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Driving Transformation Change in the Laboratory:
Comparison of a Centralized and Non-centralized Laboratory System

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Introduction

The Faculty of Medicine, Ramathibodi Hospital, is one of the two medical schools of Mahidol University. As a medical school, one of the its missions is to provide quality healthcare, modern facilities and to allow the public to access advanced technology. To enable this consolidation, Pathology Laboratory partnered with Abbott Laboratories Ltd and implemented the Abbott ACCELERATOR Automated Processing System (APS) in the new central laboratory. This total laboratory automation system combined chemistry and immunology departments into one system. Performance goals to improve laboratory operational efficiencies such as, Turn Around Time (TAT) accomplishment, process steps reduction, manpower reduction and consumable cost reduction were set.

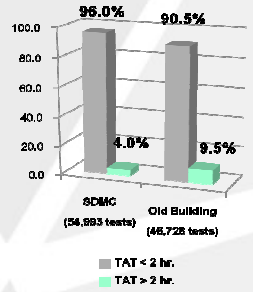
Objective

To study whether the ACCELERATOR Automated Processing System (APS) can improve laboratory operational efficiencies in terms of Turn Around Time (TAT) accomplishment, reduced process steps, less personnel and consumable usage reduction in a university hospital laboratory.

Methodology

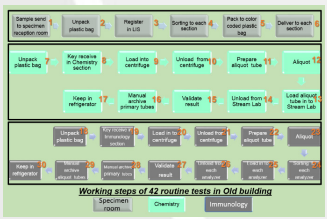
One week data of TAT achievement percentage and consumables usage of 42 chemistry and immunology tests, as well as the waiting time from phlebotomy room, were obtained from laboratory information system; whereas, the working steps, and personnel requirements were obtained by workflow observation. Data and information from a new laboratory designed using centralization concept and having the ACCELERATOR APS installed were compared with those from the old laboratory, in which tests were separated into multiple analytical sections.

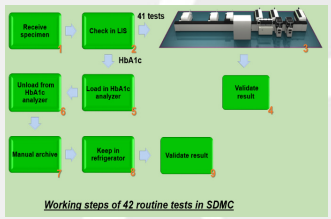
Result



TAT Reduction
96% of samples sent to Pathology laboratory in SDMC achieved the TAT goal of less than 2 hour

Reduction Working steps Through LEAN
SDMC lab sees a 70% reduction in process steps compared to the old building





Metrics	Old Laboratory (Non-centralized)	SDMC (APS implemented)	% Change
No. of CC/IA tests	46,728	54,993	17.7%
% Achieved TAT goal	90.5%	96%	10.6%
Working steps	30	9	-70.0%
Personnel	12	4	-66.7%
Drawing sample tube usage	6,418	6,313	-1.6%
Barcode usage	6,418	6,313	-1.6%
Aliquot tip usage	5,548	0	-5,548%
Aliquot cup usage	5.548	0	-5,548%
Average waiting time from phlebotomy room (mins)	15	4	-73.3%

Conclusion

The Pathology Laboratory in SDMC, through the implementation of total laboratory automation was able to achieve its set goal of more than 95% of samples with TAT of less than 2 hours. At the same time, with lesser manpower requirement, it realized a minimum consumables usage and waiting time reduction.