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# **LESS PLASMA ...LESS DRAMA**

## **REDUCING INAPPROPRIATE PLASMA TRANSFUSION ACROSS COMMUNITY HOSPITALS IN THE NIAGARA REGION**

Dr. Mohammad Refaei

CWC Annual Conference

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# PRESENTER DISCLOSURE

- **Presenter: Dr. Mohammad Refaei**
- **Relationships with financial sponsors:**
  - **Any direct financial relationships including receipt of honoraria:** Pfizer (honoraria & educational grant)
  - **Memberships on advisory boards or speakers' bureau:** none
  - **Patents for drugs or devices:** None
  - **Other:** None



## PLASMA OVERUSE

Provincial, national and international audits documented inappropriate use of plasma.

**Appropriate criteria: INR >1.7 and dose > 2units**

## NIAGARA HEALTH AUDITS

**75%** of ordered plasma is considered inappropriate

## PREVIOUS EFFORTS

September 2022, NH implemented **technologist-led screening of plasma requests.**

Inappropriate rates decreased to **50%** across all sites.

## COSTS

This represents a waste of scarce resources, increased financial and human resources, a burden on aging healthcare system, as well as exposing patients unnecessarily to adverse events related to transfusions

# BACKGROUND/PROBLEM

# AIM

improve the rates of appropriate plasma transfusions (as measured by **appropriate INR >1.7 and dose > 2units**) amongst hospitalized adult patients of three major Community hospitals in Niagara Region by 25% by June 30, 2025 (1 year)



# METHODS

## Diagnostics

Fishbone diagram || 5 Whys || Pareto Diagram ||  
Focus Groups/Surveys

## Design

Non-randomized, time interrupted series || Model for  
Improvement

## Data collection

Monthly by in-charge technologist

## Context

NH oversees 3 acute hospitals, providing care to 450,000 residents of Niagara region. 1,054 beds, 33,000 admissions per year.

TM oversees acquisition, storage and dispensing of blood products regionally.



# OVERVIEW OF CHANGE IDEAS

## Awareness Campaign

Multifaceted including memo, posters, newsletter nursing huddles, rounds (Grand round, divisional)

## Plasma Electronic Order set

Creation of a PowerPlan in Cerner

## Audit and Feedback

Personalized review of out-of-guidelines orders with practitioner



# MEASURES

## Outcome

- Percentage of appropriate plasma orders by both INR >1.7 and dose > 2 units per month.

## Process

- Number of Plasma transfused per month (possible outcome measure)
- Number of posters around units/hospital and those observed by staff
- Number of educational sessions and frontline staff attending these sessions.
- Number of audit & feedback
- Number of Transfusion medicine orderset submitted on Cerner (EMR) per month.
- Number of frontline staff (RN, Clerks, MD/NP/PS) who completed their training for Cerner.

