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**Achieving a six-fold increase in revenue
without adding staff.**

The ADVIA WorkCell™ CDX Automation Solution – A Case Study

Answers for life.

SIEMENS

Annual billings soar 554 percent after White Plains Hospital Center implements the ADVIA WorkCell.



"We use the strength of our techs for validating test results, not delivering specimens."

Marilyn Leonard
Chemistry Supervisor



White Plains Hospital Center, a not-for-profit healthcare organization serving Westchester County, New York, set out to reduce error rates in its laboratory as part of a hospital-wide initiative to improve performance in relation to patient safety standards issued by JCAHO in 2002.

Towards that end, White Plains wanted to reduce the manual handling of tubes and specimens in the laboratory to minimize opportunities for error.

But that wasn't all – White Plains also sought a system that would:

- Virtually eliminate aliquoting
- Accommodate the increased volume of laboratory tests
- Speed turnaround time
- Help increase gross billings through outreach efforts and by bringing more tests in-house
- Reduce the number of blood draws
- Allow a wide variety of tube sizes and caps
- Maximize the use of limited laboratory space
- Increase capacity, not only in chemistry, but in other areas of the lab
- Support third-party systems

White Plains found a system that met all these criteria in the ADVIA WorkCell CDX system, which provided the advanced automation that would enable the laboratory to achieve its goals – and then some. Since adding the ADVIA WorkCell system, they have experienced stunning results in efficiency, productivity, and performance.

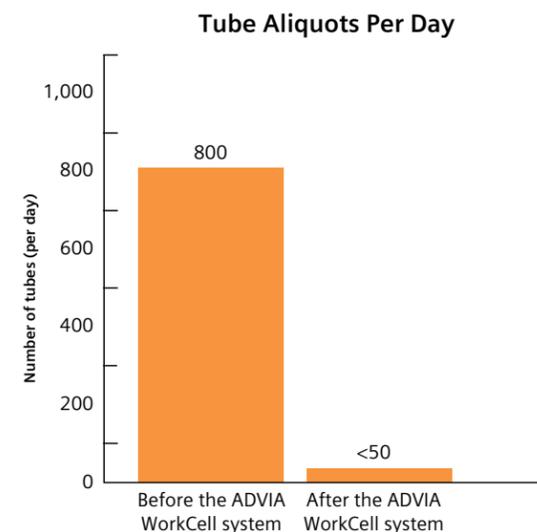
"We will not aliquot."

White Plains issued a bold proclamation in 2003 intended to meet JCAHO standards of improving performance and reducing errors: "We instituted a 'We will not aliquot' objective," says Marilyn Leonard, Chemistry Supervisor.

At one point, they had aliquoted two-thirds of its tubes at least once and, in many instances, up to seven times from the same primary tube. This practice created too many opportunities for errors and inefficiencies, not to mention personnel safety factors.

Aliquoting reduced by more than 94 percent.

With help from the ADVIA WorkCell system, White Plains achieved its objective. The ADVIA WorkCell system accommodates multiple tube sizes simultaneously and supports primary tube sampling where a single primary tube is intelligently routed to all required instruments. Today, they only aliquot those samples that need to be frozen (that is, PTH and IgE), which amounts to less than 50 samples a day, out of the 1,200 to 1,400 tubes currently processed on an average day.



White Plains is now processing approximately 800 fewer aliquot tubes a day, despite an increase in sample volume. The reduction in aliquoting has generated a dramatic cost savings from the use of fewer tubes and labels, as well as the increased productivity of technicians, who spend far less time handling tubes.

"We wouldn't have been able to achieve that with other systems we considered," says Leonard. "Some vendors said we'd have to draw two tubes or we could only use one tube size. With the ADVIA WorkCell system, neither limitation was a concern."

Minimizing manual processing increases productivity.

Going a step farther in 2008, they added a decapper to the ADVIA WorkCell system, which eliminated manual processing and enhanced personnel safety and productivity. "Once the decapper was turned on, it was never turned off. As the techs get used to it, they put more on the track and do less manually," says Leonard.

The ADVIA WorkCell sample manager is a key component of the automation system, which enables smart specimen routing, flexible sorting, and comprehensive sample tracking. "It has been very valuable in reducing errors and ensuring things keep moving," says Leonard.

The ADVIA WorkCell system enabled White Plains to meet another objective: reducing the volume of blood draws. With the ADVIA WorkCell system, smaller draws are required, and White Plains was able to go from using 10 mL tubes to 7.5 mL tubes.

The perfect fit.

White Plains was able to overcome an additional barrier – a weight-bearing wall that limited the amount of space that could be utilized in the laboratory. Fortunately, the ADVIA WorkCell system is compact, taking up as little as 320 square feet. "We looked at systems that were monstrous and way too long to fit into our space," says Leonard. "The ADVIA WorkCell system was a perfect fit and allowed us to get the biggest bang for the buck for the real estate we have."

Driving volume and revenue through outreach and by bringing in send-outs.

“The ADVIA WorkCell system has always been more than a tool to handle our current volume of testing. It’s enabled us to achieve the volume we hoped we could reach.”

