

DEFINE OPPORTUNITY

Background, Problem Statement and Goal Statement: The Canadian Choosing Wisely campaign recommends against routine complete blood count (CBC) and chemistry testing in the face of clinical stability in the inpatient internal medicine setting¹. An estimated >20% of lab tests are 'inappropriate' currently².

Problem Statement: On University of Alberta Hospital (UAH) general internal medicine (GIM) units, CBC and basic chemistries account for more than 50% of all laboratory testing. Upon admission to GIM units, CBC and basic chemistry are commonly ordered on a repeating daily basis. On UAH Unit 5D2 there is no standard process for laboratory test ordering to be reviewed upon admission and during inpatient care. This process increases the number of inappropriate and over utilized laboratory tests which creates system-wide wastes, increases operational costs and negatively impacts patient experience

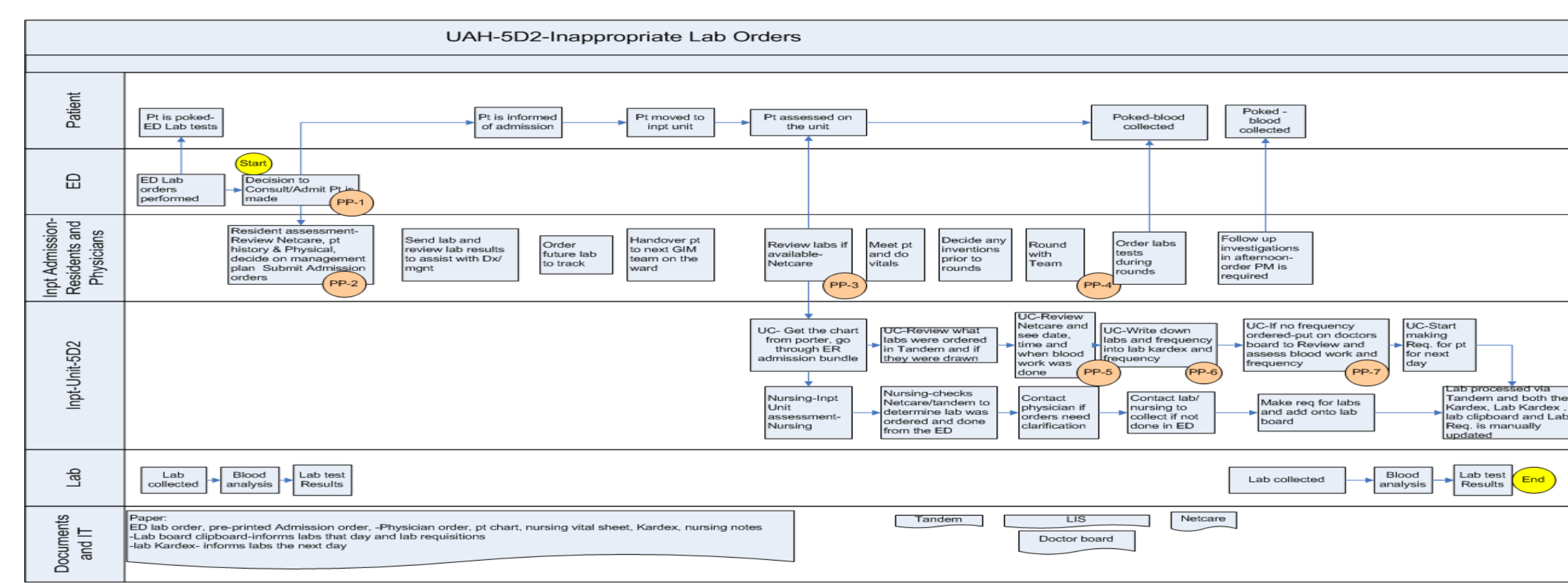
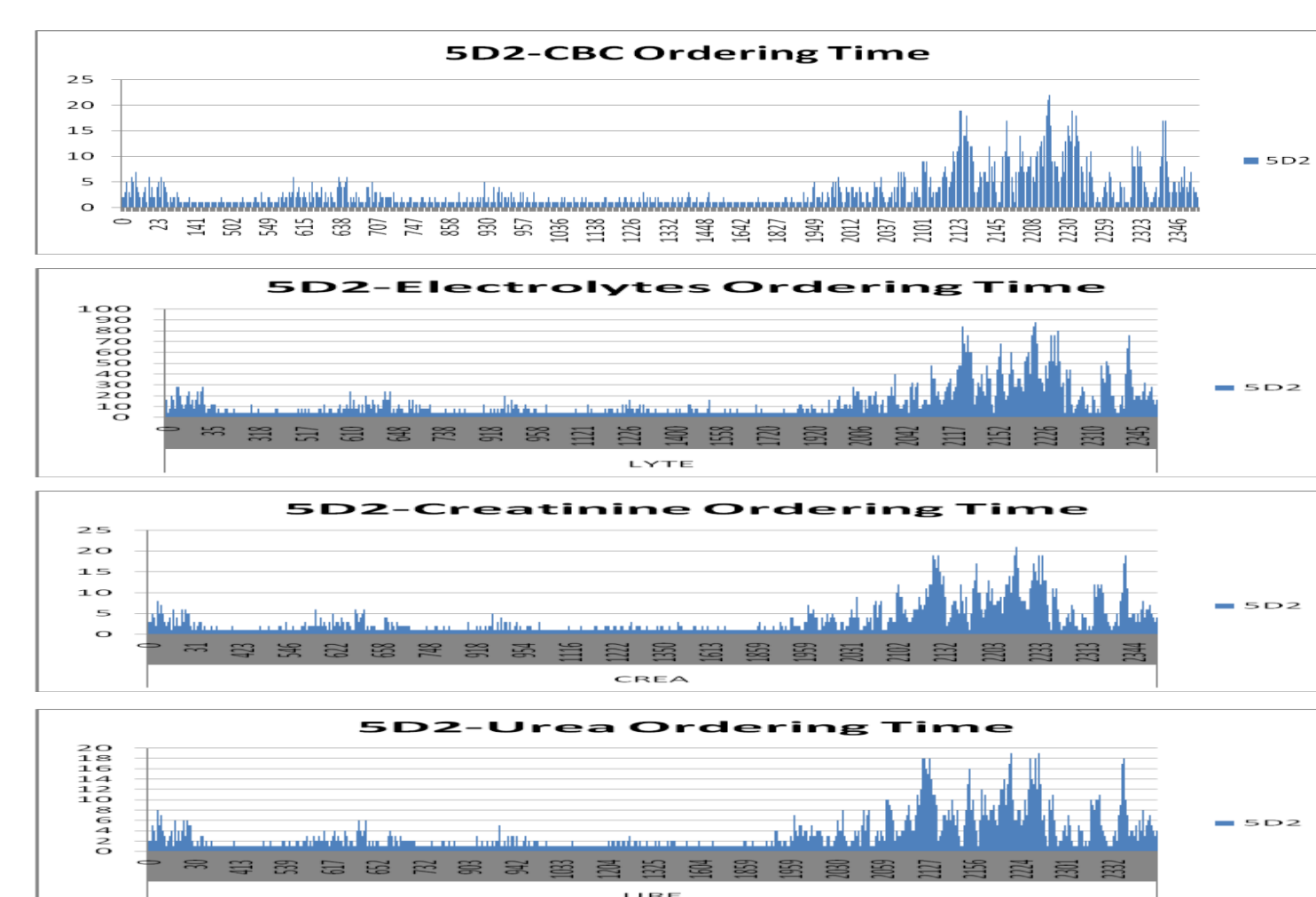
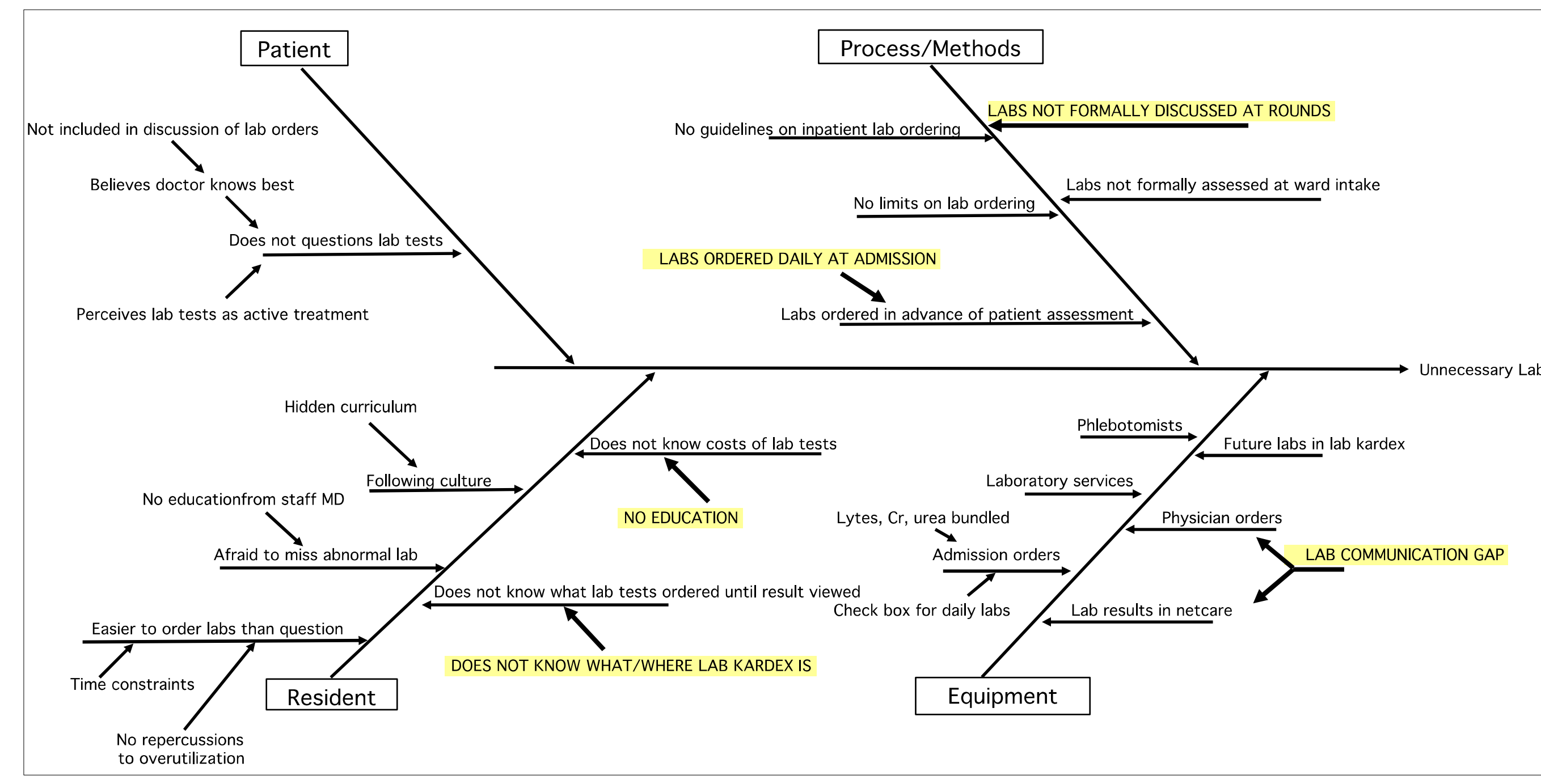
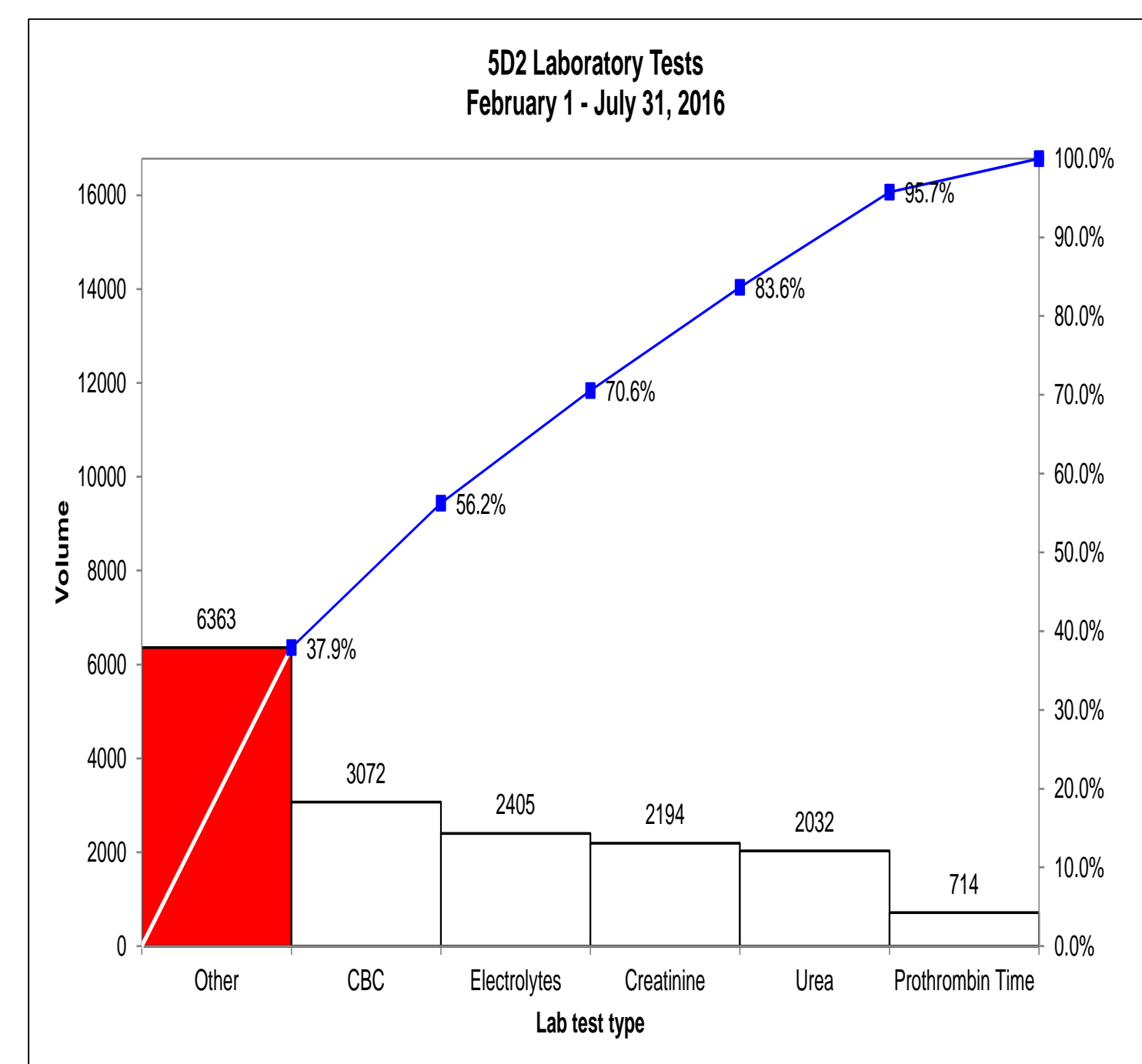
Baseline Data:

Lab data - 6 months: 60.5% of lab tests ordered were CBC, electrolytes, creatinine, urea and prothrombin time
Chart audit - 13 charts: 69% ordered CBC, electrolytes, creatinine and urea daily at admission; 44% of daily orders were indefinite, 44% limited to daily x 3 and 12% daily x 2; 100% of daily laboratory orders included CBC, electrolytes, creatinine and urea; only 1 explicit comment regarding daily blood work in progress notes

Aim Statement: To decrease the total number of CBC, electrolytes, creatinine and urea tests ordered on UAH unit 5D2 by 10% during a six month study period

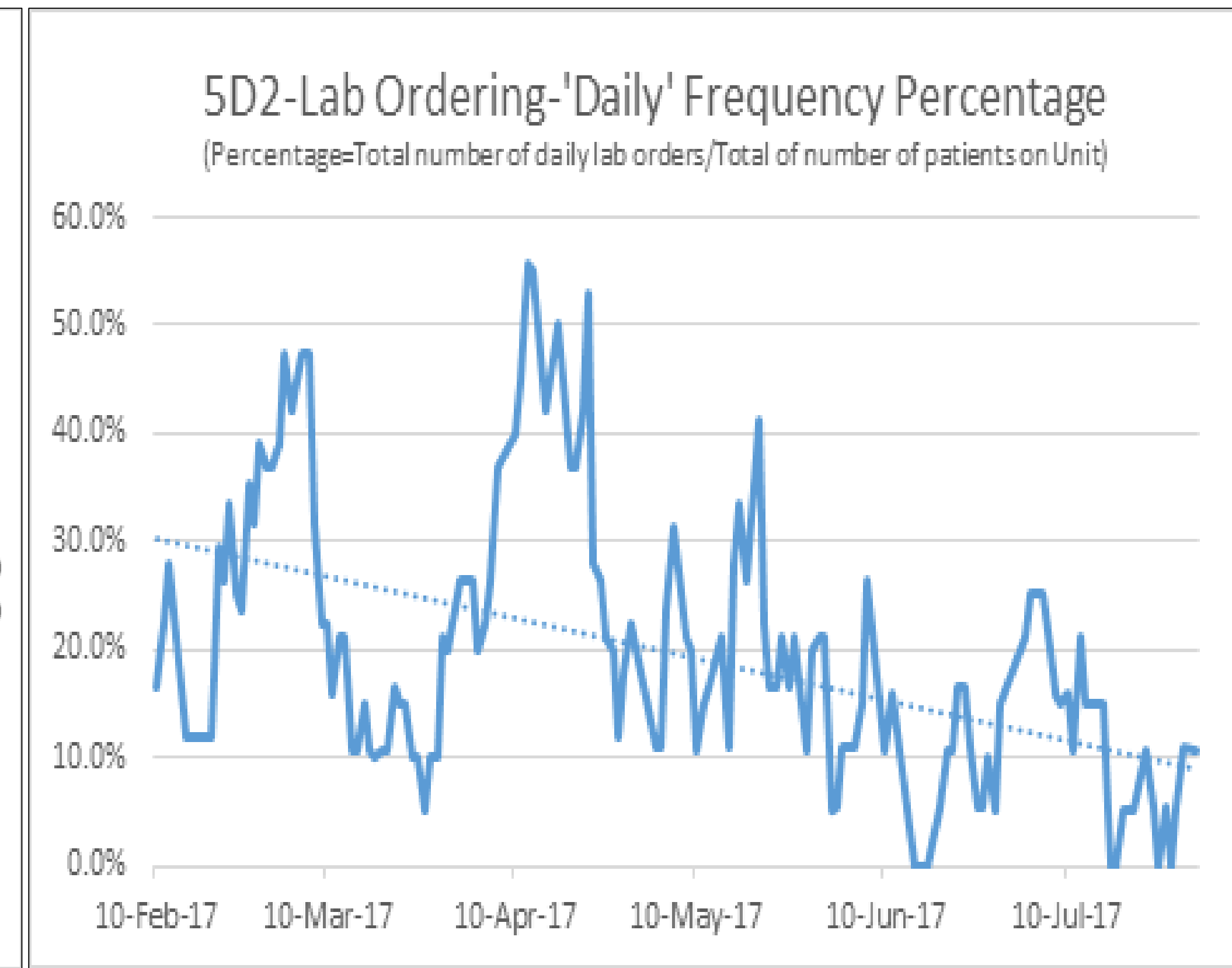
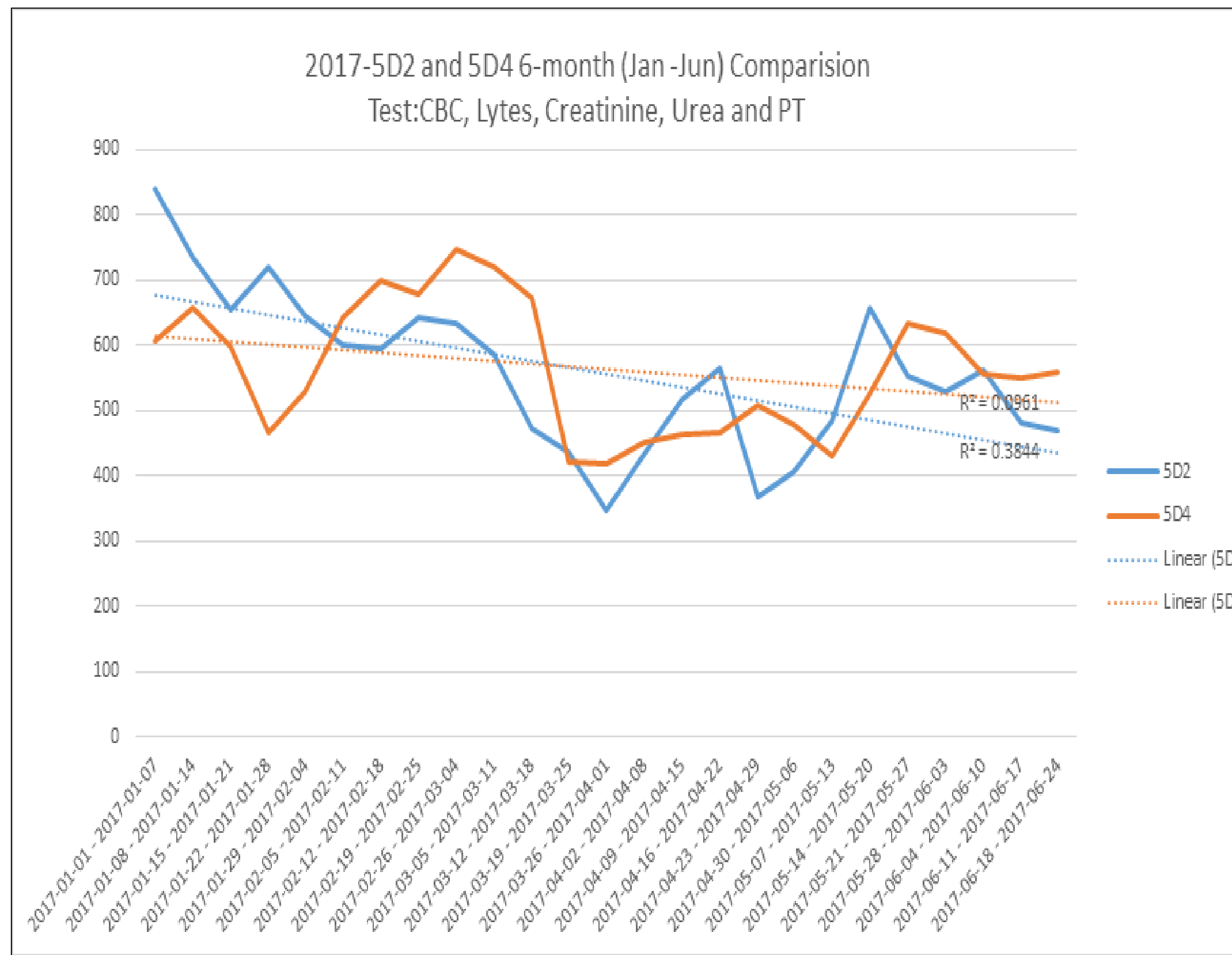
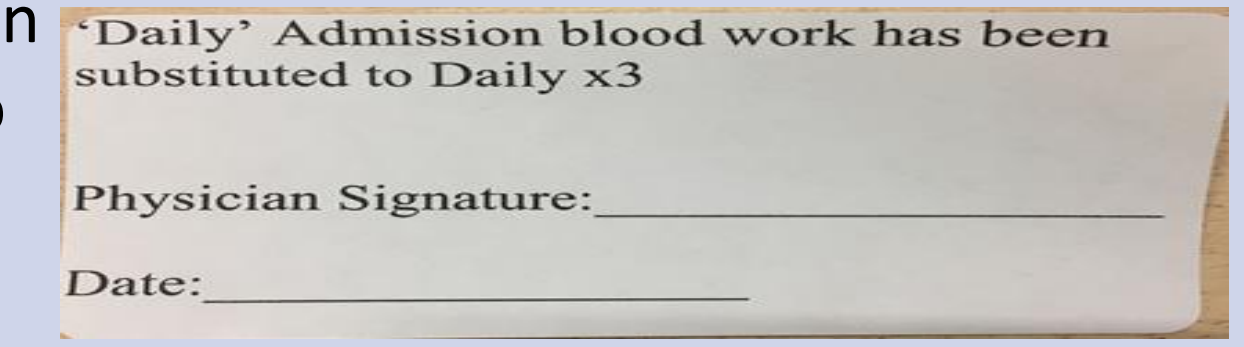
Process Assessment: A literature review provided background information. To understand the current process multiple quality improvement tools were employed