## Balancing

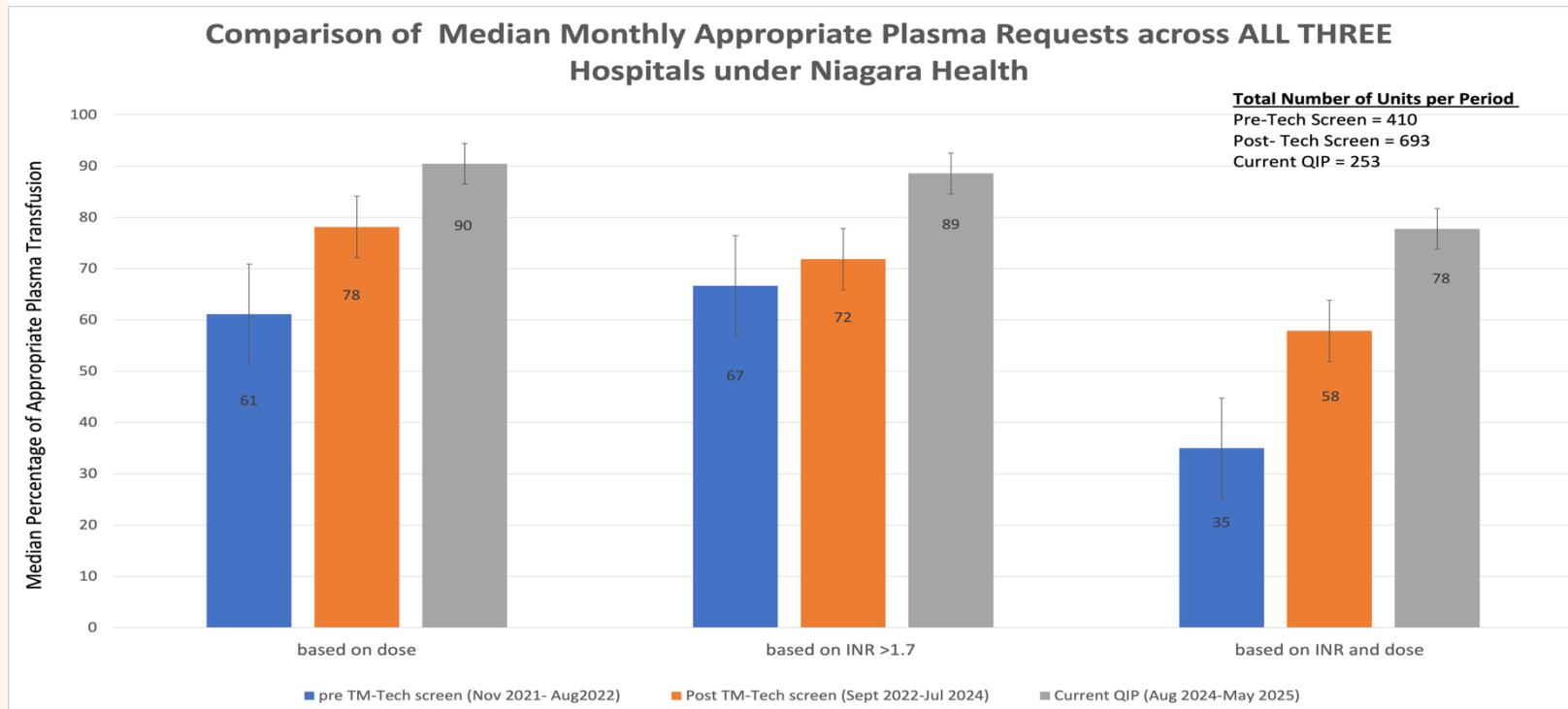
- Frontline workers (MLT, Clerks, Nursing staff, practitioners including PA/NP/MD) satisfaction
- Use of pRBC and Platelets
- Rates of audited plasma requests by Transfusion Medicine Technologists

