Improving Turn Around Time for Chemistry Results

The Problem
The Clinical Laboratory at BID Cancer Center Needham provides on-site testing, aimed at supporting the safe administration of chemotherapy. Testing is typically performed when a patient first arrives, prior to their clinic visit and infusion. Any lab testing not performed on-site is sent to the BIDMC Main Campus via courier four times a day.

It was recognized during the planning phase for the BID Cancer Center that the workflow within the laboratory needed to provide test results, or have turn-around-times (TAT) within one hour of collection. We identified that the time necessary to allow serum samples to clot prior to centrifugation could prevent us from regularly achieving this quality goal. Patients on blood thinners or in a hypocoaguable state could take much longer to clot. In anticipation, all Chemistry laboratory tests were validated using the standard serum red-top tubes, but also lithium heparin green-top plasma samples.

As patient volume grew, nurses identified an extended TAT for Chemistry laboratory results (K, Na, Mg, Cr, etc.). These results are necessary before ordering chemotherapy for patients waiting in the Cancer Center Infusion room. This resulted in further delays for other patients, as the infusion room would begin to back up.

Aim/Goal
The lab and nursing leadership identified that switching to the lithium-heparin plasma would omit the wait time for serum samples to clot and collaborated on how to implement this into the standard workflow to improve TATs.

The Team
- Dr. Nicole Tolan, PhD, DABCC - Medical Director of Clinical Chemistry
- Manny Alves, BS, MT - Laboratory Manager
- Gina McCormack, MS, MBA, MT(ASCP) - Operations Director
- Holly Dowling, RN, BSN, OCN - Clinical Advisor BID Cancer Center Needham
- Tawana Brooks – Practice Manager
- BID Cancer Center Needham Nursing and Laboratory Staff

The Interventions
- The lab and nursing leadership evaluated the processes involved in collecting a green-top tube and reviewed the validation of manufacturer’s specifications and accuracy in plasma compared to the standard red-top serum tubes.
- Over a period from June to July, staff was educated on collecting a 3.5mL green-top lithium heparin tube with each order for chemistries.
  - A standard red-top serum tube was also collected for laboratory testing performed at the main campus as well as for any send out tests.

The Results/Progress to Date
- Within two months, this intervention increased the majority of tests resulted within 1 hour of collection. At baseline (May-June), only 22-30% of samples were resulted within 1 hour prior to our intervention. This significantly increased to 83-90% for plasma samples. Additionally, this improvement has been maintained from August-December and will remain a quality indicator for laboratory TAT.

Lessons Learned
- During this process, we identified that because the printed order does not specify that a green-top tube is required, periodic reminders to collect both tubes were necessary. The standard serum red-top tubes are collected for any add-on testing providers often order after the infusion treatment.
- These add-on tests are not easily parsed from the data above and likely represent the samples with TATs that are longer than 3 hours.
- In this process, it was also identified that grey-top preservative tubes for Glucose testing was no longer necessary, given the very short time to result.

Next Steps/What Should Happen Next
- At monthly meetings with Cancer Center and Laboratory leadership, feedback is shared about how the process is working and if any unexpected delays have occurred.
- This offers an example for improving TATs in other infusion/clinical areas.

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