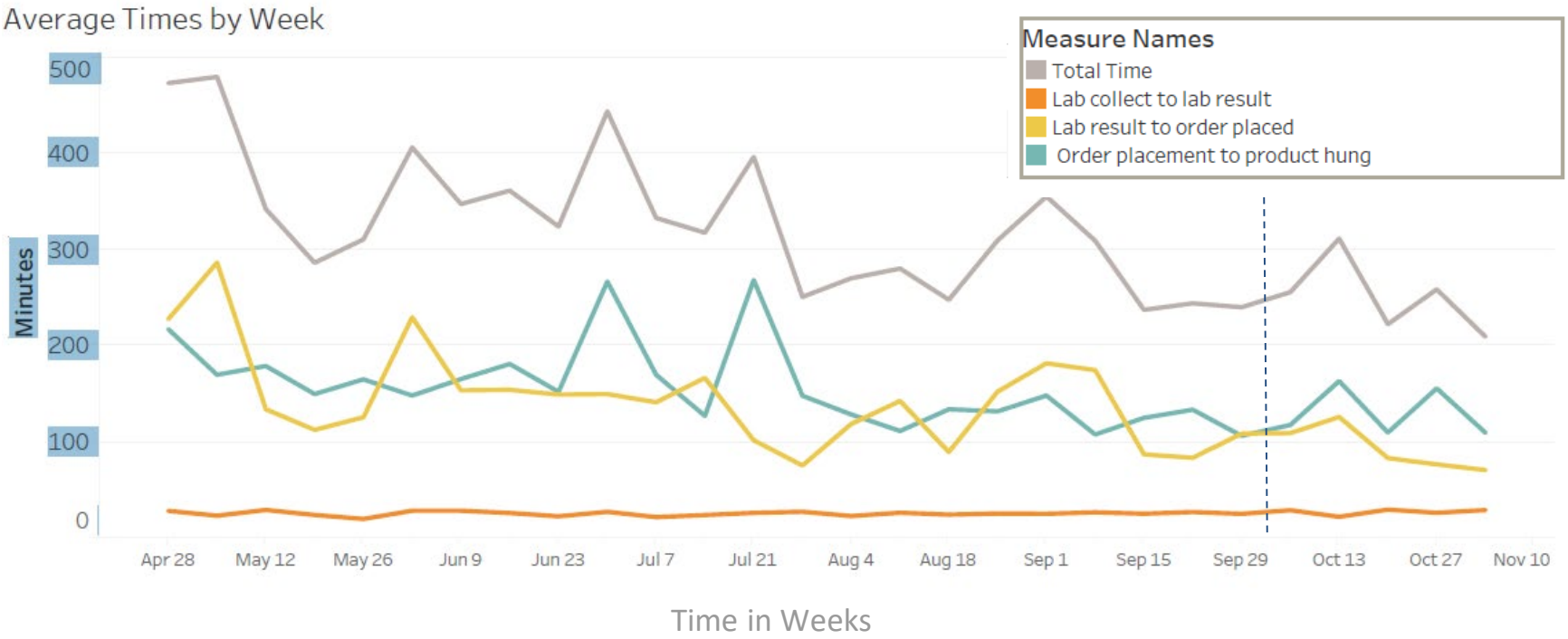
Outcome Measure

Change Data

Time from Lab Collection to Blood Administration



Baseline-RN Stress Survey

		1 Never	2 Rarely	3 Sometimes	4 Most times	5 Always
Q1 How often do you take a full 30 minute lunch?	Pre	4%	36%	40%	12%	8%
	Post	0%	25%	50%	15%	10%

Q8 Do you feel that work load is evenly divided between Day and Night shift?		Yes	No
	Pre	33%	67%
	Post	35%	65%

Baseline-RN Stress Survey

		1 No stress	2 Mild	3 Moderate	4 Significant	5 Severe
Q5 Stress level in the first 4 hrs of shift.	Pre	0%	0%	48%	52%	0%
	Post	0%	10%	65%	20%	5%
Q6 Stress level in last 4 hrs of shift.	Pre	0%	12%	68%	20%	0%
	Post	0%	20%	70%	10%	0%

Next steps

Sustainability Plan

Next Steps	Owner
Meet with team members to discuss integrating baseline transfusion information to each patient's chart as a part of admission workflow.	Abby and Paul with Jenna, NP and Sumner, MD
Educate SCT nurse with huddle tips, emails, and CBL to look for transfusion information and ensure it is incorporated into each patient's chart.	Abby and Paul
Draft nursing driven protocol for routine repletion, following parameters already agreed upon by Inpatient Oncology Service line and UVAHS Blood Bank.	Abby/Paul with Tanya, RN, Keng, MD, Terry Libby, Tom Brady (blood bank), Jenna, NP Sumner, MD
Propose protocol to Patient Care Committee for approval of pilot.	Abby and Paul with Tanya, RN
Seek additional education for SCT nurses regarding transfusion safety by Blood Bank safety officer.	Abby and Paul with Terry Libby

Conclusion

- After the sticky note intervention was introduced, incidence of delays in repletions orders greater than 60 minutes dropped from 55% to 40.3%, exceeding the goal outlined in our AIM statement.
- Workload became more balanced between day shift and night shift, with the percentage of blood products hung by day shift nurses dropping from 71.7% to 62.4%.

Conclusion

- Nurse stress levels did not change as significantly, with 90% of participating nurses experiencing moderate to severe stress for the first four hours of their shift, and 80% experiencing moderate to significant stress for the last four hours.
- 75% of nurses stated that they take their full lunch break sometimes/most times/always, up from 60% at baseline.
- There was no significant change in perception of a balanced workload between day shift and night shift, despite the decreased frequency of blood products hung on day shift post-PDSA, as compared to baseline data.