# OUTCOME MEASURES

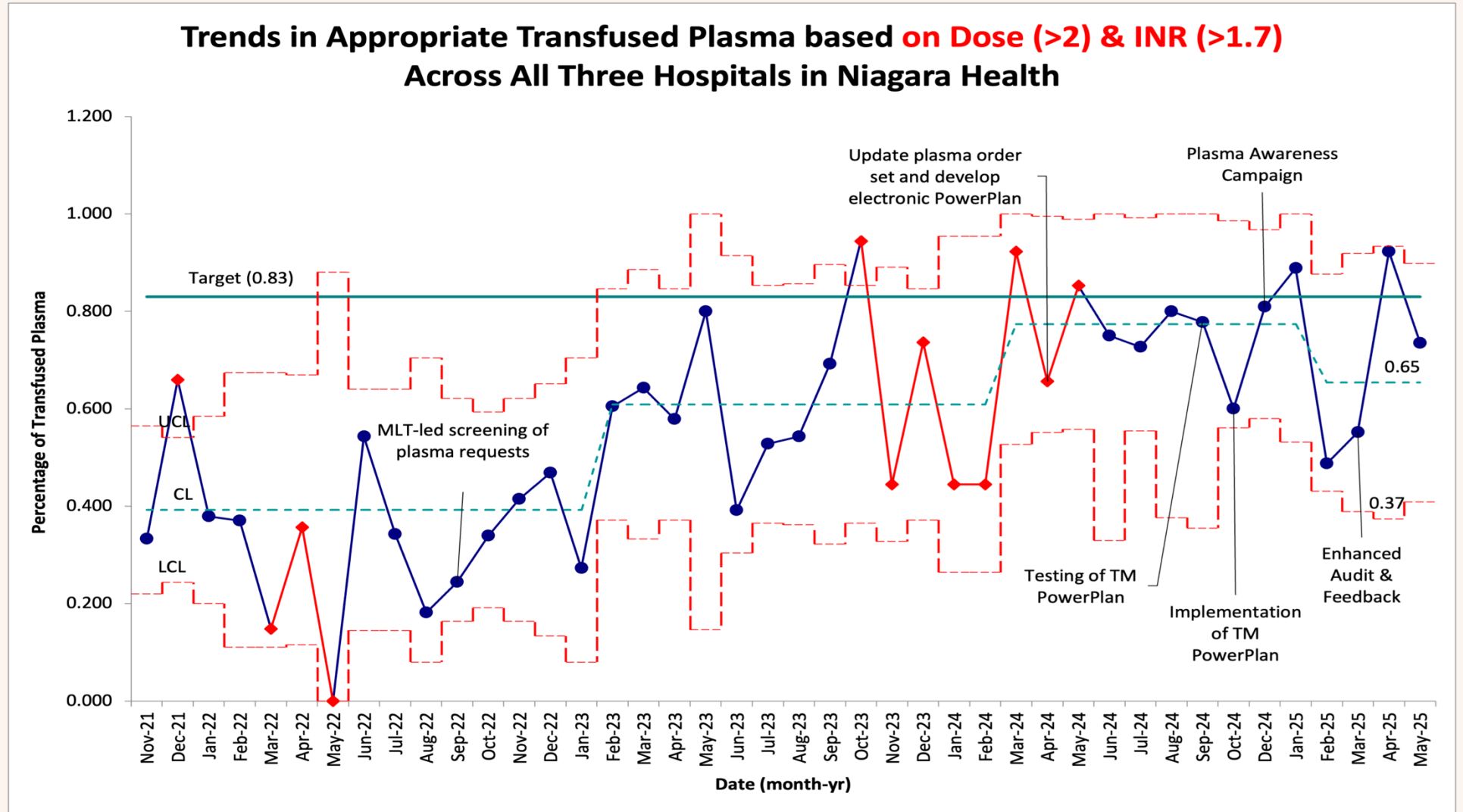
**TABLE 1** Summary table of total plasma units transfused across all three Niagara Health hospitals with median monthly appropriateness rates.

	Period (mm-yyyy)	Total number of patients	Total number of plasma (units)	Median monthly percentage of appropriate plasma units transfused, based on... (%; IQR)		
				Dose (>2 units)	INR (>1.7)	Both dose and INR
Pre-TM technologist screening	November 2021–August 2022	135	410	61 (47–66)	67 (56–74)	35 (22–38)
Post-TM technologist screening	September 2022–July 2024	263	693	78 (72–86)	72 (59–81)	58 (44–80)
Current QIP	August 2024–May 2025	103	253	90 (80–97)	89 (74–92)	78 (60–81)

