

CASE STUDY:

> Leaning Toward Laboratory Efficiency

By Linda Miller

The laboratory at Marin General Hospital in Marin County, CA, serves the 250-bed trauma hospital as well as a large outreach community. The lab is more than 50 years old, consisting of core lab, processing, dispatch, blood bank and microbiology departments. Prior to the conversion of the lab to work cells, the core lab was further divided into departments—hematology, chemistry, special chemistry, coagulation and urinalysis.

Ongoing Problems

All specimens from the main hospital, whether routine or stat, cycled through dispatch where they were received, processed and centrifuged, if needed. Unfortunately, this process resulted in lengthy report times for morning rounds; often, the morning lab work would not be completed before 8:30 a.m. This resulted in many phone calls from the floors looking for results of specific patients who were being seen by their physician. The physicians were frustrated because they were looking for results from specimens that had not been analyzed or, in some cases, even received by the lab.

Emergency room (ER) turnaround times from receipt to result averaged 73 minutes. The variation from specimen to specimen (with the same tests ordered) varied. Typically, ER staff would draw five or six blood tubes (rainbow draw) and send them to the lab for centrifugation, in the event the blood was needed at a later time.

We processed unordered tubes because of the extended centrifuge time of the specimens, believing that pre-processing would save enough time to offset time wasted by processing specimens that

would never be ordered. If the specimens were needed later, the lab staff would spend time looking for the specimens. Additionally, there were delays in processing the specimens because they were either on a rack waiting to be spun (centrifuging 10-15 minutes), waiting to be unloaded or waiting for pick up.



← The StatSpin Express® 4 centrifuge from Iris Sample Processing.

Partnering for Productivity

Physicians, nursing floors and ER were all dissatisfied with the lengthy turnaround times for lab work. The lab was frustrated by the number of phone calls that interrupted workflow and further delayed patient results. When a large volume of outpatient business was added, the service to the ER and inpatients suffered, resulting in more frustration from the ER and the lab, as well as additional phone calls and interruptions.

The lab requested the assistance of Becton, Dickinson and Company (BD), which helped to transform the laboratory by using the principles of Lean-Sigma. One major change during this process was the relocation of sample processing from dispatch to adjacent to the equipment. The use of one-piece flow (where each specimen is dealt with separately, without anticipating or waiting for another specimen to add to the run) eliminated batching; therefore, a smaller centrifuge could be used. Inconsistent turnaround times from receipt to result

dropped dramatically from 73 minutes to a consistent 28 minutes.

Compact, portable and affordable, the StatSpin Express® centrifuge produces an acceptably spun sample in three minutes.

In addition, specimens were no longer waiting for processing or analysis. Assistants were loading and spinning the samples as they were received as well as loading analyzers with the spun specimens.

Process Revolution

The StatSpin Express® centrifuge (Iris Sample Processing, Westwood, MA) was at the heart of the transformation. Compact, portable and affordable, the StatSpin Express centrifuge produces an acceptably spun sample in three minutes. Typically, three or four StatSpin centrifuges are kept at the workstations to eliminate waiting. The lab has also purchased StatSpin Express centrifuges that produce platelet-poor plasma for coagulation testing.

BD assisted in the staff training and implementation of the one-piece flow, the design of the work cells, as well as the pilot studies to substantiate the effectiveness of this new plan. Staff education was also essential to facilitate an easy transition. Using the StatSpin Express, the initiation of workflow modifications ensured that the work practice would also change.

The lab can now process up to a million tests with the existing staff with half of the volume from outpatients. The conversion to a lean lab enabled retention of the outpatient business as well as continued excellent service to inpatients and emergency patients. ■

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