

cobas[®] 6000 analyzer series: Proven efficiency gains and cost savings

An independent site evaluation at Fairview Cleveland Clinic, Cleveland, Ohio, USA

Introduction

Migrating to the cobas[®] 6000 analyzer series can deliver quantifiable efficiency gains and cost savings. Through a structured client assessment protocol, Roche documented the efficiencies gained by using the analyzer series within a client-approved case study report. Prepared by a third party research firm, with active participation of the client, findings from Fairview Hospital, Cleveland Clinic in Cleveland, Ohio, USA are presented.

Flexible consolidation

Fairview Cleveland Clinic has an annual workload of 3.1 million reportable tests for clinical chemistry and immunoassays.

The instruments utilized in the before scenario included two Siemens Dimension[®] RxL analyzers, one Tosoh HPLC analyzer for dedicated HbA1c testing, one Siemens ADVIA Centaur[®] analyzer, and a dedicated analyzer for lithium testing (Figure 1).

The after scenario utilized the cobas[®] 6000 <cce> configuration for routine workload use, cobas[®] 6000 <ce> for backup and esoteric testing use, and the ADVIA Centaur[®] analyzer for other immunoassays (Figure 2).

The client noted that further consolidation of testing from the ADVIA Centaur[®] analyzer and the manual serology workstation to the cobas[®] 6000 analyzer series is planned after the evaluation.

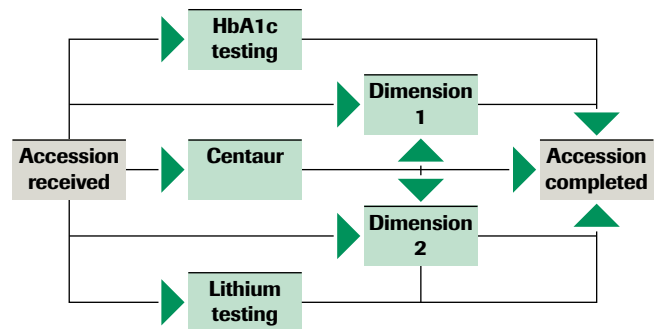


Fig. 1: Before scenario workflow

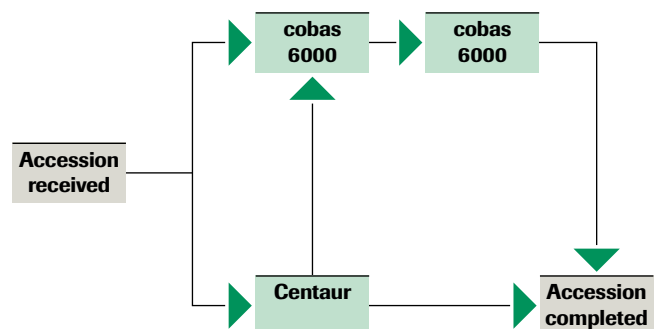


Fig. 2: After scenario workflow



“The client realized a significant reduction of over 30% in operating costs.”

Single point of entry

The consolidation of workstations has eliminated aliquots and sharing of samples between workstations by creating a single point of sample entry.

Before: Dimension® RxL accepted most tube types but required a certain minimum amount of sample volume. During an observation period of 4 times 15 minutes, 23 out of a total of 95 samples or 24% required testing in special low sample volume tubes (micro-cups).

After: The **cobas®** 6000 analyzer series accepted many tube types. While it also had a minimum sample volume requirement, it was less than Dimension® RxL. During the same observation time as used above, only 6 out of a total of 83 total tubes or just 7% required micro-cups.

The client found a statistical difference between the before and after scenarios. There were three times fewer micro-cups required for the **cobas®** 6000 analyzer series than Dimension® RxL, resulting in time savings of one hour per day due to the omission of manual aliquotting. Additional advantages observed by the staff were less consumable usage, fewer patient identification errors, and avoidance of sample contamination.

Test consolidation

Workstation consolidation helped the laboratory to dramatically reduce any non-value adding activities. Overall, this resulted in savings of approximately 380 hours per month or 4556 hours per year, which translates to more than 2 full-time equivalents (FTEs) (Figure 3).

Specifically these savings were realized due to more efficient quality control, less time loading/unloading samples and performing QC/calibration, and less frequent maintenance of equipment. The client noted that these time savings have enabled staff to focus on value-added activities within the laboratory.

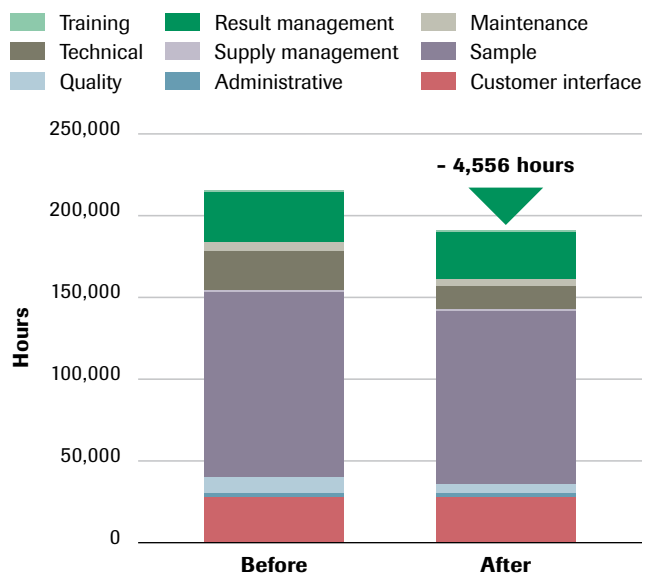


Fig. 3: Annualized staff activity comparison in hours

Lower operating costs

The implementation of the **cobas®** 6000 analyzer series resulted in lower operating costs.