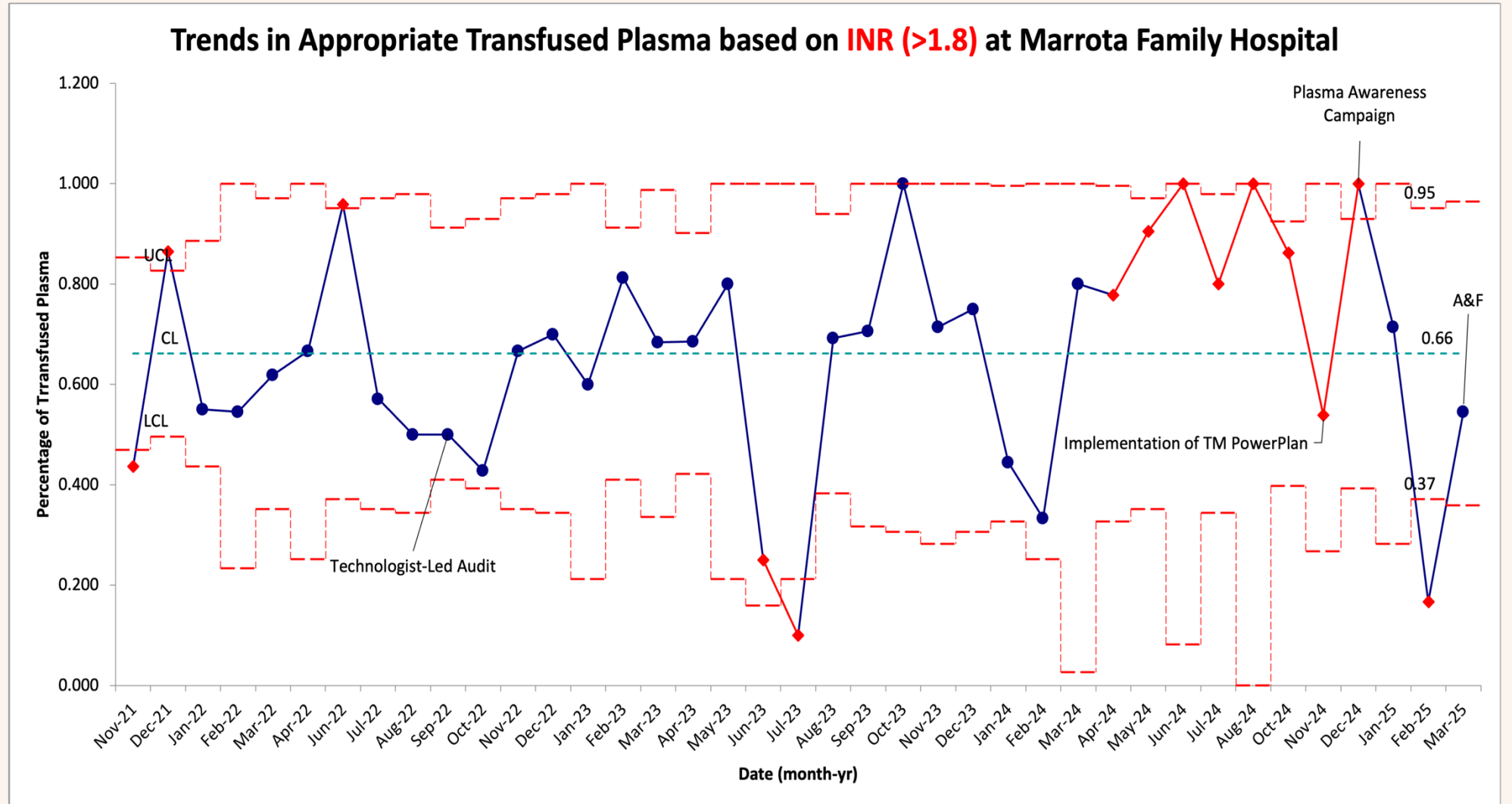
Abbreviations: INR, international normalized ratio; IQR, interquartile 25%–75%; QIP, quality improvement project; TM, transfusion medicine.



