Reducing Laboratory Test Ordering Overuse in General Internal Medicine Units at the Grey Nuns Community Hospital

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Acknowledgements: GNCH Medicine Quality Council

DEFINE OPPORTUNITY

Background:
In Canada, laboratory tests are the most common medical activity performed in the healthcare system. It is estimated that 20.6% of laboratory tests in various clinical settings are overused. Approximately 5.9 billion dollars is spent each year on laboratory tests in Canada, as such a continued growth in testing cannot be sustained by the healthcare system. It is critical to ensure appropriate lab ordering in order to reduce healthcare costs and improve patient experience. This project is a continuation of an initial project in General Internal Medicine (GIM) completed at the University of Alberta Hospital.

Problem Statement:
On Grey Nuns Community Hospital (GNCH) GIM units, electrolytes, CBC/CBCD, urea, and creatinine make up 66% of all laboratory tests ordered. Upon admission to GNCH GIM units, CBCD and basic chemistry are commonly ordered on a repeating daily basis. This includes daily urea, which has few clinical indications to be ordered on an indefinite daily basis. On GNCH 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 while often causing iatrogenic anemia.

Baseline Data:
- Lab Data – 15 months: 66% of tests ordered on units 44 and 54 were CBC/CBCD, electrolytes, creatinine, and urea.

MANAGE CHANGE

Collaboration and Communication Strategies:
- Quality Improvement (QI) team includes an Executive Director, Program Managers, Unit Managers, Unit Clerks, Laboratory Services, a Medical Student, a Resident, an Attending GIM Physician and a QI Consultant.
- An initial meeting and ordering session was held with the QI team, increasing their awareness of why this project is needed and to obtain their knowledge of current process in order to understand and identify areas of opportunity.
- A second meeting with the QI team was held to discuss the key interventions that will be implemented and how they will be carried out. Consensus determined interventions that would be used.

ACT TO IMPROVE

Improvement Selection and Implementation Plan:
Target Units: 44 and 54
September 1, 2019 – December 31, 2019

SUSTAIN RESULTS

Reinforce Ownership, Measurement and Continuous Improvement:
- Analysis of lab data for PDSA demonstrated a positive effect to urea test utilization.
- For PDSA2, we recommend to scale and spread to units 51 and 53 to develop a monitoring plan to sustain physician awareness of appropriate laboratory test ordering and order frequency. Also, to further encourage physicians to reduce the ordering of CBCD where appropriate.
- Continual resident education will occur at the start of each resident training block.
- Spread and share project learning with other hospitals in Alberta.

SHARE LEARNING

Why This QI Project Matters:
- To patients: Decreasing inappropriate laboratory blood tests reduces patient discomfort, anxiety, stress and bruising, rates of nosocomial anemia, and length of hospital stay.
- To Albertans & the health care system: Decreasing inappropriate laboratory blood tests can save hundreds of thousands of health care dollars per year, reducing labour burden on hospital and lab staff, allowing resources to be allocated to other areas/programs.

Lessons Learned:
- Physicians were not aware of lab order frequency, or where to find this information. Providing opportunities to review lab order frequency with residents and attending physicians on a regular basis is a key factor in reducing inappropriate test ordering.

References:

Results:
Comparing urea ordering volume from January to December 2018 and 2019 shows a 48% reduction in the total number of urea tests ordered on Units 44 and 44. For PDSA1, in December 2018, GIM education was provided which resulted in a sharp reduction. For PDSA2, a total of 500 urea tests were ordered on Unit 44 and 54 from Sept to Dec 2019 for a total estimated cost of $5200 as compared to 1064 tests from July to Dec 2018 for a total estimated cost of $5120, showing a reduction of 56% urea tests ordered and a cost avoidance of $2820. When combined with the reduction in urea tests ordered in PDSA1, this resulted in a cost avoidance of $5865. Further, the graph indicates a sustained change from January 2020 to August 2020 for both units.

For PDSA2, comparing CBCD annual order volume from January to December 2018 and 2019 indicated a 16% increase in CBCD ordering.

Process measure – use of auto-substitution labels.
- Number of auto-substitution labels used varied weekly during Sept-Dec 2019, suggesting that some physicians may require further awareness regarding daily orders on admission.
- No data was recorded for the weeks of Dec 22 and Dec 29.

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Lessons Learned:
- Physicians were not aware of lab order frequency, or where to find this information. Providing this information and having a standard formal process to review frequency can improve patient care and reduce costs.
- Educating medical students, residents and attending physicians on best practice guidelines plays a key role in changing the culture and habits of lab test ordering overuse.