Background, Problem Statement and Goal Statement: In the Royal Alexandra Hospital/Lois Hole Hospital (RAH/LHH), pregnant women with suspected or confirmed preeclampsia are ordered “PIH” (pregnancy induced hypertension) labs, which are bundled to conventionally include CBC, ALT, AST, creatinine, uric acid, fibrinogen, PT/INR, PTT, D-dimers, electrolytes, and urea. Most of these blood tests are listed in the SOGC guidelines to investigate for preeclampsia; however, they are not of equal value. For instance, some blood tests are: 1) not cost-effective such as fibrinogen, PT/INR, PTT, and D-dimers, esp. if done once recently and are normal; 2) not necessary to repeat once they are positive, such as uric acid and urine protein to creatinine ratio; 3) not usually helpful, such as electrolytes; or 4) not necessary at all, such as urea. About half of the physicians, residents and nurses surveyed agreed that some labs ordered do not impact on the patient management.

Problem: Currently, the Royal Alexandra Hospital (RAH) has a panel for pregnancy-induced hypertension (PIH) that comprises daily laboratory tests that are ordered for both suspected and confirmed cases (~125 suspect patients/month with 63 patients/month confirmed for preeclampsia). The laboratory tests can be ordered as often as 3 times per day. This leads to further diagnostic testing, increases laboratory costs and decreases the quality of the patient experience. Additionally the SOGC (national society of obstetricians) advises against use of the term PIH since it is misleading.

Baseline data: Jan to April 2017

<table>
<thead>
<tr>
<th>Tests</th>
<th>Units</th>
<th>Total Volume (in 4 months)</th>
<th>Total Cost (in 4 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIH Labs* (see above)</td>
<td>83W, 85WO, 84E, 84S, BASI</td>
<td>10,462</td>
<td>$60,350</td>
</tr>
</tbody>
</table>

Aim: Dec 31, 2017 – Decrease 10% of laboratory tests ordered for suspected or confirmed preeclampsia patients in the RAH/LHH.

Process Assessment: A cross functional process map, a Gemba walk, force field analysis and a cause and effect analysis assisted in the identification of current process strengths and gaps. Project team along with Clinical Biochemists reviewed literature and current best practices to aide in the development of a standard laboratory approach.

PDSA measurement plan

Outcome measures: No further use of the term “PIH” and a 10% reduction of labs ordered for preeclampsia.

Process measures: Chart review of lab test ordering patterns.

Survey of stakeholders of the use of the job aides and suggested lab ordering algorithm for feedback/next steps.

Reinforce Ownership, Measurement, & Continuous Improvement: Continue measuring laboratory use data and correlate with our interventions to determine effectiveness. Ongoing education of residents, nurses, and physicians regarding use of the algorithm. Considering broadening use of the preeclampsia investigation algorithm to the Edmonton Zone.

Lessons Learned:

- Laboratory testing data is available 6 weeks after intervention so there is a delay in formally measuring impact.
- Much of laboratory test ordering is cultural as opposed to being based on what is needed to make clinical decisions for a patient.
- Care providers are often unaware of laboratory test costs, and knowledge of the cost can assist in making test ordering more effective and applicable to the patient.
- Care teams are amenable to job aides, especially pocket cards. Job aides posted on the wards significantly impact practice and ordering.