Improving Timely Treatment of Patients with Suspected TTP - University of Alberta Hospital

J. Karathra, A. Parker, D. Sawler, P. Mathura, L. Sun

Presentation PDF

DEFINE OPPORTUNITY

Background, Problem and Aim Statement:

Thrombotic thrombocytopenic purpura (TTP) is a life-threatening condition that must be treated as a medical emergency to ensure that patients receive timely access to life saving plasma exchange. Plasma exchange, also referred to as plasmapheresis, has reduced mortality survival from as high as 90% to 10-20%. UK guidelines recommend initiating plasmapheresis in patients with suspected TTP within 4-8 hours of presentation . Timely definitive management of TTP is not being achieved in Northern Alberta. The current time from suspected diagnosis to plasmapheresis is 15.5 hours which may directly impact patient outcome. Our aim was to identify and implement salient interventions using cycle time analysis and the Shewhart Plan-Do-Study-Act iterative cycles to decrease the current cycle time within the TTP patient journey to achieve timely plasmapheresis treatment.

BUILD UNDERSTANDING

Process Assessment:

The QI method included value stream mapping, cycle time and root cause (Ishikawa) analysis to identify areas of improvement opportunity. A chart audit of baseline data from patients presenting with suspected TTP from 2016 showed that it took 9.3 hours (median) for a patient to receive plasmapheresis after arriving to the UAH emergency department (ED). Sources of delay included 3.3 hour delay for hemolysis lab workup to return to ordering physician, and 4.2 hour delay to book transportation after being diagnosed in an outpatient setting. 33% of patients presented to ED between 24:00 and 08:00 when PLEX is unavailable.

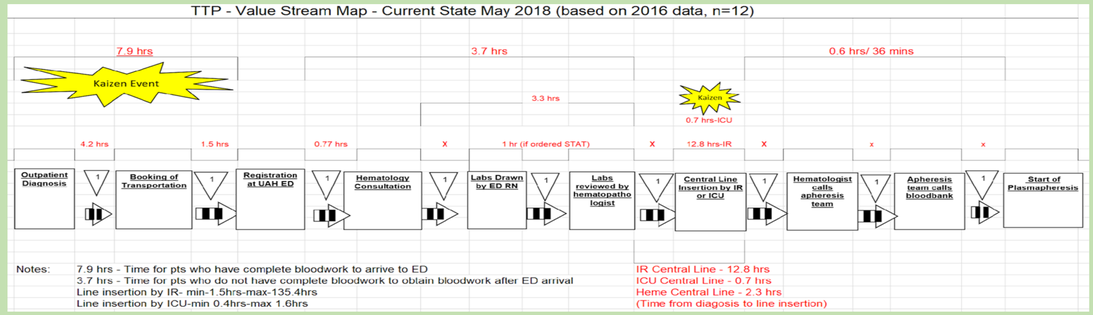
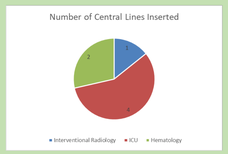


Figure 1. Value Stream Map of TTP patient pathway

Figure 2 & 3. Distribution of TTP patient location of residence and initial presentation



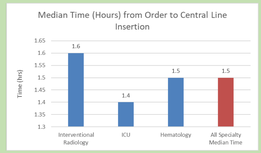


Figure 4 & 5. Central line distribution among medical specialties and insertion delay

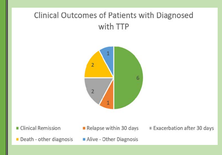


Figure 6. Clinical outcomes

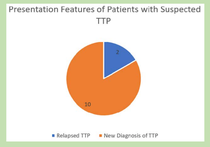


Figure 7. Proportion of new vs relapsed TTP

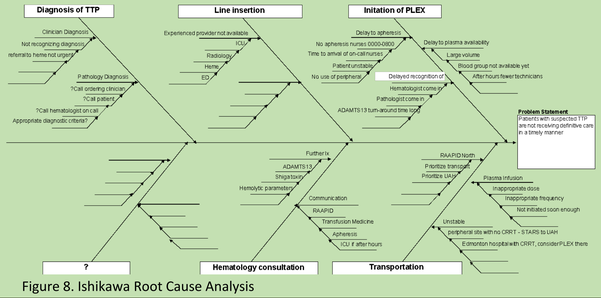


Figure 8. Ishikawa Root Cause Analysis

MANAGE CHANGE

Collaborations & Communication Strategies:

