

The Challenge of Sustaining Improvement in Blood Test Utilization for Stable Hospitalized Patients

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Quality and Safety in Hospital Medicine

Background

Standing orders for daily blood work on hospitalized patients is common practice, even in the face of clinical and lab stability. This wasteful practice is not only costly to the system, it also has adverse effects to the patient including pain, inconvenience and the risk of developing hospital acquired anemia.

Aim

The aim of our Hospitalist team was to use quality improvement strategies to reduce the frequency of unnecessary blood tests by 5% over a period of 6.5 months on medically stable patients under our service.

Improvement

After preliminary chart audits to determine the frequency of blood tests ordered on our ward, we used root cause analysis, process mapping and stakeholder engagement to identify key areas to target for intervention. We focused our efforts over two Plan Do Study Act (PDSA) cycles at the following three stages of phlebotomy ordering process: 1) on admission, reassess previous orders made by Emergency and Critical Care physicians, 2) review recurring blood work at inter-professional bullet rounds and 3) upon cancelling a recurring written blood work order, have the physician inform the nurse and later verify the cancellation in the electronic system. The first stage was targeted during the first PDSA cycle, the second and third stages were targeted during the second PDSA cycle.

Measures

We chose the primary outcome to be the number of complete blood count (CBC) labs ordered per patient per week over 6.5 months. Over the same period we also followed the frequency of creatinine and electrolyte labs ordered per patient per week in order to account for other causes of diagnostic blood loss other than CBC tests. The frequency of tests were collected retrospectively for each patient over 1 week intervals using the electronic patient record. This data was validated against the Phlebotomist's log.

Project Impact

We did not achieve our goal of reducing unnecessary blood tests by 5% on our medically stable patients. The median frequency of blood draws over the 6.5 month period was calculated as 0.53 draws per patient per week. Following the first PDSA intervention, blood draw frequency declined to 0.38 by week 10 and then declined further to 0.27 at week 12 following the second PDSA intervention. However, this initial successful decline was not sustained. Phlebotomy orders began to increase after week 12 which coincided with the loss of our project champions from the ward. Applying run chart rules we see that we did not achieve a shift or trend, nor did the data generate a significant run.

Lessons Learned

Using QI tactics we were able to confirm the redundancy of blood draws in our patient population and identify steps in the phlebotomy ordering process to target for intervention. Through our efforts, which focused on improving awareness and communication between physicians and nurses, we were able to achieve modest temporary drops in blood draws. However, our very modest and short-lived impact highlights the challenge of sustaining improvement using educational tactics in a system where health care providers are constantly changing. The rise in phlebotomy orders after week 12, when we had lost all of our original QI team members, verifies how essential project champions are to the sustainability of QI initiatives.

Forced functions may be essential to achieve long lasting changes for a system in flux. For this project, automated electronic blood reduction reminders, forced review of orders for transferred patients, and automated time limitations on standing orders could further solidify our initiative. A combination of interventions that incorporate education, new requisition design, advanced computerized ordering systems, and funding incentives are needed to maintain the reductions in unnecessary lab tests in the long-term. In order for these more time-intensive, costly, system-wide changes to take place we need to broaden and improve our stakeholder engagement to encompass the entire division of Internal Medicine, Critical Care and Emergency Departments.

