

Reducing Inappropriate Lab Ordering in General Internal Medicine Units at Misericordia Hospital

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Presentation PDF

DEFINE OPPORTUNITY

Background: With the increasing focus on resource stewardship in hospital care, it is important to review proper lab ordering to reduce costs and improve patient experience.

This project is a continuation of an initial project in GIM completed at the University of Alberta Hospital.

Problem Statement: On MCH GIM units, electrolytes, CBCD, Urea, and Creatinine make up 49% of laboratory tests. Upon admission to MCH GIM units, CBCD and basic chemistry are commonly ordered on a repeating daily basis. This includes daily urea (BUN), which has few clinical indications to be ordered on an indefinite daily basis.

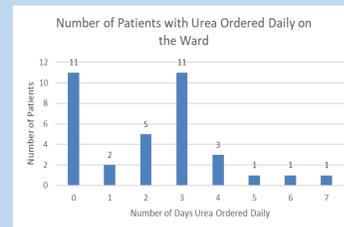
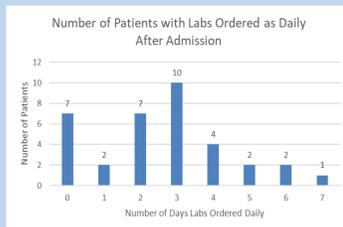
On MCH GIM Units there is no standard process for laboratory test ordering frequency to be reviewed upon admission and during inpatient care. This process increases the number of inappropriate and over utilized laboratory tests which creates system-wide wastes, increases operational costs and negatively impacts patient experience.

Baseline Data:

Lab Data – 1 year: 49% of tests ordered on GIM units 8E, 7E & 7W were CBC, electrolytes, creatinine, and urea.

Test	Baseline MCH 8E, 7E & 7W Jan 2017 to Jan 2018
CBC/CBCD	33878
Electrolytes	69464
Creatinine	16429
Urea	18617
Total Tests	138388
Total Annual Cost	\$759,696

Chart Audit: 63% of patients had one of these tests ordered daily at admission, with 34% indefinitely. 49% had urea ordered daily, with 29% indefinitely. 46% of patients continued to have urea ordered daily on the ward.

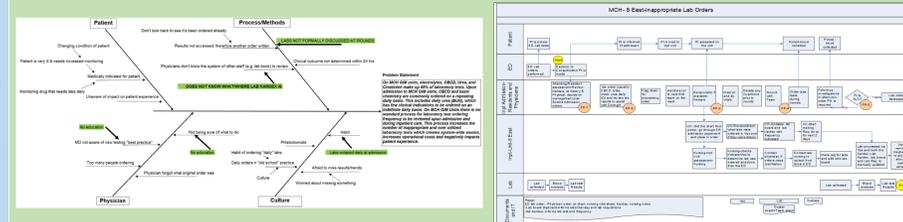


Aim Statement: Nov. 30, 2018

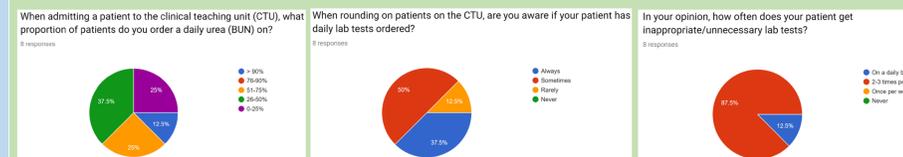
- 35% reduction of total CBC/CBCD, electrolytes and creatinine tests ordered
- 50% reduction of urea tests ordered and when appropriate urea testing is justified 100% of the time.

BUILD UNDERSTANDING

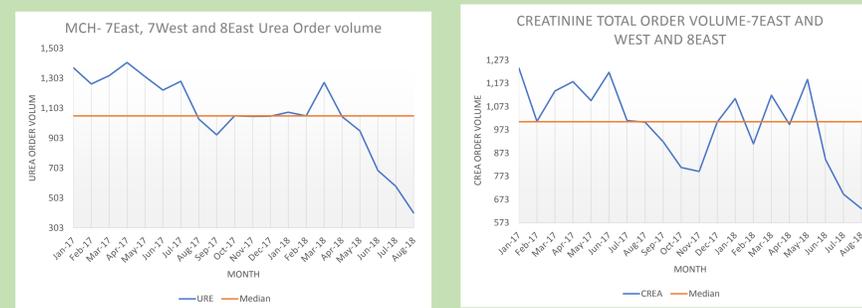
Process Assessment: A literature review was completed to understand clinical indications for ordering blood urea nitrogen (BUN). Process mapping and a cause and effect analysis was used to identify current gaps and future solutions. Based on these solutions, Plan-Do-Study-Act (PDSA) cycles were implemented.



