

From Efficiency to Return on Investment:

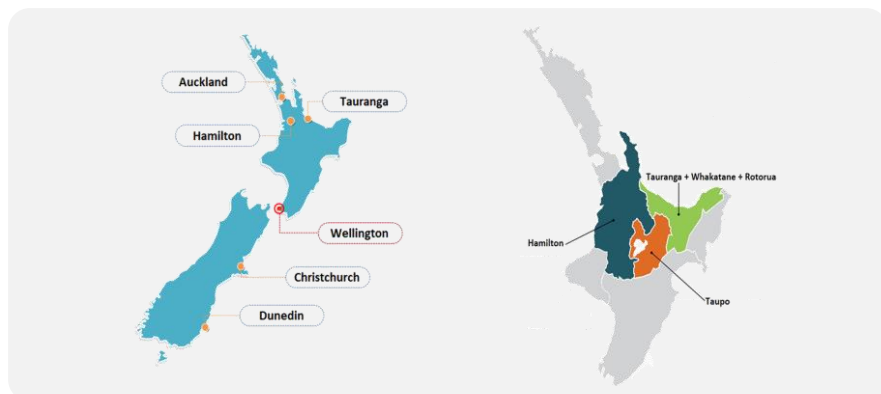
Transformational Outcomes with DxA 5000 and Dxl 9000 Systems at Pathology Associates, New Zealand



Executive Summary

The DxA 5000 Workflow Automation System, when integrated with the Dxl 9000 Immunoassay Analyzer, has brought about considerable operational, clinical, and financial advantages for high-volume laboratories. This combined solution effectively address prevalent issues, including staffing challenges, increasing test volumes, inconsistent turnaround times, and growing operational expenses, proving to be a significant driver of measurable transformation.

The total solution has resulted in substantial improvements in both performance and financial outcomes for these laboratories. It achieves this by ensuring more consistent turnaround times, a high auto-verification rate, boosting throughput, and enhancing reliability through automated sample handling and rapid immunoassay processing. These standardized workflows minimize delays and variability, allowing for quicker and more precise delivery of results, which in turn supports superior patient care and clinician satisfaction. Furthermore, the solution generates strong returns on investment by optimizing labor and expanding testing capacity without requiring additional staff or space, positioning it as a forward-thinking approach to achieving operational efficiency and financial sustainability.



5 Lab Sites

There are two main laboratories – Tauranga and Hamilton – and three satellite laboratories located in Rotorua, Whakatane, and Taupo.

500

Employees

51

Emergency department beds

723

Beds for 4 Hospitals

40,000+

Tests per day across 5 sites

900,000

Population

Source:



Pathology Associates Laboratory Background

Pathology Associates Laboratory was founded in 1958 with the goal of improving workflow and services and achieving world-class standards. Our partnership with Beckman Coulter provides a total solution encompassing Chemistry, Immunoassay, Hematology, Automation, and middleware. Beckman Coulter's total solution helps to unify the 5 sites, integrating data and sample management through the middleware – REMISOL Advance connecting multiple analyzers, and a centralized rule system to streamline data and processes.

Tauranga Site:

- Automation: DxA 5000 with Dual Centrifuge, Aliquoter, 13K Stockyard
- Analyzers: 2x AU5822, 2x Dxl 9000, 1x DxH 900-2S, 1x DxH 900-1S, 1x ACL Top 750 LAS,
- CIT Solution: REMISOL Advance, DxONE Command Central



Hamilton Site:

- Automation: DxA 5000 with Dual Centrifuge, Aliquoter, 13K Stockyard
- Analyzers: 2x AU5822, 3x Dxl 9000, 2x DxH 900-2S, 1x ACL Top 750 LAS,
- CIT Solution: REMISOL Advance

Pathology Associates Goals

The Laboratory's history began in 1958 with the underlying goals: Improving workflow and services, and achieving world-class standards

Boost Efficiency & Performance

Laboratory focus in maximizing efficiency by expanding workload capacity, optimizing processes, and balancing tasks. This will speed up turnaround times and deliver consistent performance

Unify and Standardize Hub-and-Spoke Laboratory Model

Implement a Hub-and-Spoke laboratory operational model, where five labs function as a single cohesive department, with each lab serving as a backup for the others to ensure seamless operations and uninterrupted service

Optimize Resources and Support Growth

Minimize wastage of reagents and consumables by improving efficiency and monitoring usage closely to support sustainable growth and ensure the lab is prepared to scale operations effectively

Quantifiable Benefits

Streamlined Operations & Reduced TAT

The DxA 5000 automation system, paired with intelligent workflow optimization, profoundly streamlined laboratory operations in Tauranga by successfully reducing process steps by an impressive 70%. This significant simplification directly accelerated turnaround time (TAT) by up to 85.5%, even while effectively managing a substantial 167% increase in laboratory workload. Further enhancing this streamlined process, the Dxl 9000 analyzer seamlessly integrates with the automation line. As a result of this advanced integration, the high-sensitivity Troponin I (hsTnl) test now boasts an exceptional turnaround time of just 26 minutes from sample loading to result.

