Automating DaVita Labs to increase productivity

A case study in implementation, change management, and partnership

SIEMENS Healthineers

Executive summary

DaVita Labs manages one of the world's largest volumes of testing for dialysis patients and sought to upgrade its diagnostic lab facilities to a total laboratory automation (TLA) solution. In so doing, DaVita intended to consolidate two existing labs into one new facility that would allow it to maintain or increase capacity. To be successful, the project had to deliver a lower cost per result without sacrificing throughput, capacity, or accuracy of testing.

DaVita partnered with Siemens Healthineers to develop this new vision for its future laboratory. To complement its workflow expertise and robust portfolio of IT solutions and analyzers, Siemens Healthineers engaged its long-term partner Inpeco, a leading laboratory automation manufacturer, to deliver one of the world's largest automated clinical laboratory at that time. Siemens Healthineers and Inpeco both share a passion for pioneering automation projects that include complex project management, change management, and unique training, service, and support.

The new laboratory, one of the world's largest automated labs, came online in 2018 and has met or exceeded benchmark key performance indicators:

- Multidisciplinary testing volumes increased by 16.4% in the first half of 2020 and achieved more than 200,000 samples in a single day at peak throughput.
- More than **99% of tests** met DaVita's turnaround time (TAT) goal.
- Cost per test was **reduced by ~10%**, and employee engagement reached an **all-time high of 91%**.
- Overall, the new lab is delivering savings of **approximately $7.5 million per year,** according to leadership at DaVita.

This project demonstrates the dramatic improvements in performance and efficiency that can be realized through diagnostic laboratory automation when coupled with highly effective implementation and change management.

DaVita Labs in DeLand, Florida.

About DaVita Labs

DaVita Kidney Care is a leading provider of renal dialysis in the U.S., serving more than 200,000 patients. Because of the high volume of blood testing DaVita's patients require, the company established its own diagnostic laboratories.

DaVita Labs receives up to 175,000 samples daily and is dedicated to providing fast, reliable test results for DaVita's patients with end-stage renal disease (ESRD). In order to meet its commitments to these patients while containing costs, DaVita made the decision to build a new, automated lab. This automated lab would allow the company to consolidate its two Florida labs into a single facility.

The case for automation

Building a new, high-volume, automated diagnostic testing laboratory is a huge commitment, and one that DaVita had compelling reasons to make. First and foremost, its current labs did not have total lab automation (TLA) in place, meaning that substantial manual processing was required to deliver test results. For example, relabeling incoming tubes was a labor-intensive process that occupied dozens of team members every day. Further, DaVita's TAT goal of having each day's samples resulted by 4:00 a.m. the next morning demanded high efficiency, throughput, and accuracy. Both of these factors underscored the need for a highly reliable automated solution.

And of course, economic factors played an important role. DaVita sought to reduce the overall cost per result and consolidate two facilities into one, measures that would help control costs for patients and payers.

Desired outcomes of DaVita Labs automation and consolidation

- Achieve sustainability in the workforce.
- Reduce manual tasks.
- Optimize current workflows.
- Consolidate two labs into a single facility.
- Reduce cost per test.
- Increase test volume.
- Meet sample TAT goal.

DaVita Labs diagnostic lab in DeLand, Florida.

DaVita Labs diagnostic lab in DeLand, Florida.

Key challenges in automating DaVita Labs

Maintaining uptime and capacity throughout the transition
Creating a single lab, with new processes and equipment, and with ample throughput capacity to replace two existing high-volume facilities, was a monumental challenge. The difficulty was compounded by the need to keep operations at current throughput levels in the older facilities until the new lab was fully operational.

Training for new equipment, IT, and processes
One of the biggest challenges DaVita faced was in educating and training the laboratory professionals who would operate the new facility. In the older facilities, a variety of middleware solutions existed, limiting DaVita's flexibility to cross-train their team.

An important way to increase flexibility and adapt to fluctuations in volume was to standardize middleware and equipment solutions, making it easy to certify approximately 250 team members.

"One major concern was the continuity...it was very important to maintain operations throughout the transition."

Keri Wagner, VP-Laboratory Operations, DaVita Labs

Why DaVita chose Siemens Healthineers

Total lab automation expertise

In choosing partners to create their new laboratory, DaVita looked for extensive experience in high-volume automation along with expertise in workflow optimization and change management. With shared experience co-developing some of the world's largest automated laboratories, the longstanding partnership between Siemens Healthineers and Inpeco was a natural choice.

