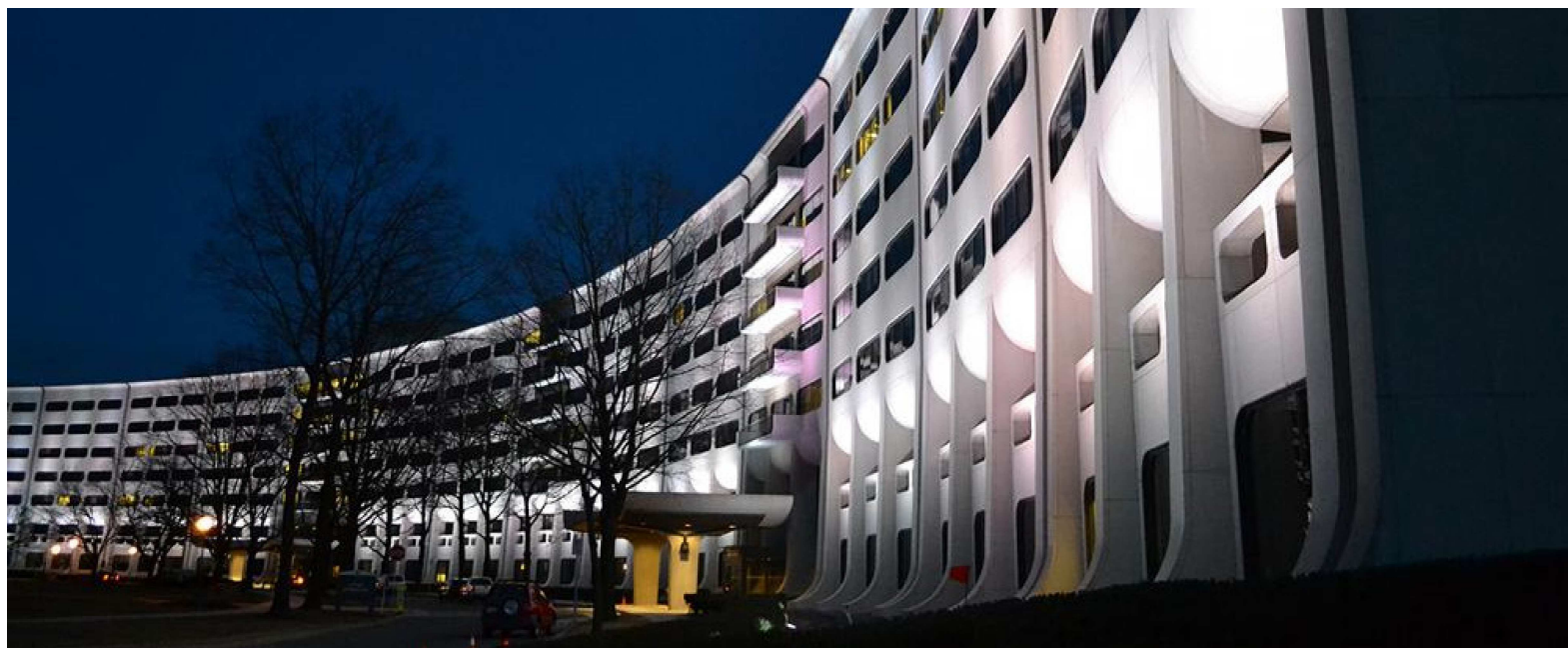


CASE STUDY

At Penn State Health Milton S. Hershey Medical Center, a new automated laboratory testing system speeds up results and improves quality.



When the time had come for new instrumentation in the laboratory at the Milton S. Hershey Medical Center, a team of more than a dozen people took their time to select testing equipment that could handle more than 5,000 specimens per day. They chose to partner with Roche Diagnostics. Roche's comprehensive automated laboratory testing system consolidates several analyzers into one system, connects to robust automation line and offers some of the best clinical outcomes.