Matt Palazola, MS
Administrative Director, Clinical Diagnostic Services



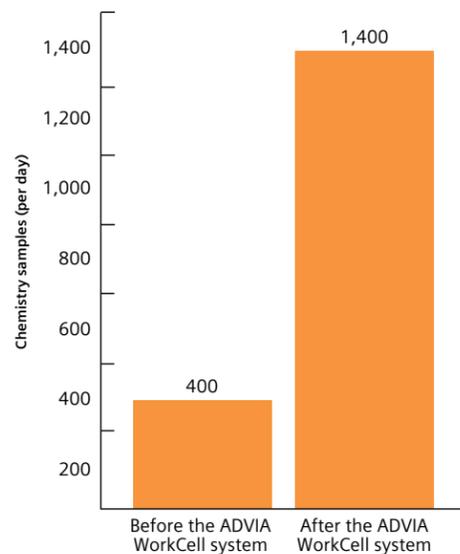
Growing test volume by double digits annually.

Above and beyond automating the laboratory’s existing test load, the ADVIA WorkCell system enabled White Plains to accommodate additional volume through outreach efforts. In fact, the ADVIA WorkCell system has been such an attractive selling point that they have seen more than a 350 percent increase in test volume since 2003 and continues to see double-digit growth annually. Today, 30 to 45 percent of White Plains’ testing is derived through outreach, adding more than \$500,000 per month in revenue.

“We could have never managed the growth in testing volume without automation,” says Leonard.

The laboratory went from handling 400 chemistry samples a day to 1,200 a day – 1,400 including urines. With a 400 tube-per-hour capacity, the ADVIA WorkCell system easily handles the busiest times and still has room for growth. “This has allowed us to shift from batch testing to routine testing 24/7,” notes Leonard.

Chemistry Samples Per Day



More and more tests done in-house.

The growth of volume can also be attributed to White Plains’ ability to bring testing in-house that used to be sent out. Since installing the ADVIA WorkCell system, they have brought approximately two dozen tests in-house, which has dramatically improved turnaround time (TAT) and profitability.

Tests brought in-house:	2003	2004	2005	2006	2007	2008
BNP, Caffeine, CA19-9, HgB A1C, Intact PTH, Urine electrophoresis						
Intraoperative PTH						
CA27.29, Prealbumin, Fetal fibronectin						
Molecular testing, HIV and HCV viral loads						
PLAC, EBV-3 test panel, Free kappa and lambda light chains, Parvo Virus-2 test panel						
25OH Vitamin D, HSV-3 test panel, all thyroid and hepatitis testing, including HIV moved to the automated system, allowing 24/7 testing						
Gross billings:	\$6.8M	\$7.7M	\$7.8M	\$7.4M	\$25.1M	\$44.5M

Exploding revenue at minimal cost.

White Plains has seen very healthy returns to its bottom line thanks to its investment in the ADVIA WorkCell system, enabling them to drive significant volume through outreach without requiring additional resources. They were able to redeploy one technician to handle newly adopted molecular testing while handling a burgeoning immunoassay volume, even after losing one full-time employee (FTE) to attrition.

In fact, White Plains will be adding its third ADVIA Centaur® Immunoassay system to accommodate the volume. “I can justify adding another Centaur because of the auto-validation and not needing to increase FTEs,” says Leonard.

Overall gross billings have increased 554 percent since 2006 – from \$7.4M in 2006 to about \$44.5M in 2008. Currently, the lab generates about \$4.6M in monthly billables, two-thirds of what they generated through all of 2003.

Perhaps most impressive of all, they were able to achieve this volume at a low relative cost. An analysis by White Plains estimates that costs only increased by 17 percent, well below the corresponding increases in volume and revenue. And these costs include the cost of the ADVIA WorkCell system.

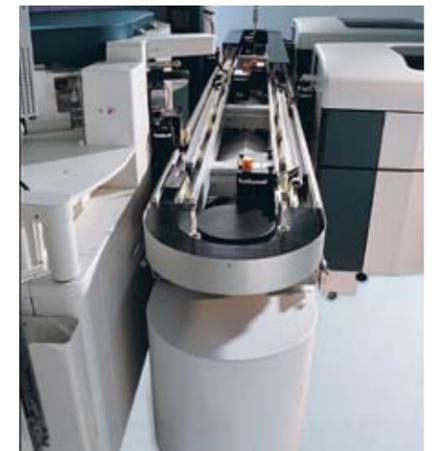
Cutting TAT in half.

Overall, TAT has been cut in half. Before the ADVIA WorkCell system, routine tests took up to two hours. Now, routine results are available within one hour, STATs in a bit less time. “Every once in a while, techs feel that they can do STATs faster manually, and every time the automation system proves them wrong,” says Leonard.

“A methadone clinic sends us 300 samples at once, and each one has five screens,” says Palazola. “It used to take up to 17 hours to process these, whereas we can do them in an hour with the ADVIA WorkCell system.”

The decapper also has contributed to improvements in turnaround, as it helps get tubes on the track faster. “Once the techs get used to it, they put more on the track and do less manually,” says Leonard. “They love it.”

