

IMPROVED TURNAROUND TIME WITH LEAN PROCESSES AND EFFICIENT AUTOMATION

Laboratory Profile

- › 1,000-bed hospital located in Izmir, Turkey
- › Provides uninterrupted 24/7 service (inpatient, outpatient and emergency services)
- › Employs two biochemistry specialists and 20 operators
- › Capacity to process five million biochemistry and hormone tests annually
- › Routine Clinical Chemistry Laboratory: Power Processor core automation system with two centrifuges, recapper, automated 1020-tube room temperature stockyard, one AU5821 clinical chemistry system, one AU5811 clinical chemistry system and two UniCel® DXI800 immunoassay systems
- › Additional system: AutoMate 2550 sample processing system



Like most hospitals, Dokuz Eylul University Faculty of Medicine Hospital's capacity and demand for testing services is on the rise. Therefore, laboratory efficiency has become more important than ever. Recently, the facility took aggressive steps to adopt LEAN processes and consolidate testing services, where possible. Fortunately, this hospital chose state-of-the-art automation and equipment solutions from Beckman Coulter, making their important goals a reality.

The First Step: Adopting LEAN Laboratory Practices

This hospital's LEAN journey began in November 2012, when the Emergency and Clinical Chemistry Unit first started using LEAN laboratory practices to improve its end-to-end processes. In 2013, those efforts paid off when the Emergency and Clinical Chemistry Laboratories were successfully restructured and consolidated.

This dramatic consolidation was made possible by introducing a core automation system, which has led to a bounty of far-reaching benefits.

“Since we began using the automation system for both routine and STAT samples, we were able to eliminate the need for manual centrifugation. Employing an automated, 1020-tube, room temperature stockyard also facilitated access to patient samples for dilution, repeat and reflex testing. Therefore, in spite of a 14% hospital capacity increase, we were able to decrease our number of instruments, which reduced our operator workload, costs and turnaround time (TAT),” said Zubeyde Erbayraktar, laboratory supervisor and associate professor.

Using LEAN Tools to Identify Wasteful Steps

“During the tender preparation, we created a detailed workflow analysis of our pre-analytical, analytical and post-analytical processes, and we had to make tough choices in order to achieve a LEAN laboratory. Through this process, our local Beckman Coulter team provided a LEAN Score Card, which helped us evaluate all our process steps and determine those that were wasteful,” said Erbayraktar.

Using this tool, the hospital realized it could benefit from consolidation, by integrating the operation of emergency and routine biochemistry laboratories.

“For continuous improvement of the laboratory function, we targeted all steps that extended the wait time in the analytical process and identified all risk-bearing processes that could be open for medical intervention, plus those that could pose a risk for biological hazard,” added Erbayrakta.

Laboratory Goals	Benefits of Laboratory Consolidation with Automation		
Reduce Wasteful Steps	Using the Beckman Coulter LEAN Score Card tool, the laboratory decreased its wasteful steps from 44 to 21 (between November 2012 and May 2014). As a result of the improvements, the laboratory’s LEAN Score increased from 48% to 75%.		
Improve Turnaround Time	Tests	November 2012	May 2014
		Average TAT in Minutes	
	TSH	208	105
	Troponin	99	55
	Potassium	128	74
Glucose	142	80	
Increase Productivity	Using the stockyard, the laboratory can better facilitate dilution, repeat and reflex testing due to easier access to patient samples.		
	Although hospital capacity has increased by 14%: <ul style="list-style-type: none"> > Laboratory consolidation was achieved with a small number of instruments > Operator workload was reduced > Costs were decreased 		

Consolidation and Automation Leads to Impressive Results

After the transition to automation, the hospital noticed dramatic improvements in various areas.

For example, between November 2012 and May 2014, the laboratory's turnaround time dropped significantly. Prior to automation, 95% of sample tubes were completed within 164 minutes of delivery; but today, this turnaround time has been reduced to 133 minutes—a reduction of 31 minutes.

Erbayraktar is happy to report, "Currently, our TAT is well above our expectations, despite the laboratory consolidations."

The LEAN Journey Continues

Overall, the laboratory couldn't be happier with their recent LEAN process improvements.

"I would like to thank our Beckman Coulter-Turkey team, who was with us through every step of our systematic study and helped carry us to a higher level," concluded Erbayraktar. "Our LEAN laboratory practices have reduced our costs, increased the quality of our work and improved our customer satisfaction. Going forward, we plan to continue improving our work and making even more progress along our LEAN journey."

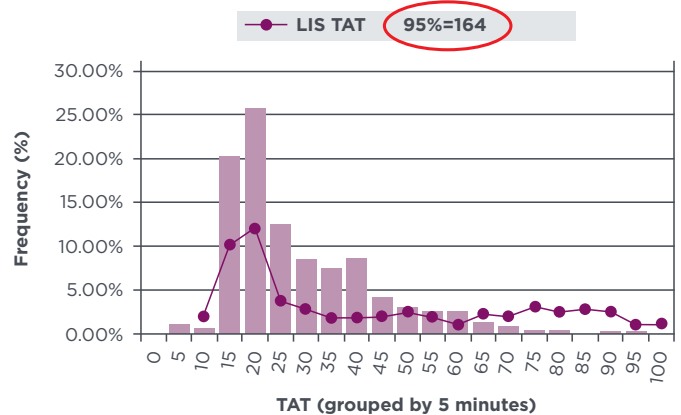


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- Zubeyde Erbayraktar
Associate Professor,
Laboratory Supervisor, DEUTF-ML

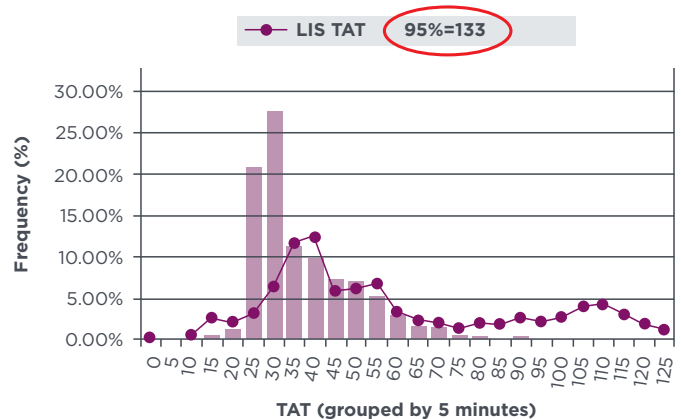
November 2012 ●

Dokuz Eylul University Otomasyon
Tube % vs TAT (All Tube Types)



May 2014 ●

Dokuz Eylul University PP
Tube % vs TAT (All Tube Types)



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