

Refining Medical Care Using State of the Art TLA System

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Introduction

The Automated Mega Laboratory (Mega Lab) was founded in 2008, based on two separate (Chemistry & Hematology) "Power Processor" Total-Laboratory-Automation (TLA) lines of Beckman Coulter (BC). Due to increase in number of annual tests and complexity of routine procedures, there was a necessity for upgrading. Consequently, a state of the art automation system, DxA5000 (BC), was world-widely launched in the Mega Lab at Sheba Medical Center during 2018-9.

Objectives

- Consolidate operation (robotics) while improving analytics quality
- Increase throughput by at least 50%
- Reduce average TAT by at least 25%
- Simultaneous auto-management of several priority levels
- · Support for a mixed wider variety of tube types
- Reduce amount of full time employees (FTE)



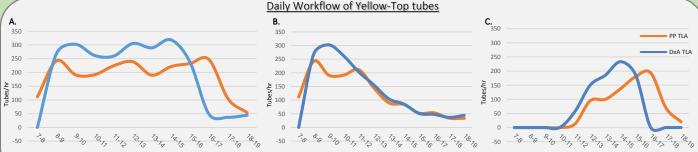


Figure 1: Daily workflow of chemistry and immunochemistry tubes in the Mega Lab with the PP TLA (orange line) and with the DxA5000 TLA (blue line);

(A) Total tubes, (B) Hospital tubes, (C) Community tubes; PP- Power Processor, TLA- Total Laboratory Automation.

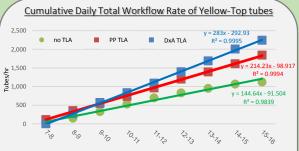


Figure 2: Cumulative daily workflow of chemistry and immunochemistry tubes in the Mega Lab without TLA (green line), with the PP TLA (red line) and with the DxA5000 TLA (blue line); PP- Power Processor, TLA- Total Laboratory Automation.

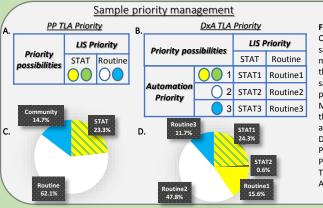
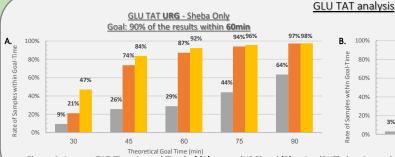


Figure 3:
Options for
sample priority
management and
the distribution of
samples in each
priority in the
Mega Lab with
the (A,C) pp TLA
and with the (B,D)
DXA5000 TLA.
PP- Power
Processor, TLATotal Laboratory
Automation.



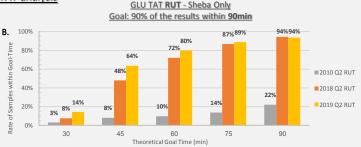


Figure 4: Average TAT (Turn Around Time) of (A) urgent (URG) and (B) rutine (RUT) chemistry tubes (representative test- Glucose) with no TLA (gray columns), with the PP TLA (orange columns) and with the DxA5000 TLA (yellow columns); PP- Power Procesor, TLA- Total Laboratory Automation

Summary and conclusions

<u>DxA5000 TLA reduces average TAT and increases lab throughput</u> <u>DxA5000 TLA reduces amount of full time emploees</u>

Year – Gen	2500 tubes	Year – Gen	Throughput
no TLA	18 hr	no TLA	baseline
PP TLA	12 hr	PP TLA	↑ 50%
DxA TLA	10 hr	DxA TLA	↑ 30%

Year – Gen	FTE	
no TLA	baseline	
PP TLA	↓ 10	
DxA TLA	↓3	

<u>DxA5000 TLA Consolidates two automation line in to</u> <u>onw line and supports a wider variety of tube types</u>





The TLA upgrade lead to a decrease of avarage TAT, increase of lab throught, decrease in FTE No., consolidation of automation lines and support for a wider variaty of tube types. This technological evolution have improved the efficacy of our laboratory services and consequently enhanced medical care.