- A multidisciplinary meeting with RAAPID, hematopathology, transfusion medicine, and apheresis were held to co develop interventions
- Periodic meetings were held with frontline stakeholders from hematology, apheresis, and ICU.
- Collaboration with the head of the division of interventional radiology (IR) is ongoing to expedite the triaging process and central line insertion for suspected TTP patients
- Hematologists at UAH were also informed of quality improvement initiative through revised TTP management guidelines

ACT TO IMPROVE

Improvement Selection: December 2018 - December 2019

Figure 9. Sequence of TTP interventions to support timely TTP management

Gaps	Future Intervention	Who
Central line not placed promptly after arrival to UAH	ICU and interventional radiology physicians were informed of urgent need to insert central lines on patients with TTP and informed to triage TTP patients as an urgent priority	ICU and Interventional radiology physicians
PLEX not available via apheresis between 2400 – 0800 due to lack of nursing coverage	TTP patients will be prioritized by ICU for central line insertion if presenting between 21:00 – 08:00, and hematologist were informed to give an appropriate dose of plasma infusion if there was going to be an anticipated delay to receive plasmapheresis. • If patient is at the Royal Alexandra Hospital, then patient can receive urgent apheresis treatment at RAH and then be sent to UAH for further treatment. • Selected dialysis nurses were cross-trained to provide backup coverage for plasmapheresis after-hours	ICU, Dialysis RNs
Hemolysis lab workup not ordered as STAT, lab workup taking several hours to return	Job aide sheet to staff hematologists to ensure labs for query TTP are ordered STAT, appropriate hemolysis workup ordered for suspected TTP, and central line inserted urgently.	Hematologists
Delay in transportation of patient to UAH	Informed hematology staff to book transportation through RAAPID and to verbally request the patient to be transported as level red.	Hematologists, RAAPID

SUSTAIN RESULTS

Reinforce Ownership, Measurement & Continuous Improvement:

To ensure that the reductions in cycle time are maintained, patient chart audits will be performed after each patient journey. Quarterly, the QI team will review each patient's chart findings to assess cycle time changes (impact of the interventions) and to identify areas of further opportunity over the upcoming year.

Furthermore, the interventions implemented in this QI project will be shared at UAH hematology divisional meetings to ensure that all hematology physicians are educated on the steps they must take to reduce delay in treatment of patients presenting with query TTP.

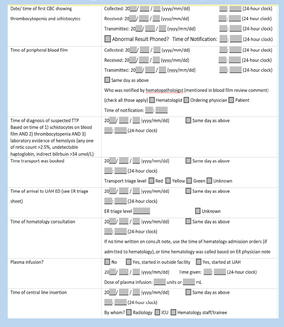


Figure 10. Excerpt of chart audit sheet. Process and outcome measures are captured after every TTP patient and reviewed with the QI team to measure intervention impact.

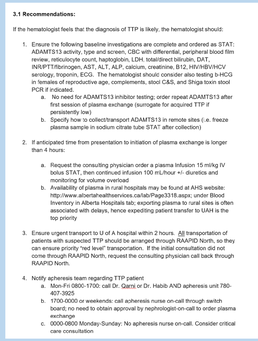


Figure 11. Excerpt of TTP treatment protocol sheet for hematologists which outline sequence of interventions which must be completed in the management of TTP.

SHARE LEARNING

Lessons learned:

- A limitation in this project is that TTP is a rare disease. PDSA cycles can only be implemented on a case by case basis as patients present over the course of a year. Impacting timely improvement analysis
- There is practice variability in how each specialty triages procedures such as line insertion for patients with TTP which then impact delays in patient treatment

Why this Quality Improvement matters

To Patients

Reduce mortality rates and receive life saving treatment faster for patients presenting with TTP

To Albertans

Optimizing resources already within the hospital to improve care for TTP patients – reducing the need for more costly interventions

To the healthcare system

Data on historic treatment of TTP allows us to make treatment protocol more formalized for healthcare practitioners, and reduces treatment related complications that extend patient stay

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