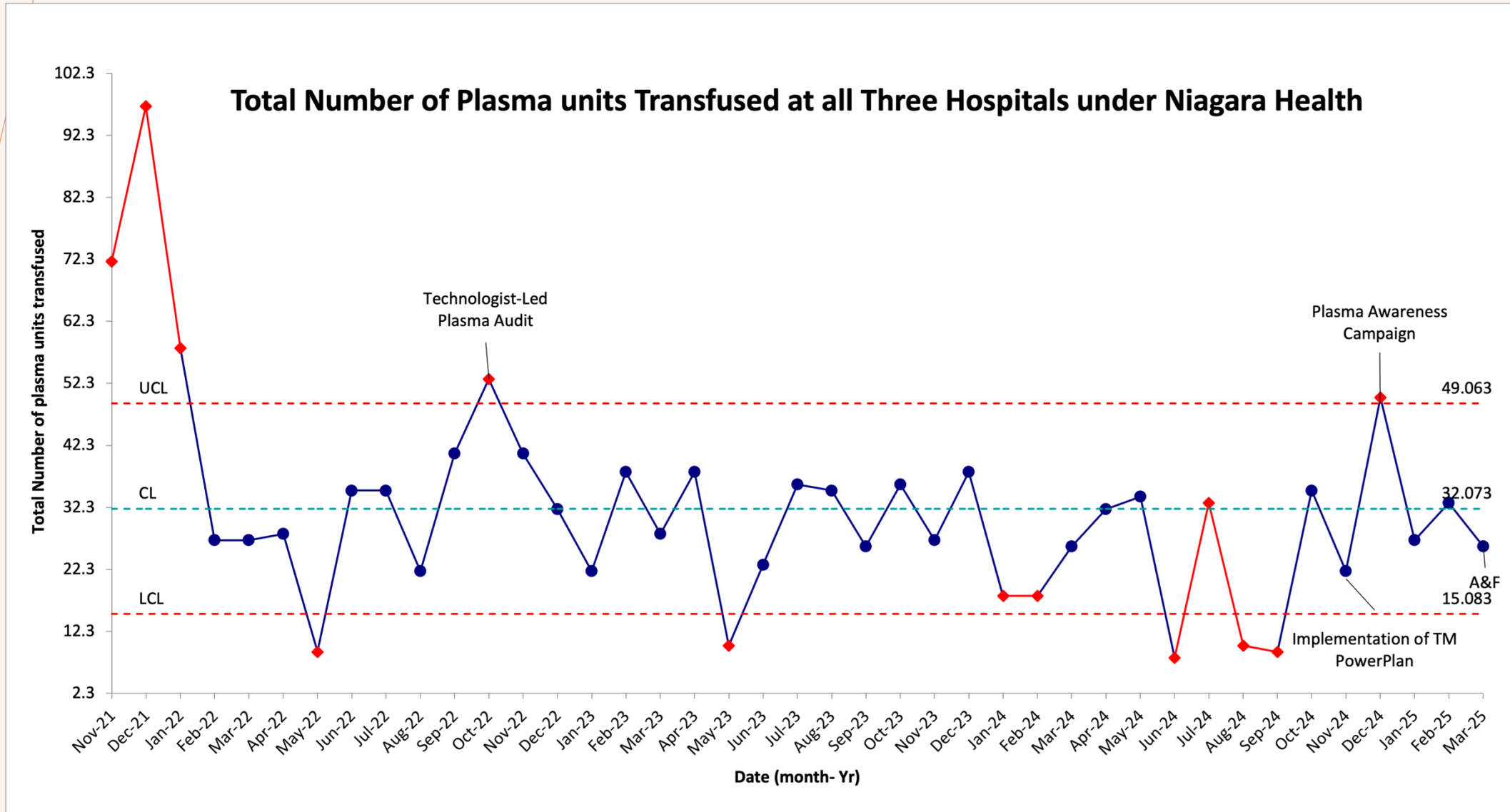
# OUTCOME MEASURES



# OUTCOME MEASURES



# ROI - COST AVOIDANCE



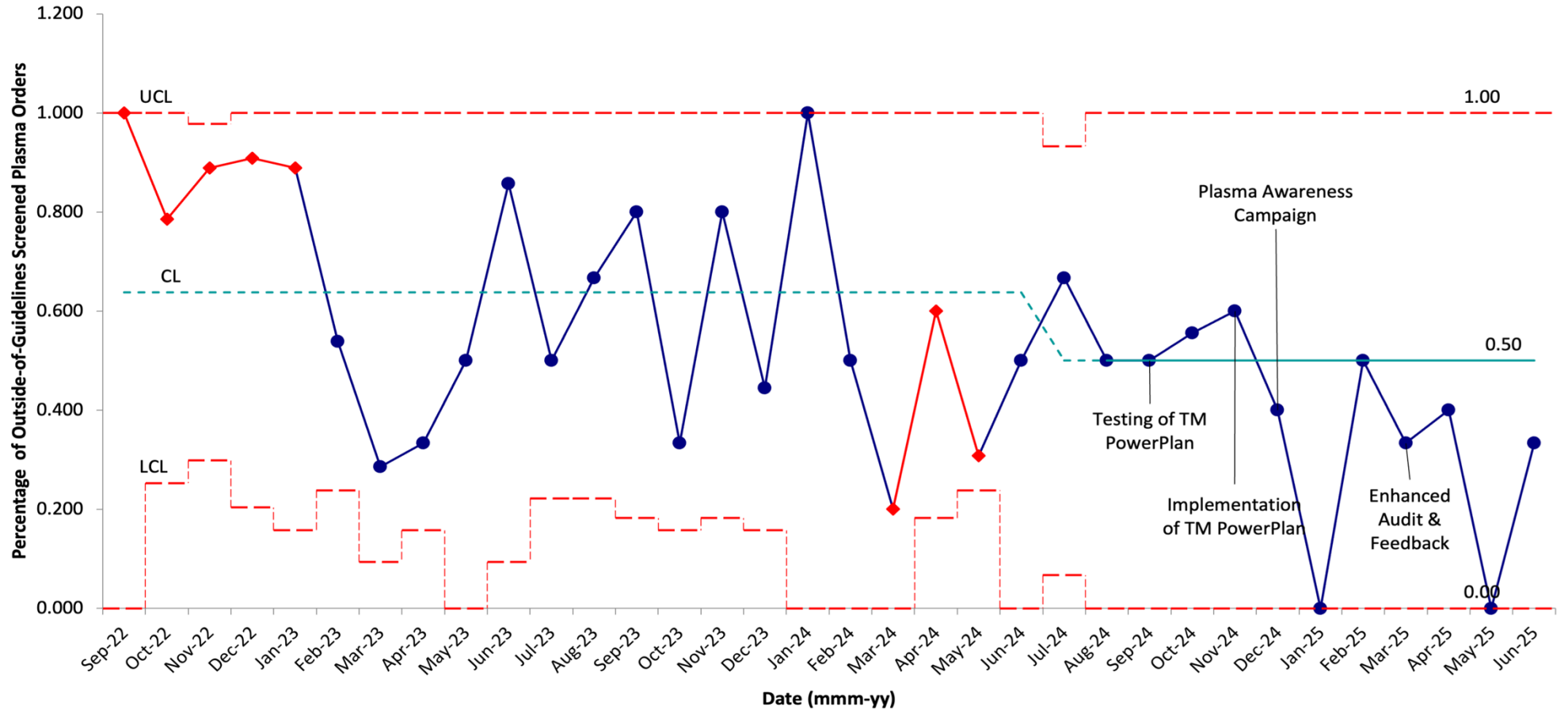


# SUSTAINABILITY

Use the 20% of appropriateness (equivalent to 50 units of plasma) achieved of what would have been additional units at 7.69 Kg CO<sub>2</sub> emission leading to driving **1600km worth of gasoline-operated vehicle**

# BALANCING MEASURES

**Rates of Outside-of-Guideline Screened Plasma Requests by TM Technologists  
Across all Three Hospitals in Niagara Region**



- Lower adverse transfusion reactions
- No impact increase of red cell or platelet transfusion



# NEXT STEPS

## REVIEW DATA COLLECTION

Identified INR and Marrotta Hospital as specific area of improvement

## INTRADEPARTMENTAL CONSENSUS

Develop survey and focus group questionnaire for discussion covering effect/impact/effectiveness of tested/implemented change ideas

## FORCE FUNCTION OF INR/DOSE IN CERNER

Engage with stakeholders and HIS team in order to enforce appropriate limits for INR and dosing of plasma orders.

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# THANK YOU