Another factor in that choice was the robust post-implementation support offered by Siemens Healthineers. Proactive maintenance and process optimization services were important to the ongoing success of the lab. Siemens Healthineers offered an on-site customer service manager to support all aspects of the solution, including technical issues, logistics, training needs, upgrades, and modification requests, to ensure the new lab keeps pace with DaVita's needs as they change over time.

Broad portfolio of analyzers, automation, and IT solutions

The broad, multidisciplinary portfolio of analyzers available from Siemens Healthineers was another critical factor. DaVita Labs was very satisfied with the Siemens Healthineers analyzers it was currently using. The company's ability to seamlessly integrate automation with real-time, data-based decision making, pre-analytical modules, analyzers, and the robust, open, highly scalable Siemens Healthineers IT portfolio into an open, automated TLA solution by Inpeco helped simplify the decision.

Training and change management expertise

Siemens Healthineers was ready to provide training and change management to get the DaVita team ready for the transition. The Siemens Healthineers team had the change management experience to guide DaVita from planning through implementation to full-capacity ramp-up, so that operations could continue while the new lab was being brought online.

"We felt like there was a benefit to being all-in with Siemens Healthineers and creating an environment where we both shared in the success here and had complete ownership on both sides."

Keri Wagner

"I really feel like the Siemens Healthineers team bought into DaVita and bought into what we were doing. It wasn't just another project to them."

Dan Baylor, Sr. Director of Operations Innovation, DaVita Labs

Co-creating the new automated lab

DaVita and Siemens Healthineers, together with automation partner Inpeco, worked seamlessly as a team to quantify key requirements and expectations, design solutions, and implement them.

"Our situation is unusual," according to Dan Baylor of DaVita. "We have a relatively narrow testing menu, and a very tight window for getting results out the door. Our partners really understood our specific needs and worked shoulder-to-shoulder with us to make this happen."

That level of teamwork was critical to achieving success. In just over a year, the new laboratory went from vision to reality. See Figure 1 for a summary of the analyzers, automation solutions, and IT solutions that DaVita installed in their new lab.

Figure 1. DaVita Labs automated laboratory at a glance

396 meters of track across two high-throughput **FlexLab™ tracks**

22 **ADVIA Centaur® XPT** Immunoassay Systems

24 **ADVIA® Chemistry XPT** Chemistry Systems

42 **ADVIA® 2120i** Hematology Systems

- **Bulk input modules*** and other pre- and post-analytical automation modules
- **Streamlined hematology workflow** via automation and robust rules library (e.g. automatic trigger for slide maker, etc.)
- **CentraLink® Data Management System** (Planned for upgrade to Atellica® Data Manager in 2021)

** Includes approximately 50 pre- and post-analytical processing modules to support bulk tube and rack input/output, tube inspection, centrifugation, decapping, aliquoting, sealing, storage, and automated disposal. Two high-volume refrigeration units capable of storing and automatically retrieving 700,000 tubes were also chosen for the new lab.*

"I think it was highly successful. Really thinking through change management with the Siemens Healthineers team early on helped us map out the entire transition."

Nicole Stumbo, PHR; Director, Learning and Development, Safety and Facilities, DaVita Labs

Keys to success: education, training, and change management

DaVita faced a great challenge in terms of its ability to get its staff trained and confident on the new automated equipment and processes. DaVita tapped into Siemens Healthineers and its deep experience in change management and training programs. With their support, DaVita was able to provide approximately 3600 hours of training for the roughly 250 team members who would operate the new facility—all while the existing facilities continued to process an average of 100,000 sample tubes daily.

The education and change management programs were co-created and run by DaVita personnel, led by Nicole Stumbo, and the Siemens Healthineers Healthcare Consulting Solutions (HCS) team.

Training and change management overview

Survey yields insight into current attitudes
In keeping with the collaborative nature of this project, DaVita sought to understand as much as it could about how the staff perceived their current laboratories, and what their hopes and concerns were for the new facility. To that end, DaVita and Siemens Healthineers HCS together developed a customized staff survey to assess employees' perceptions.

The results of that survey formed the foundation for a communications campaign that addressed opportunities and pain points identified by the DaVita laboratory professionals. The survey also contributed to the development of training modules for use throughout the transition.

The transition to the new lab required more than just learning new processes; for the project to take flight, the staff would have to embrace a new culture. Whereas the previous labs had discrete workflows separated by discipline, the new lab was designed to be an integrated multidisciplinary facility where hematology, chemistry, and immunoassay would all run on the same system. "We invested a lot of energy into designing the new multidisciplinary workstations and communicating with the staff on how to move to that model," according to Sue McDonald, Senior Manager Global Healthcare Consulting Solutions at Siemens Healthineers.