Facility

Penn State Health
Milton S. Hershey Medical Center
Hershey, Pennsylvania

Annual test volume

More than 2 million (billable)

Challenges

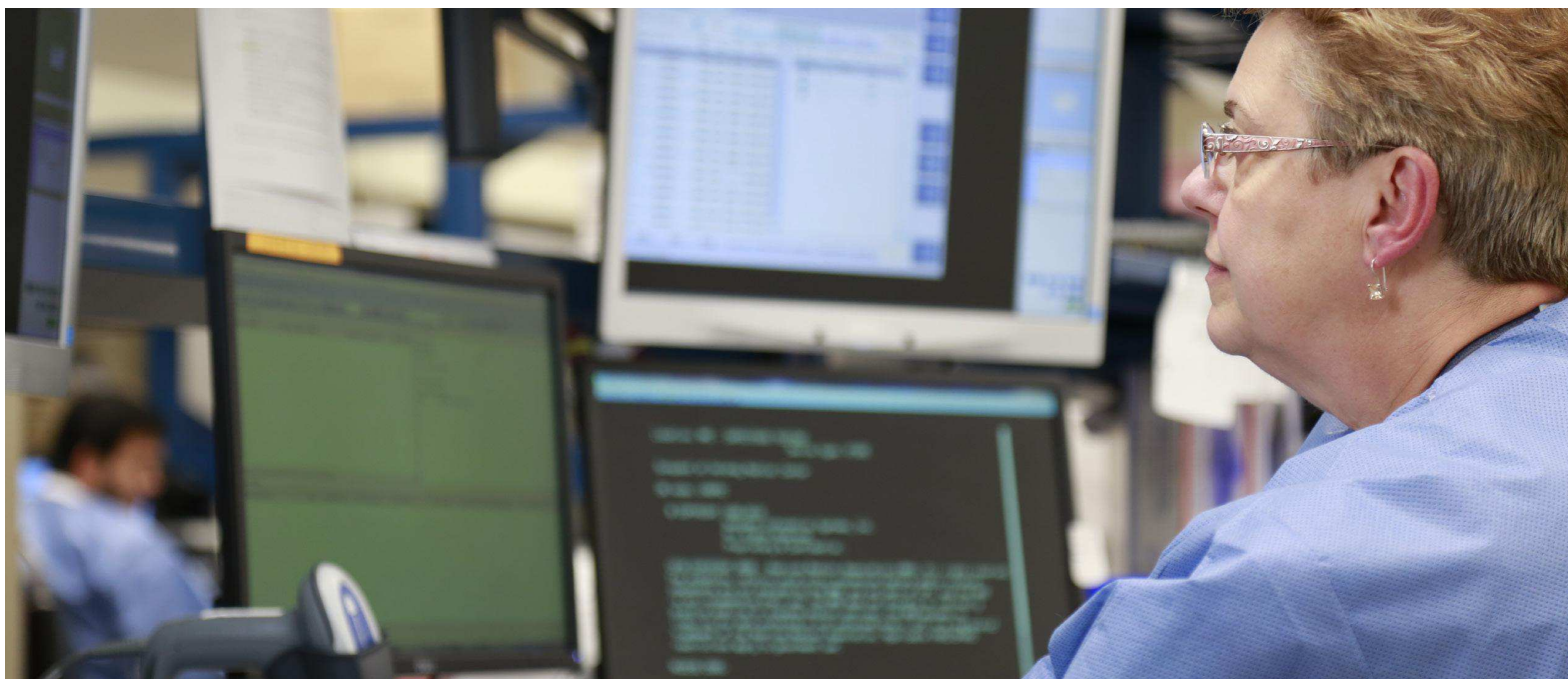
- Aging and outmoded equipment
- Burdensome manual sample tracking
- Decreased workforce supply

Solution

cobas® 8000 analytic platform connected to cobas 8100 pre-analytics automated workflow series, with Roche Middleware solutions, automated sample storage and retrieval capability

Objectives

- Consolidate multiple analyzers into one system
- Expand testing menu
- Improve Troponin turnaround time
- Achieve consistent and predictable cycle times
- Automate manual processes
- Improve space utilization
- Leverage technology to optimize staff expertise
- Improve ability to meet short-term disaster relief needs



Penn State Health Milton S. Hershey Medical Center

“We have both the longest and the shortest track in Roche history. That’s because we run our Cancer Institute laboratory with a lot more horsepower than it needs to serve our cancer patients. It’s our disaster fallback. If we have to, we can support the institutional needs for days until our main lab is recovered.”

— Edward Pederson, chief technologist
Automated Testing Laboratory

Founded in 1963 through a gift from The Milton S. Hershey Foundation, Penn State Health Milton S. Hershey Medical Center is a leading university health center located in Hershey, Pennsylvania.

