Background and Problem

In the Edmonton zone (EZ) in Alberta, Canada laboratory testing has increased by 1.4 million tests in the last 4 years (2014 to 2018) which is the highest annual increase in the province. Additionally, approximately $3.6 million dollars were spent on Urea testing which is about 48% of the provincial urea total (AHS Annual Report, 2016-17 and Provincial Laboratory Services) and urea ordering is higher in the hospital setting.

In response to the steady growth in lab testing, 4 separate quality improvement (QI) studies were undertaken (started Feb. 2017) by the Edmonton Zone Medicine Quality Council (EZMQC) to explore the phenomenon of laboratory test ordering trend (LTOO) in a paper based ordering process to identify salient intervention components in various EZ Alberta Health Services(AHS) and Covenant Health (CH) teaching hospitals (University of Alberta Hospital (UAH), Royal Alexandra Hospital (RAH) and the Misericordia Community Hospital(MCH)) general internal medicine (GIM) wards.

Baseline data: Where is the opportunity?

- 97% of residents order unnecessary lab tests at least once per week
- 97% of residents admit to ordering CBC daily at admission in >75% of patients
- 95% of residents order unnecessary lab tests at least once per week
- 97% of residents admit to ordering CBC daily at admission in >75% of patients

Aims:

By: Dec 31, 2018, identify key intervention components from hospital admission that discharges that support a reduction in LTOO for CBC, CBCD, urea, creatinine and lytes along with laboratory test order frequency

Measurement:

Outcome measure: Number of CBC, CBCD, urea, creatinine and lytes per month and cost per test/month

Process measure: Number of auto-substitution labels used per month, Number of Urea justification labels used per month, Number of ALC stickers used per month

and the number of resident/physicians trained per month

Balancing measure: Percentage of stat lab tests ordered post admission per month (tracked in Lab services), In-hospital mortality rate, ALOS/ELOS ratio and 30 day readmission

Methodology and Methods

All QI studies employed the model of improvement framework, Donabedian conceptual model, and to support the people side of change both the Translational behavioral change framework with the ACOSE (Awareness: Change of Action: Reinforcement) model were used. A literature review, QI tools, questionnaires and prospective chart audits were conducted to determine variable relationships and to develop causal inferences supporting intervention adaptation to each hospital local context. Results were analyzed using descriptive statistics and an estimated cost calculation (reference median cost multiplied by total test volume count).

Key Sequenced Intervention Components Identified

- Updated admission order form for understanding lab tests, videos and frequency limits, removed urea and added an area for any lab test to be written (not restricting lab ordering)
- Resident and Attending LTOO education: Presentation and handout Encourage-No daily ordering upon admission
- 6. Ward Lab Kardex highlighted and given to physician team and 7. lab test frequency formally added to rounding conversation.
- 97% residents provide evidence-based care
- 95% residents ordered unnecessary lab tests at least once per week
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- 97% of residents admit to ordering CBC daily at admission in >75% of patients

Key Findings Post "12 Months:

- Volume of test reduced: ~45,000 estimated future test reductions: ~2000
- Lower order frequency: ~20% reduction
- Estimated future cost/test avoidance: ~$10,000.00 per GIM ward
- No observed negative effect to any balancing measures

Lessons Learned

- Allocation consonance at the QI team level is not possible, as residents and physicians correlate between hospital GIM wards and other hospitals within the EZ.
- Contamination arising from sequential multifaceted intervention was at the hospital/health system level.
- Why this Quality Improvement Matters

- Reducing LTOO means real healthcare cost delivery burden which supports funding other life programs to further enhance patient care.

QAQI Impact:

- Choosing Wisely:

- • Attending and resident education: Presentation and handout
- • Kardex highlighting and giving to physician team
- • Lab test frequency formally added to rounding conversation

- Unobserved negative effect to any balancing measures

References


Zhi, Ding, Theisen-Toupla, Melendez-Rosado et al., 2016; Yarbrough, et al., 2016; Zhi, Ding, Theisen-Toupla, Melendez-Rosado et al., 2016

Additional information and resources can be found at: https://www.albertahealthservices.ca/your-care/services/programs/quality-safety-and-continuous-improvement/continuous-improvement/quality-and-safety-framework/

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