Pathology Associate Laboratory installed REMISOL Advance as a multi-site network middleware that helps the laboratory standardize its auto-verification rule-based procedures. This ensures that the consistency and integrity of test results are automatically verified without human intervention, resulting in over 95% of routine tests and more than 80% of Troponin I (hsTnl) tests being auto-verified.

Dxl 9000 System Revolutionizes Lab Productivity with Zero Daily Maintenance

The Dxl 9000 analyzer delivers immense laboratory benefits and operational value by eliminating 100% of daily maintenance, reclaiming 40 minutes of instrument uptime time every day. However weekly maintenance increased by 33% due to workload increases. Monthly and Preventive maintenance was reduced to 50%, respectively.

Time-saving summary between Dxl 800 vs Dxl 9000 systems in Tauranga & Hamilton

Maintenance	Yearly Time Saving with Dxl 9000 (mins)
Daily Maintenance	14,400 mins
Weekly Maintenance	(480 mins) increased due to workload increases
Monthly Maintenance	720 mins
Preventive maintenance	1,920 mins

85.5%

Reduction in TAT at 90th Percentile in Tauranga for NA/K, TSH, HsTnl, and Crea

Up to

70%

Reduction in the manual steps from Tauranga after DxA 5000 system implementation

OVERALL AUTO-VERIFICATION RATE

>95%

For routine tests for both Hamilton and Tauranga sites

Eliminated

100%

Daily maintenance

Quantifiable Benefits

(continued)

Over just five years, this unparalleled design delivered an astounding 1,380 hours of total time savings, directly contributing to significant operational value. This newfound efficiency and increased throughput empowered their lab to seamlessly manage growing workloads without compromising performance. Ultimately, the Dxl 9000 analyzer allowed their team to dedicate more time to critical tasks, optimized workflows, and enhanced patient care.

Manpower Optimization: Delivering Significant Return on Investment (ROI)

The automation solution delivered significant Return on Investment (ROI) through unparalleled manpower optimization, allowing laboratories like Pathology Associate in Tauranga with 10 FTEs and Hamilton with 21 FTEs to manage substantially more work without increasing staff. Specifically, the Tauranga site experienced a remarkable 167% increase in daily tests, while the Hamilton site saw a 12% rise, all handled by existing personnel.

This efficiency translates directly into a substantial **reduction in FTE costs per test per day, amounting to savings of up to \$4.091 million USD**. Beyond cost savings, this higher throughput and optimized workforce enabled labs to attract more clients and enhance their service offerings. Ultimately, this led to increased revenue and a stronger market reputation within the healthcare industry.

Maximizing Laboratory Efficiency and ROI with Dxl 9000 Analyzer Total Costs per test

The Dxl 9000 analyzer's total cost encompassed all essential consumables, including reagents, controls, calibrations, pipette tips, wash buffers, rinse solution, and disposable cuvettes.

Up to

1,380 Hrs

Total Time saving for 5 years with Dxl 9000 Daily, Weekly, Monthly, and Preventive Maintenance

ZERO

No additional manpower with 167% of daily test volume growth

\$ 4.091M USD

Cost savings from Manpower Optimization for both Tauranga and Hamilton supporting 167% and 12% workload growth respectively

Quantifiable Benefits

Continued..

At Pathology Associates' Tauranga site, an impressive 317% increase in immunoassay (IA) test workload over the past six months led to significant cost efficiencies. The Dxl 9000 analyzer reduced the total cost per test by \$0.26 USD, resulting in total savings of \$439,069.5 USD over five years for the site.

Conversely, the Hamilton site experienced a 16.18% decrease in IA test volume. Despite this, the Dxl 9000 analyzer still contributed to a slight reduction in total cost per test by \$0.01 USD, generating total savings of \$40,966.8 USD over five years. This demonstrates the system's ability to maintain efficiency across varying demand levels.

The combined total cost savings for both sites amounts to **\$480,036.3 USD**.

These improvements directly translated to faster, more reliable results for customers, significantly enhancing overall service quality. By delivering substantial cost savings, **boosting operational efficiency, and ensuring consistent performance, the Dxl 9000 analyzer played a crucial role in supporting both laboratory success and customer satisfaction.**

\$ 480.03K
USD

Overall cost savings in 5 years from
Tauranga and Hamilton



The advantage of the DxA 5000 Automation system over the previous Power Express Automation is reliability and speed. The reduced centrifugation time and shorter track length deliver samples significantly quicker. The intelligent distribution manager prioritizes urgent samples and prevents work building up at the analyzer. The new substrate on the Dxl 9000 analyzers has increased sensitivity of assays and significantly reduced time of analysis. The net effect of the combined DxA 5000 and Dxl 9000 has been to reduce turnaround times, improve quality of results and prioritize processing of urgent investigations. We are delighted with the new system.

John Woodford

Lead of Specialty – Biochemistry, Pathology Associates, New Zealand



In my 20 years plus of Lab experience with Biochemistry analyzers, the Precision Vision Camera Technology on Dxl 9000 is the best innovation I have seen on an automated analyzer.



Bobby Tagore

Core Laboratory Manager, Head of Department Biochemistry
Pathlab Bay of Plenty, Tauranga Hospital, New Zealand

Learn more about Beckman Coulter's DxA Total Lab Automation and CIT portfolio
<https://www.beckmancoulter.com/en/products/automation/dxa-5000-lab-automation-system>



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