Additional highlights

Other training and change management milestones included:

- Shared 3D file of new lab design/layout to generate enthusiasm.
- Mapped current hematology, chemistry, and immunoassay processes.
  i. Identified practices that needed change.
  ii. Focused on quality processes, centralized workstation design.
  iii. Consulted on roles and responsibilities in new lab.
- Mapped new processes for new laboratory.
- Created and shared staffing plan for new laboratory.
- Finalized education and training curriculum/plan.
- Executed training plan (DaVita team) (3500+ hours, 250 team members).

"We recognized that medical technologists and laboratory talent in general are scarce resources. Which means that not only do we need to ensure that we're deploying resources as efficiently as possible, but also that we create a differentially special work place to retain that talent long term."

Keri Wagner

Outcomes to date

Testing volume up 16%

The new, larger, highly efficient laboratory is now handling higher volumes than the two older labs combined. Test volume through the first half of 2020 was up 16.4% compared with the comparable period in 2016.

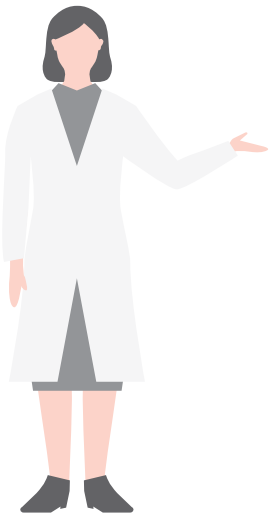
99.4% of tests reached TAT goal

Even with this increased volume, DaVita is exceeding its own TAT goals. DaVita aimed for a 98% on-time result rate for tests it produces. In the first 7 months of 2020, 99.4% of tests have been resulted by the 4:00 a.m. cutoff.

Cost per test reduced by 10%

Finally, the efficiency gains DaVita anticipated have materialized. Although volume has increased, cost per test is down 10% versus 2016 due to reduced labor and reagent costs, and new proactive service contracts. With an estimated savings of approximately $7.5 million per year, the new facility is expected to reach break-even on the initial investment by 2022. See Figure 2 for a summary of preliminary outcomes.

Figure 2. DaVita lab automation and consolidation: key outcomes to date



Realized savings of
$7.5 million
per year

Reduced cost per test
by 10%

Exceeded TAT goal of
>98% resulted
by 4:00 a.m. (January–July 2020)

Increased test volume
by 16.4%

Improved team engagement
to 91%

Processed 90%
of tubes without manual handling

98% uptime
achieved across disciplines

Improved
staff productivity

Conclusion

The results described above are viewed as very positive by the DaVita team. The new facility has entirely replaced the two former laboratories. The DaVita laboratory-professional team has fully embraced the new automated systems, and staff engagement is at a record high. This is a testimony to the excellence of the DaVita team and to the thoughtful and comprehensive training and change management put in place by DaVita and Siemens Healthineers.

According to DaVita staff and management, the combined team was able to leverage the complementary expertise of DaVita, Siemens Healthineers, and Inpeco experts in ways that maximized the success of the overall project. Alignment and open communication meant that decisions were never made in silos, reducing false starts and missteps and allowing the team to design and implement the new lab in just over a year.

The goal of this project was to create a more efficient, automated lab. The hardware and IT solutions, while important, are only part of the story. At the center of this successful project lies the human story, a story of hundreds of team members who needed to be trained on new systems and processes while operating the existing facilities at full capacity. The co-creation approach to this project was vital to its success. By involving the staff in the process from the initial stages, the DaVita-Siemens Healthineers team gained valuable insight into what was working in the current labs and what could be improved. The comprehensive training and change management program was highly effective, leading to improved morale and higher overall productivity.

"You really can't tell the difference between a Siemens Healthineers resource and a DaVita resource because they've integrated with us so well."

Dan Baylor

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An estimated 5 million patients globally benefit every day from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics, and molecular medicine, as well as digital health and enterprise services.

We are a leading medical technology company with over 120 years of experience and 18,000 patents globally. Through the dedication of more than 50,000 colleagues in 75 countries, we will continue to innovate and shape the future of healthcare.

The outcomes obtained by the Siemens Healthineers customer described here were realized in the customer's unique setting. Since there is no typical laboratory, and many variables exist, there can be no guarantee that others will achieve the same results. Product availability varies by country.

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Siemens Healthineers Headquarters
Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
Phone: +49 9131 84-0
siemens-healthineers.com

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Phone: +1 914-631-8000

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