

Reducing delay in administration of high dose Methotrexate administration: A quality improvement project

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INTRODUCTION – 48 font

- Methotrexate is a widely used antineoplastic agent in childhood cancer
- It is renally excreted and can be deposited in renal tubules as crystals and give rise to AKI
- Excretion is aided with alkaline pH of urine and hydration.
- So chemotherapy with high dose methotrexate (HD Mtx) $\geq 1\text{g}/\text{m}^2$ needs:
 - Hydration with alkaline IV fluid as a part of chemotherapy order
 - Patient needs to reach specific urine analysis parameters in terms of specific gravity and pH (SG 1.010, pH ≥ 7)
- The above specialized fluid needs sophisticated preparation and rigorous oversight from nursing and pharmacy before it is administered to the patient
- The whole process needs time resulting in “ delay” giving rise to
 - Longer patient stay
 - Decreased patient satisfaction
 - Wastage of health care resources HD Mtx
 - Average delay 78 minutes
- In first six months of 2016 there were 55 patients admitted for
 - 31% patients could start within 30 minutes of scheduled time

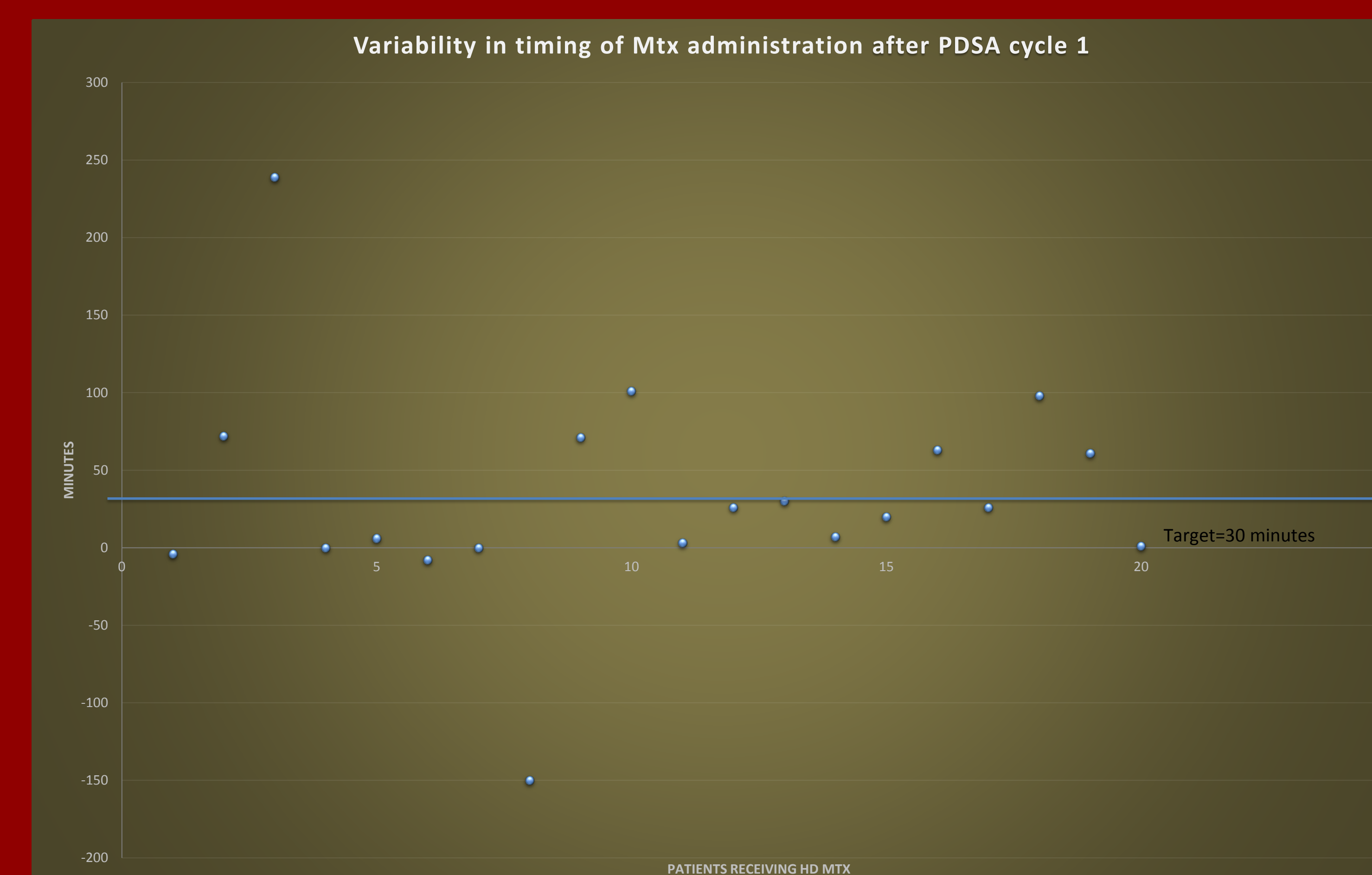
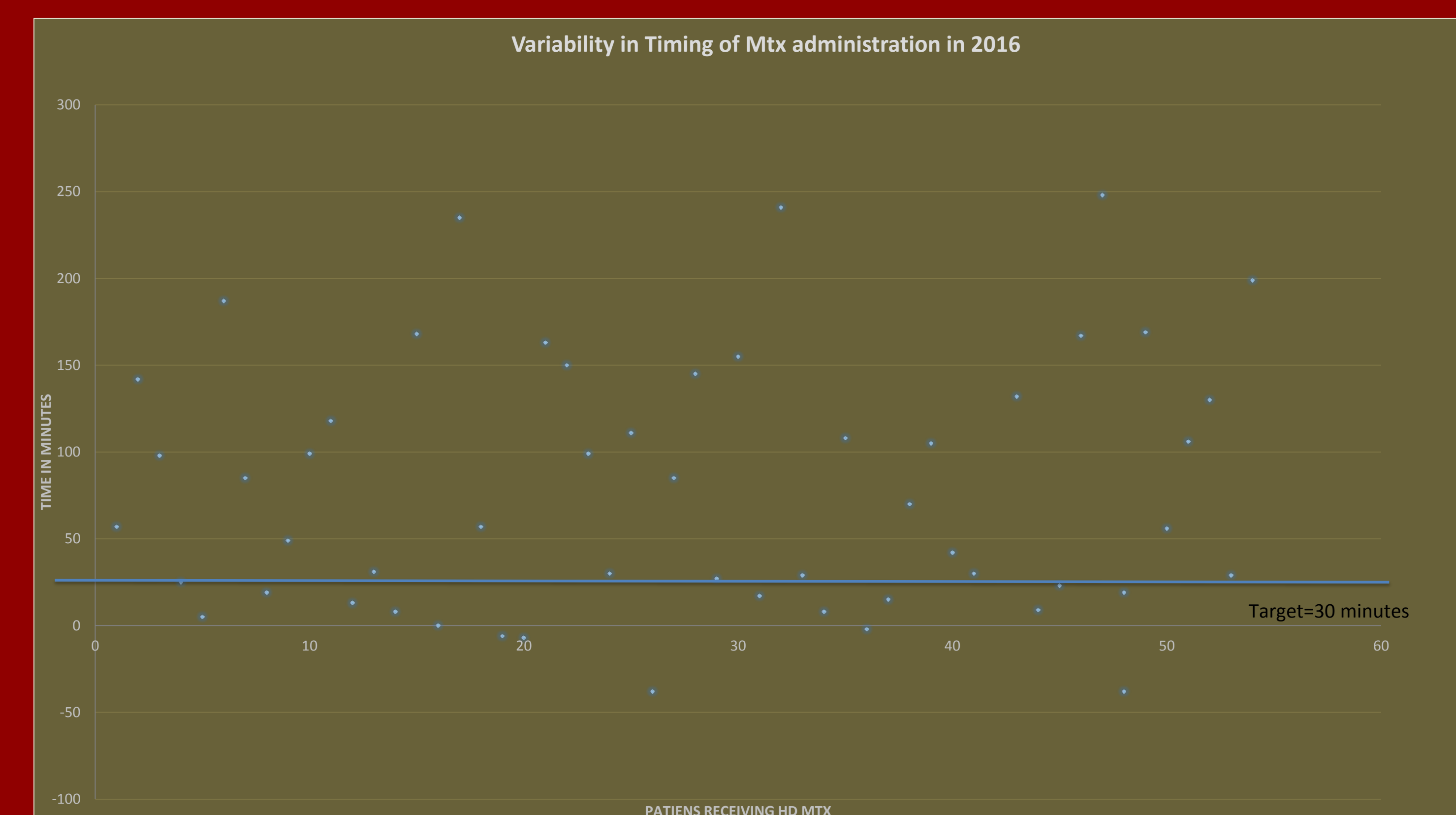
PURPOSE