White Plains also enjoys the added benefit of the ADVIA Centralink™ Middleware & Networking Solution, which has cut the time for add-on test processes in half. Now, no tech time is needed to locate samples for re-runs. “Most of the time, the techs don’t even know there’s an add-on until they verify the results,” says Leonard.



Becoming the employer of choice.



"We use the strength of our techs for validating test results, not delivering specimens."

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Perhaps the most profound effect of the ADVIA WorkCell system at White Plains has been on laboratory staff. Initially wary of automating the laboratory, the technicians soon saw that the ADVIA WorkCell system was a powerful tool that could help make their lives easier. "Techs were fearful that if you bring in automation, jobs would be lost," says Leonard.

Such fears were rapidly allayed once the techs became accustomed to the ADVIA WorkCell system. Freed from the manual handling of tubes, technicians were able to focus on the big picture instead of the details. "We use the strength of our techs for validating test results, not delivering specimens," says Leonard.

Laboratory personnel can also dedicate more focus to maintaining relationships with referring physicians and other customers. "Do physicians want another reference lab or the hospital they deal with all the time?" poses Leonard. "Physicians like to deal with someone they know. Trust and validity are key."

By the same token, the speed and accuracy of the ADVIA WorkCell system has helped reduce physician calls by 50 percent. However, they still get calls from the emergency department, because of the critical and time-sensitive nature of emergency medicine.

The prestige factor.

While many laboratories have difficulties finding qualified technicians, White Plains has them knocking on its door because they want to work in a laboratory with the advanced automation the ADVIA WorkCell system with the decapper offers. "Several new hires came to the lab because of the prestige factor," says Leonard. "The joke in HR is that chemistry doesn't have any trouble filling positions."

"The ADVIA WorkCell system helps us retain staff because it provides technicians with a good quality of life," says Palazola. Turnover may also be low because boredom is seldom an issue with the ADVIA WorkCell system. "I can promise techs that they will not be doing the same thing every day," says Leonard.

In addition to the variety, technicians also appreciate the fact that the ADVIA WorkCell system and the decapper reduce the repetitive strain that could lead to carpal tunnel syndrome.

The quality of the work environment at White Plains is exemplified by septuagenarian Nancy Reifenhauer, MT, who enjoys working with the ADVIA WorkCell system so much she has postponed her retirement. "The ADVIA WorkCell system has been a godsend – I don't want to retire!" says Reifenhauer.

Third-party support. First-class partnership.

The explosive growth White Plains has experienced in recent years has not only been a story of advanced technology but of the relationship it has developed with Siemens. The integration of Bayer, DPC, and Dade Behring into Siemens Healthcare Diagnostics has brought together best-in-class technologies and best practices.

What has impressed Leonard is that, as a customer, she is a very important part of that mix. "I went to a user group meeting and I was impressed that Siemens listened and prioritized what they heard," she says. "I can honestly say that we have seen everything that we have asked for."

Leonard also appreciates the fact that service from Siemens goes beyond Siemens systems. White Plains enjoys the flexibility Siemens provides in supporting third-party systems and every size tube. "We had a horrible experience with third-party support from another vendor," says Leonard. "All we heard was 'That's not mine—it's yours.' In contrast, the Binding Site, DCL, and IDS have all been very positive about Siemens and have found Siemens a real pleasure to work with."

Rock-solid reliability, even in the most trying times.

As for reliability, the ADVIA WorkCell system has been down only once in five years, and that was during the blackout of 2003. The system even works when the LIS is down.

Since White Plains has the ADVIA CentraLink Networking Solution, the laboratory is able to continue operations when the LIS is down, because the ADVIA CentraLink Networking Solution serves as an independent system.

"When our hospital information system is down, other departments wonder how they're going to manage," says Leonard. "When it comes to chemistry, we just print and fax the results, which really makes life easy."



Adds Leonard: "The ADVIA CentraLink Networking Solution is really the brains of the operation. That's where you validate, you order, you keep track. All the information you could possibly need is available at the fingertips of the person verifying results."

White Plains has also undergone two smoothly executed software upgrades. Leonard says the information that was added to the software for supervisory troubleshooting "has been very, very useful."

ADVIA WorkCell system key benefits

- High-capacity automated workflow to increase throughput and laboratory productivity
- High performance that empowers laboratories to manage increasing volumes with minimum staffing
- Ability of laboratorians to focus on high-value tasks rather than on manual handling of samples

Solutions in use at White Plains

- 1 ADVIA WorkCell CDX Automation Solution
- 2 ADVIA® 1800 Chemistry Systems
- 2 ADVIA Centaur® XP Immunoassay Systems
- 1 IMMULITE® 2000
- 1 ADVIA CentraLink Networking Solution

Planned upgrades

- Incorporating auto-validation to allow technicians to focus on problems
- Installing an online centrifugation system, which will consolidate three manual systems into one

Upgrades being considered

- Automating additional immunoassay testing. "If I had more space, I'd also connect my IMMULITE 2000 Immunoassay System to my ADVIA WorkCell," says Leonard.