BUILD UNDERSTANDING



Improvement Selection and Implementation Plan: January-June 2017

Gaps	Solutions
Residents are unaware of lab ordering behaviour, practices and system impact	Develop one page information sheet and power point delivered in a formal session by a senior resident or attending physician at the beginning of a resident unit training block. Started Jan 17, 2017 and then every 4 weeks. *Feb 27-April 10, Project Champion did weekly follow up
Unit staff keeps an electronic daily lab Kardex but very few of the medical team are aware	All medical staff will be made aware of what the lab Kardex is (lists lab test ordered and frequency) and the unit staff will print the lab kardex daily (started January 17, 2017) and highlight all daily lab orders on the lab kardex such that the physician can reassess (started March 3, 2017)
No formal lab conversation during rounds	A formal lab conversation will be <u>encouraged only</u> to occur during rounds, and notes charted in the progress notes
Unit staff notified medical team of labs ordered daily x 3 for review after the 3 days has occurred	Upon ward admission, if blood work is ordered daily an auto-substitution label is attached for the physician to review and sign off (started June 7, 2017)
Admission form-Lab tests are checked off and 'daily' is written	Planned updates to the admission form: Unbundle lab tests, remove lab test (urea) and build in the auto-substitution process without a need for auto-substitution label (planned start date November 2017)



ACT TO IMPROVE

Reinforce Ownership, Measurement, & Continuous Improvement: Nov 2017-Update the admission lab order form, spread and share project learning with 3 more UAH GIM units, the Royal Alexandra and Sturgeon Hospitals, and develop a monitoring and measurement plan that sustains awareness

Test	5D2-baseline-Jan to Jun 2016	5D2-PDSA-Jan to Jun 2017	Change
CBC	1192	906	24.00% ↓
Electrolytes	9500	8788	7.50% ↓
Creatinine	2165	2006	7.30% ↓
Urea	1981	1686	14.90% ↓
Prothrombin Time	625	537	14.00% ↓
Total tests	15463	13923	10% ↓
Total cost	\$81574	\$73038	\$8,536 ↓

- A conservative cost saving estimate of 10% for each GIM unit is forecasted
- Approximately \$8500 per unit can be saved over 6 months or ~\$80,000 annually for all GIM units.
- The form update is expected to further decrease both lab test volume and costs.

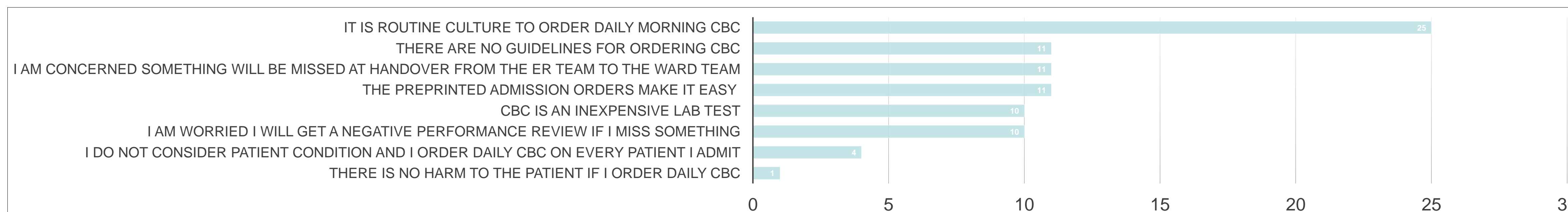
SUSTAIN RESULTS

MANAGE CHANGE

Collaboration & Communication Strategies: Regular 1:1 meetings with the unit manager, mapping session with unit care providers, unit council meeting presentation, laboratory news article, poster presentation at U of A research day and poster at the Alberta Quality Summit

Resident Survey (voice of the customer analysis) (n=38):

- Survey of core internal medicine R1-R3
- 37/38 residents admit to ordering CBC daily at admission in >75% of patients
- 68% always review lab orders when accepting a patient on the ward
- < 30% always review lab orders on daily rounding
- 92% feel inappropriate lab ordering is a problem



SHARE LEARNING

Lessons Learned:

- Cultural change is difficult and requires dedication, persistence and patience
- Control Unit-5D4 also indicated an improvement of 13.6%, demonstrating unintentional spread
- Sharing lab test cost with the residents was eye opening as very few knew what tests cost

References
 1. Choosing Wisely Canada Committee. Internal Medicine: five things physicians and patients should question. Canadian Society of Internal Medicine 2014.
 2. Zhi M, Ding EL, Theisen-Toupal J, et al. The Landscape of Inappropriate Laboratory Testing: A 15-Year Meta-Analysis. PLoS One 2013;8:e78962.