Before: Monthly reagent and consumable costs averaged \$368,354. Staff FTEs averaged 9.75 with 0.25 in overtime.

After: Monthly reagent and consumable costs averaged \$246,174 and FTEs averaged 9.41 with 0.05 in overtime.

The client realized a significant reduction of over 30% in operating costs, totaling \$ 1.4 Mio. in annualized cost savings. While no overall labor savings were realized due to the decision to redeploy staff to other activities, the laboratory realized a significant opportunity savings.

Unique reagent concept

The implementation of the **cobas®** 6000 analyzer series introduced a new reagent concept, which was considered to be convenient and cost effective.

Ready to use reagents

Before: Dimension® RxL reagents, controls and calibrators required a variety of storage needs: room temperature, freezer and refrigeration. Once loaded, an extra step of hydrating Dimension RxL reagents was necessary and slowed the analyzers significantly. Additional storage was needed for Lithium and HbA1c reagents as well.

After: The **cobas c** and **cobas e** reagent packs required no preparation with the exception of one third party assay for special use. The compact reagent pack size resulted in one less refrigerator needed for storage of reagents. Once the reagent was loaded on the analyzer, it was immediately ready to use.

The ready-to-use **cobas c** and **cobas e** packs meant less time spent on reagent preparation. Overall time savings were 20 minutes in preparation per day or 122 hours per year.

Reagent loading on the fly

Before: Dimension® RxL required reagent reconstitution on board the analyzer with hydrating packs. Due to the amount of time needed for this step, the task of reagent loading would fall on the night shift so that there would be minimal impact on the workflow. Nevertheless, during each shift additional reagent kits needed to be loaded due to the small packaging size and test volume.

After: Loading and unloading of **cobas c** and **cobas e** packs were performed during normal operation. However, most reagent loading was performed just once and was sufficient for the complete day due to larger package sizes. The client noted that the afternoon and evening shift needed to load reagents only 1-2 times per week.

Overall time savings with **cobas c** and **cobas e** packs were 23 minutes per day or 140 hours per year. For the shifts with less staff coverage, reagent handling was considered easier due to infrequent reagent loading.

Superior analytical performance

The **cobas**® 6000 analyzer series also contributed to reducing the cost of quality. The client evaluated the impact on its staff's activities dedicated to ensuring quality by documenting the time spent on activities such as error prevention, result inspection and appraisal, and result correction.

Reduced cost of quality

Before: Annualized staff activities dedicated to ensuring quality totaled 48,875 hours.

After: Annualized staff activities dedicated to ensuring quality totaled 39,595 hours, a time saving of over 9,000 hours or 4.5 FTEs (Figure 4).

The implementation of the **cobas**® 6000 analyzer series had a significant impact in reducing the cost of quality by reducing staff activity dedicated to ensuring quality by 19%.

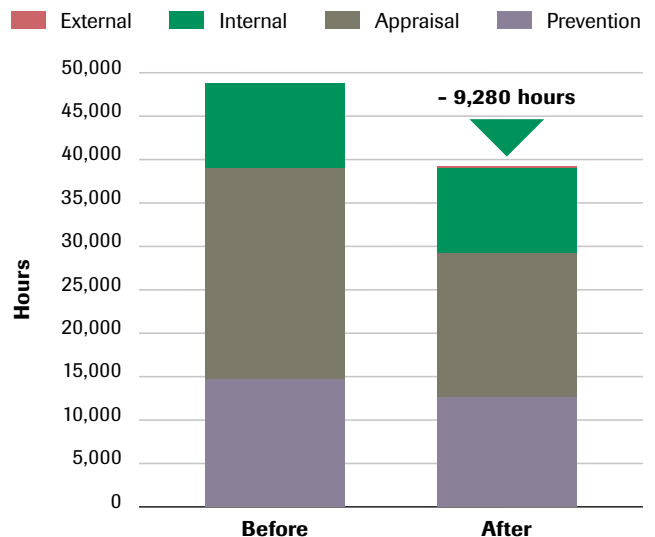


Fig. 4: Annualized staff activity comparison in hours dedicated to ensuring quality

“Consolidation resulted in savings of approximately 380 hours per month, which translates to more than 2 FTEs.”

“Annualized staff activities dedicated to ensuring quality was reduced by the equivalent of 4.5 FTEs.”

Proven system performance

The implementation of the **cobas**[®] 6000 analyzer series contributed to the laboratory’s responsiveness by improving system reliability and uptime.

Before: In a five month period Dimension[®] RxL analyzers had 27 incidents of service calls, with many issues requiring multiple service visits with multiple days of analyzer downtime.

After: In a five month period, the **cobas** analyzers had only 10 service calls with minimal impact on downtime.

Service calls ranged from 1 hour to 7 hours, not counting system downtime prior to the arrival of the service technician. Using a 4 hour average, this would equate to 259 hours per year in the before scenario and 96 hours per year in the after scenario, a dramatic reduction of over 60%. This represents a system uptime of 99% for a lab operating 24 hours a day, 365 days per year. Thus, while the age of the system should also be noted as a contributing factor, the **cobas**[®] 6000 analyzer series was considered to be more reliable with less service calls and unexpected downtime.

Conclusion

Today’s laboratories are faced with providing broad menus, increased expectations from providers and a diminishing workforce. In addition, the medical community is under scrutiny for patient safety. As a result of this site evaluation, Fairview Cleveland Clinic maintains that the cobas[®] 6000 analyzer series is the solution to these challenges.

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