The 548-bed Milton S. Hershey Medical Center is a provider of high-level, patient-focused medical care. Annually, the Medical Center admits 29,000 patients, receives 72,000 emergency room patients and performs 30,000 surgical procedures. As a Magnet-designated hospital since 2007, Hershey Medical Center employs caregivers who are dedicated to excellence and achieving superior patient and community outcomes. The Hershey Medical Center campus includes Penn State College of Medicine (Penn State’s medical school), Penn State Cancer Institute and Penn State Children’s Hospital — the region’s only children’s hospital.

The core laboratory analyzes more than 5,000 specimens daily, some of which have life-changing or therapy-altering implications.

HERSHEY MEDICAL CENTER LABORATORY GOALS

Operational Efficiency

- Expedite processes from pre-analytics to results
- Achieve auto-verification rate of 95%
- Maximize FTE utilization
- Improve turnaround times (TAT) to less than 60 minutes 90% of the time
- Utilize Cancer Institute laboratory as a disaster laboratory, rather than construct a second laboratory
- Accommodate high volumes

System Requirements

- Growth potential — ability to add testing modules
- Connectivity with multiple analyzers
- Innovative IT solution
- Bidirectional track


The Selection Process

In 2015, with their analyzers approaching their 10th year, the laboratory assembled a team to examine all the options in the marketplace and determine the best fit with their institution and their needs. “We weren’t convinced that our current vendor was that solution,” said Christopher Morrow, operations and finance director, Automated Testing Laboratory.

The team sent a Request for Proposal (RFP) to five potential vendors. Four responded. Then the evaluation process began. The team of evaluators included management, key lab stakeholders, subject-matter experts (actual lab techs), as well as Laboratory Information Systems NIT.

Once they scored the RFPs, the team scheduled site visits with the various vendors, either at customer sites or experience centers. At the end of each visit, they continued to score and evaluate the RFPs.

“We were looking for a way to consolidate several different analyzers into one system, connected by a very robust automation line,” said Terri Neibauer, senior technical specialist. “We knew the right system could help reduce the burden of manual sample tracking, expand our offerings for tests and improve our turnaround time, accuracy and quality.”



“The new system enables our laboratory specialists to spend more time analyzing results that really need their expert interpretation. It also opens up time for essential quality improvement projects and better communication with clinicians.”

—Thomas Stipe, manager,
Department of Pathology and
Laboratory Administration

Why Roche?

“The initial perks of the Roche system were practical. It takes the place of numerous analyzers we had all over the lab, each one serviced by a different company with its own procedures,” explained Thomas Stipe, manager, Department of Pathology and Laboratory Administration. “The cobas system processes samples faster and more accurately, so it opens many future opportunities for capacity, quality assurance and research. Selecting it was the best way to make the possibilities we wanted available to us all at once.”

“One of the biggest benefits we’re seeing is the ability to get real-time analytics for specimens going into the clinical chemistry analyzers. We now know consistently that, on any given day, all specimens are resultd within 35 minutes from the time they’re received in the lab, and all specimens are resultd in a bit more than 60 minutes from the time that they’re collected.”

— Tony Douventzidis, manager, Laboratory Information Systems

THE VALUE OF THE ROCHE SYSTEM

Roche 8100 Pre-Analytics (option)

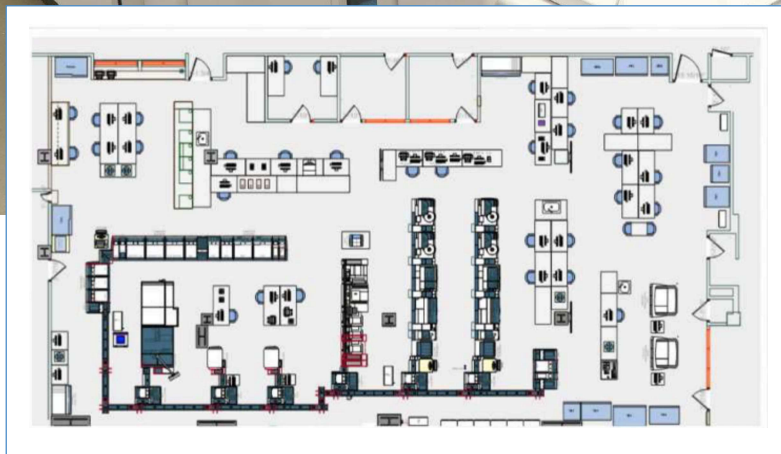
- Upfront integrity checks confirm sample volume and quality, remove high-touch manual steps, and identify errors within first 15 minutes for earlier intervention
- Multi-level, bidirectional tube transportation, throughput 800 to 1,100 tubes/hour
- Ability to run both primary tubes and make aliquots to run in mixed mode— workflow flexibility
- Ability to use all sample tube sizes in mixed mode, single-tube transport with radio-frequency identification (RFID)
- No compressor to run specimen track system