Instituting interventions so that the chemotherapy starts within 30 minutes of the planned original start time in 90% of patients

METHODS

1. First cycle PDSA: Early Initiation of Sodium chloride (20ml/kg) and bicarbonate (25 meq/m² of BSA) boluses and sending urine analysis stat to ensure a rapid turn around
2. Second cycle PDSA: Sending earlier UA with first void after boluses to see whether patient has already reached required parameters and start chemotherapy early

RESULTS



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- After first cycle (3 months) the delay of less than 30 minutes achieved in 60% patients
 - Average delay was 33.1 minutes
- After second cycle (6 months) the delay of less than 30 minutes achieved in 56% patients but another 11% patients were close with delays of 31, 32, 39 minutes respectively
 - Average delay was 40.5 minutes

CONCLUSIONS

- Rapid hydration and alkalinization with early UA decrease delay in starting HD Methotrexate.
- As seen in the second cycle of PDSA, delays in administering HD Mtx still happening because of high SG in UA even when performed after boluses
- Can be circumvented by oral fluid that is given at home before presentation on the day of chemotherapy
 - Setting a goal for oral hydration for patients based on their weight and age in the day preceding the chemotherapy admission might achieve that : this can be a goal of PDSA cycle 3

REFERENCES

- Widemann, BC, and Adamson, PC. Understanding and Managing Methotrexate Toxicity. The Oncologist 2006;11:694-703