Provider Survey: The results of a provider survey showed that 38% of providers routinely order standard blood work as daily on admission. When assessing patients arriving on the ward, 75% always review which lab tests were ordered on admission but only 50% always review lab order appropriateness during rounds. The most common reason for ordering urea on patients was that it is part of a P7 lab panel, which is a historical lab panel no longer in use. Common clinical indications for ordering urea included renal injury/impairment, suspected GI bleed, and sepsis. A limitation to our survey data was the low response rate of 36%.



Initial Results: Comparing lab volume data from August 2017 to August 2018 showed a 42% reduction in CBC/CBCD, 37% reduction in electrolytes and creatinine, and a 61% reduction in urea orders.



MANAGE CHANGE

Collaboration and Communication Strategies:

-QI team members included a unit manager, unit clerks, laboratory services, a medical student, an attending GIM physician and a QI consultant.

- A meeting and mapping session was held with a unit manager, unit clerk, and supervising physician. Increasing their awareness of why this project is needed, fostering their desire and employing their Knowledge of current state therefore developing interventions co-designed by the QI team.
- Meeting with management was also held to ensure operational leadership support.
- Meeting with the GIM physician team held to share why this project was needed and to obtain their feedback and support.

ACT TO IMPROVE

Improvement Selection and Implementation Plan: August 20, 2018 – November 30, 2018

Gaps	Solutions
Residents are unaware of appropriate lab ordering practices and the impact of inappropriate ordering	Ongoing resident education presented by an attending physician at the beginning of a resident unit training block to enforce appropriate ordering practices and emphasize the importance of providing a clinical rationale for ordering urea (BUN). First education session was on August 14, 2018.
Physicians/NPs are ordering daily labs indefinitely and are unaware of the frequency already ordered	Unit staff will be issued an auto-substitution label that will substitute all daily orders to daily x 3 and ask for physician signature on the change. Physicians will be prompted to reassess the necessity of further lab investigations after 3 days.
Physicians/NPs are ordering Blood Urea Nitrogen (BUN) daily on an indefinite basis when there are few clinical indications to do so	Unit staff will be issued an additional label where physicians must provide a valid clinical rationale before a urea (BUN) order will be processed. An information sheet on clinical indications for ordering urea (BUN) was distributed via email to each physician and placed on each ward for reference.

Outcome measures include total number and cost of CBC/CBCD, electrolytes, creatinine and urea, and total number of daily orders. **Process measures** are the number of urea rationale labels used and number of auto-substitution labels used. **Balancing measures** are ALOS/ELOS and 30 day readmission rate.

SUSTAIN RESULTS

Reinforce Ownership, Measurement and Continuous Improvement:

Analysis of lab data post interventions will start Oct 1, 2018. Total number of CBC/CBCD, electrolytes, creatinine and urea will be measured every 6 weeks using lab order volume data provided by Laboratory Services. Total cost will be calculated from the total lab test order volume utilizing current lab test cost information. Continual resident education at the start of each resident training block will be provided by the physician project lead or designate. Development of a monitoring plan to sustain physician awareness of appropriate laboratory ordering will be discussed at the MCH GIM Division meeting Jan 2019 supporting project impact sustainment.

SHARE LEARNING

Why This QI Project Matters:

To patients: Reducing inappropriate testing saves patients the pain and discomfort of needle draws, while also reducing the risk of infections, irritation, bruising and nosocomial anemia.

To Albertans & the health care system: Reducing inappropriate lab testing can save hundreds of thousands of dollars per year, while reducing the cost delivery burden on hospital & laboratory staff. Appropriate ordering ensures funding is allocated to other areas/programs supporting patient care.

Lessons Learned:

- Physicians were not aware of lab frequency information, or where to find this information. Ensuring information is available and communicated to the entire health care team can improve patient care and reduce care costs.
- Providing a clinical rationale before ordering Blood Urea Nitrogen (BUN) may reduce inappropriate ordering.
- Educating residents on appropriate ordering aids in changing the culture and habits of inappropriate ordering.