Roche cobas 8000 System

- Turnaround time less than 45 minutes using one standard process
- Mid-term storage for hands-free add-on/repeat testing and archiving
- Fewer processing steps, even when starting from a partially automated laboratory
- Superior Middleware — true autoverification, no enter/edit needed, tracks turnaround time
- Largest test menu of all vendors and small sample volume requirements

Roche Value Drivers

- Flexible training options
 - On-site at customer facility
 - Roche Indianapolis campus
 - Roche Diagnostic University
- Virtual online environment
- Proactive support
- Customizable dashboards
- Data drives real versus perceived improvement



THE NEW LABORATORY

The new Roche system operates fairly independently. When it receives a sample, robotic arms scan the barcode to register all ordered tests and immediately start processing the sample. The system then sends the sample down the line to whichever instruments are required for the ordered tests.

When testing is complete, the cobas 8100 refrigerates and discards as appropriate. Medical technologists program the system to automatically identify and set aside samples for research.

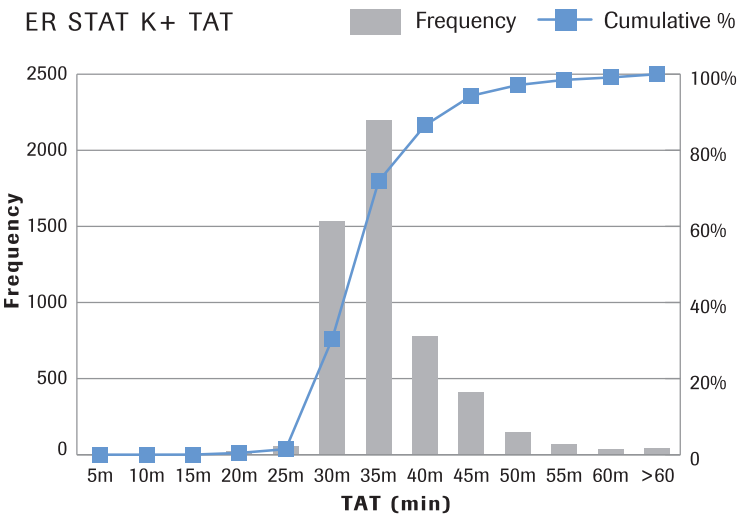
“Almost everything is automated, so human error is reduced, and the medical technologists can focus on work that is a better use of their time and skill, such as improving quality and patient safety,” said Yusheng Zhu, medical director.

The new system has resulted in significant improvements in laboratory function. For example, simply reducing “flagged” samples from 20% to 10% means technicians have 500 fewer samples to manually review and interpret daily.

Improved Turnaround Times

Chemistry (Receipt to Results Verified)

Chemistry turnaround times are both shorter and more consistent and predictable.

