Consultant, Laboratory and Information Services. Data was analyzed using run chart rules. Intervention: a) Removed rarely used tests from electronic nursing order sets b) Uncoupled order panels c) Developed six presentation-based medical directives with appropriate blood testing. d) Staff education Family of measures Outcomes: percent of targeted uncoupled test per 1000 ED visits for each of AST to ALT, GGT to ALT, aPTT to INR, and CK to troponin; Total number of blood tests ordered per 1000 ED visits Process: number of "separate and hold" tubes; number of blood tubes used in the ED; proportion of staff attending education Balancing: volume of blood drawn; LOS **Evaluation/Results:** Outcome: Estimated relative reduction in proportion of all uncoupled tests per 1000 ED visits by: • 33% AST/ALT • 52% GGT/ALT • 50% CK/troponin •18% aPTT/INR Total number of lab tests per 1000 ED visits decreased by 7.7% (5742 to 5331). Evidence of special cause variation on all outcomes. Process measures: 1. 100% reduction in weekly "Separate and Hold" tubes (56 to 0). 2. Monthly total of blood tubes used in the ED decreased by 2.8% (11620 to 11300) 3. Attendance pending. Balancing measures: Monthly average volume of blood drawn decreased by 1.4L(2%) from 50.4L to 49.0L; LOS pending **Discussion/Impact:** A multi-pronged intervention resulted in a decrease in blood testing in the ED. We achieved the sub-aim of reducing targeted blood tests and are on track to achieve the overall aim of total lab reduction in the ED by April 2020. Final interventions to be implemented in the coming months include changes to the ED paper record and replacement of the paper add-on order process with an electronic ordering tool. Complete data will be available by April 2020. This intervention is scalable and has the potential to reduce costs and preventable harm to patients.

Keywords: choosing wisely, laboratory testing, quality improvement and patient safety

LO37

Reducing hemolysis of coagulation blood samples in the emergency department

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Background: Hemolysis of blood samples is the leading cause of specimen rejection from hospital laboratories. It contributes to delays in patient care and disposition decisions. Coagulation tests (prothrombin time/international normalized ratio [PT/INR] and activated partial thromboplastin time [aPTT]) are especially problematic for hemolysis in our academic hospital, with at least one sample rejected daily from the emergency department (ED). **Aim Statement:** We aimed to decrease the monthly rate of hemolyzed coagulation blood samples sent from the ED from a rate of 2.9% (53/1,857) to the best practice benchmark of less than 2% by September 1st, 2019. **Measures & Design:** Our outcome measure was the rate of hemolyzed coagulation blood samples. Our process measure was the rate of coagulation blood tests sent per 100 ED visits. Our balancing measure was the number of incident reports by clinicians when expected coagulation testing did not occur. We used monthly data for our Statistical Process Control (SPC) charts, as well as Chi square and Mann-Whitney U tests for our before-and-after evaluation. Using the Model for Improvement to develop our project's framework, we used direct observation, broad stakeholder engagement, and process mapping to identify root causes. We enlisted nursing champions to develop our Plan-Do-Study-Act (PDSA) cycles/interventions: 1) educating nurses on hemolysis and coagulation testing; 2) redesigning the peripheral intravenous and blood work supply carts to encourage best practice; and 3) removing PT/INR and aPTT from automatic inclusion in our electronic chest pain bloodwork panel. **Evaluation/Results:** The average rate of hemolysis remained unchanged from baseline (2.9%, $p = 0.83$). The average rate of coagulation testing sent per 100 ED visits decreased from 41.5 to 28.8 (absolute decrease 12.7 per 100, $p < 0.05$), avoiding $4,277 in monthly laboratory costs. The SPC chart of our process measure showed special cause variation with greater than eight points below the centerline. **Discussion/Impact:** Our project reduced coagulation testing, without changing hemolysis rates. Buy-in from frontline nurses was integral to the project's early success, prior to implementing our electronic approach – a solution ranked higher on the hierarchy of intervention effectiveness – to help sustainability. This resource stewardship project will now be spread to a nearby institution by utilizing similar approaches.

Keywords: laboratory testing, quality improvement and patient safety, resource stewardship

LO38

Reducing inappropriate urine culture testing in the emergency department

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Background: Urinary tract infections (UTI) are a common emergency department (ED) presentation. Urine cultures (UC) are frequently ordered to confirm the diagnosis, however, it can be challenging to differentiate between a true infection and asymptomatic bacteriuria (ASB) which does not generally benefit from antibiotics. This over-treatment of ASB leads to serious adverse side effects, growing antimicrobial resistance and increased healthcare costs. By reducing inappropriate ED urine culture testing, we can concomitantly avoid the false positives that contribute to this large-scale problem. **Aim Statement:** We aimed to reduce ED urine culture testing at Credit Valley Hospital, a large community hospital based in Mississauga, Ontario by 30%, from a baseline average of 97 cultures per 1000 ED visits in 2017, to 68 cultures per 1000 ED visits by year end 2019. **Measures & Design:** Multiple PDSA cycles were ran with our multi-disciplinary ED team. Our interventions to encourage rational urine culture testing are three-fold, including (1) medical directive optimization (removal of routine sending of UC), (2) individualized physician feedback and (3) physician education with introduction of a clinical decision aid. Our outcome measure is rate of UC per 1000 ED patient visits with a balance measure of rate of 30-day ED return visit of hospital admission for patients with a UTI. **Evaluation/Results:** Despite a parallel surge in ED volumes, we observed a significant decrease in urine culture testing, from an annual average of 97 cultures per 1000 ED visits to 60 cultures per 1000 ED visits in 2019 year-to-date. There was no increase in the rate of ED 30-day return visit or admission for UTI or a diagnostic equivalent. **Discussion/Impact:** Our multipronged approach effectively decreased the rate of UC testing during the study period. ED physicians provide higher quality care with judicious use of resources to guide diagnosis and management. Active ongoing interventions include our transition to a 2-step UC order protocol (uncoupling urinalysis with culture) using BD vacutainer urine collection products, which will allow for 48 hour storage of uncompromised urine. Further work will leverage our knowledge and experience with optimizing urine culture testing to other culture specimens.

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