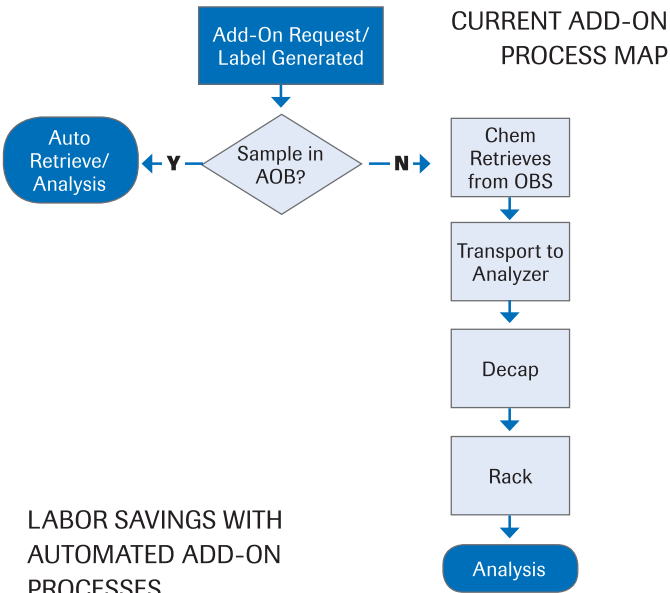
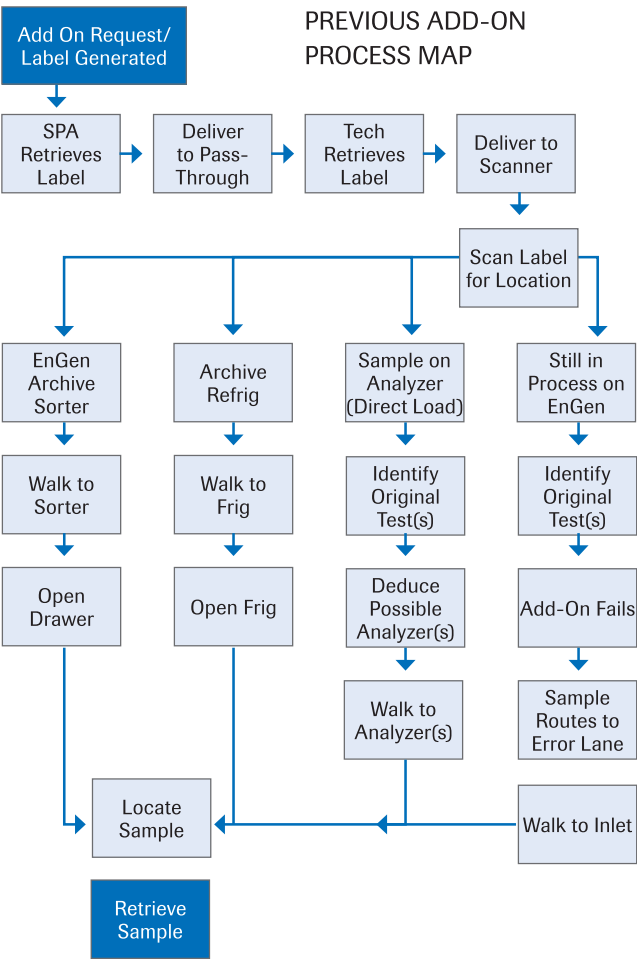


K+ TAT (minutes): BEFORE AND AFTER

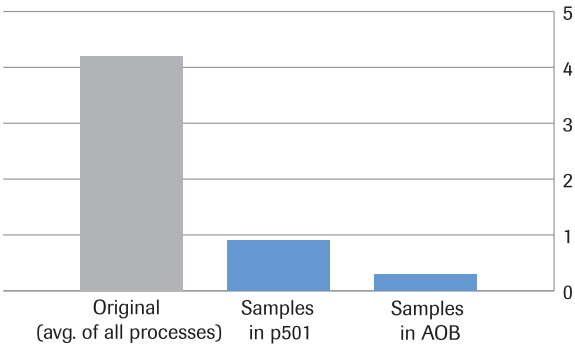
	Original (ER STAT Only)	Roche Solution (ALL Priorities)	Percentage Improvement
MEAN (min)	46	34	-26%
STD DEV (min)	14	7	-50%
90th % (min)	63	42	-33%

Add-On Process Time

In the before state, an average of 4.2 manual hands-on hours spent per day for add-ons.



LABOR SAVINGS WITH
AUTOMATED ADD-ON
PROCESSES





“Senior management asked about FTE savings. ‘Didn’t you promise savings from attrition within two years.’ I said yes, we’ve already eliminated three out of four FTE positions.”

— Christopher Morrow, operations and finance director, Automated Testing Laboratory

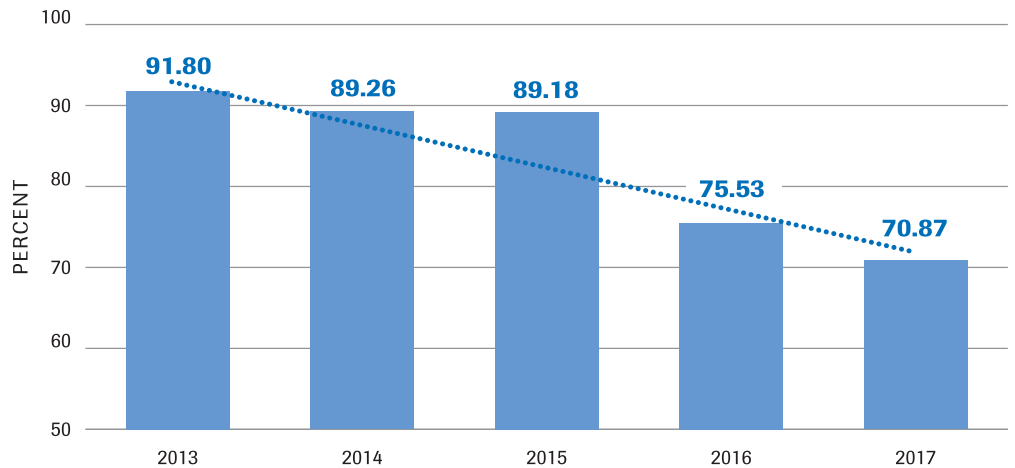
The Automated Laboratory improved productivity and achieved significant labor savings through attrition. Front row from left: Ron Livingston, Chris Witkowski, Terri Neibauer, Monica Straub, Civia Katz, Filomena Blaine and Sofia Scott; middle row from left: Chris Morrow, Tom Stipe and Laurel Woods; back row from left: Chris Pederson, Jim Neibauer and Tony Douventzidis.

Productivity / Labor Savings

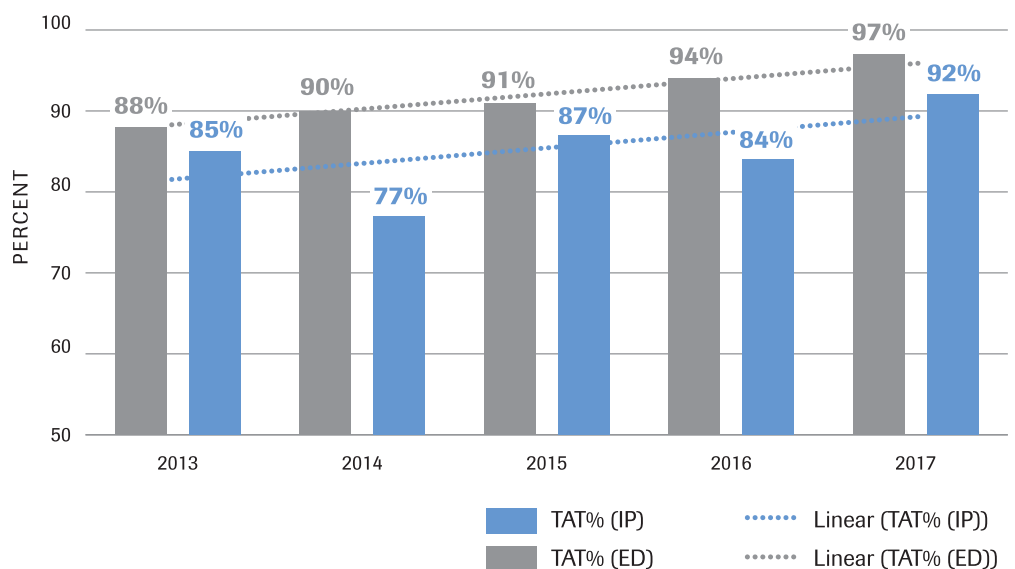
Turnaround times continue to improve even with a significant net reduction in FTEs.

Note: FTE reduction was achieved through attrition, no terminations.

STAFFING (in FTEs)



TAT %



RESULTS SUMMARY

LABORATORY GOALS	LABORATORY RESULTS
Achieve platinum-level consistent and predictable turnaround times	From 60 minutes 90% of the time to 32 minutes 99.5% of the time
Maximize FTE utilization	Commitment to reduce FTEs by four within two years; achieved 75% within five months
Streamline add-on processing	Turnaround time reduced from 120 minutes (manual process) to under 60 minutes (automated process)
Enhance auto-verification to 95%	Increased from a daily average of 82% to a daily average of 91% within the first three months
Expand testing menu	Added testing for Procalcitonin, Anti-mullerian Hormone and Haptoglobin
Establish disaster laboratory capability	Cancer Institute Laboratory can support the needs of Hershey Medical Center for several days in the event that the main laboratory is disabled

“I can’t say enough about how much we take it to heart that the results we report are accurate, are received in a timely manner and are meaningful, so physicians can make the right decisions sooner for people’s medical care.”

— Teri Neibauer, senior technical specialist

Discover how you and Roche can redefine the value of your laboratory together.

Contact your Roche Diagnostics representative:
call 1-800-346-8606, or visit usdiagnostics.roche.com

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