

Total Lab Automation

Rajagiri Hospital

NABH Accreditation Presentation

Powered by Roche Diagnostics

Rajagiri Hospital | We care. We cure

About Rajagiri Hospital



- A premier multi-specialty hospital committed to delivering healing at its finest
- Believes everyone deserves access to world-class healthcare services
- Continuously adopts cutting-edge technology to enhance patient safety
- Focus on affordable, accurate, and timely diagnostic services
- Led by Fr. Johnson Vazhappilly CMI, Executive Director & CEO

Need for Total Lab Automation

- Increasing patient load demands faster turnaround times (TAT)
- Manual processes prone to pre-analytical and analytical errors
- Need for standardization across all diagnostic disciplines
- Growing demand for high-throughput testing with minimal sample volumes
- Requirement for real-time monitoring and proactive quality management

Introduction

At Rajagiri Hospital, we believe every patient deserves the highest standard of care and the confidence that comes with accurate, timely diagnostics.

To further enhance our commitment to clinical excellence, we have embraced Smart Laboratory Automation powered by Roche Diagnostics. This transformative solution seamlessly integrates advanced technology, intelligent workflow management, and precision-driven diagnostics to deliver faster turnaround times, improved accuracy, and enhanced operational efficiency.

By minimizing manual intervention and optimizing every stage of the laboratory process, we ensure that every test result is reliable, every diagnosis is supported by quality data, and every patient receives the best possible care at the right time.

Together, we are redefining the future of diagnostics—where innovation meets compassion, and excellence drives better patient outcomes.

Rajagiri Smart Lab — Solution Overview

- End-to-end total laboratory automation powered by Roche Diagnostics
- Integration of pre-analytical, analytical, and post-analytical phases
- Advanced robotics and conveyor systems for sample handling
- Digital Command Center with navify® Lab Operations & Monitoring
- Multidisciplinary connectivity: Biochemistry, Immunoassay, Serology, Haematology

Pre-Analytical Automation



Technology Features

- High-definition cameras for sample imaging
- Laser technology for barcode reading
- Comprehensive sample quality checks
- Automated centrifugation & aliquoting
- Intelligent sample routing

Benefits & NABH Compliance

- Near-zero pre-analytical errors
- Error samples flagged early in workflow
- Ensures sample integrity
- Reduces manual touchpoints
- Complete traceability & audit trail

Aerial View – Roche Lab Infrastructure



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Smart Lab Overview - Cobas Automation



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- High-throughput, scalable cobas® modules (pro, e 801, ISE neo)
- Lowest required sample volumes — pediatric friendly
- Shortest assay turnaround times with expanded test menu
- Built-in QC, automated calibration, and reagent management
- Inter-instrument connectivity for consistent, reliable results

Sample Processing - Lab Technician



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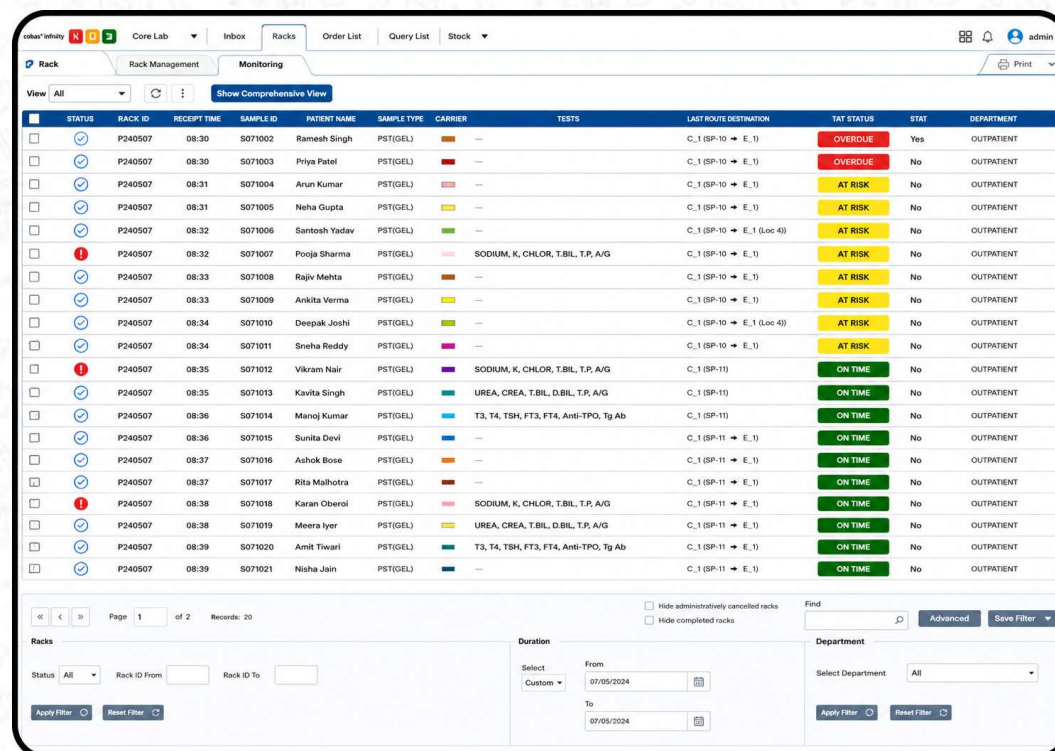


Multidisciplinary Connectivity

- Clinical Biochemistry — metabolic and organ function panels
- Immunoassay — hormones, tumor markers, cardiac markers, thyroid profiles
- Infectious Serology — viral markers, autoimmune panels, serological tests
- Haematology — CBC, coagulation profiles, haemoglobin analysis
- Single sample entry with intelligent routing; unified reporting platform

Post-Analytical Automation

- Automated result verification and validation workflows
- Intelligent auto-rerun and reflex testing capabilities
- Automated sample archiving and storage (cobas p 501)
- Seamless integration with Hospital Information System (HIS)
- Complete sample lifecycle management from receipt to disposal



STATUS	RACK ID	RECEIPT TIME	SAMPLE ID	PATIENT NAME	SAMPLE TYPE	CARRIER	TESTS	LAST ROUTE DESTINATION	TAT STATUS	STAT	DEPARTMENT
☐	P240507	08:30	S071002	Ramesh Singh	PST(GEL)	—	—	C_1 (SP-10 → E_1)	OVERDUE	Yes	OUTPATIENT
☐	P240507	08:30	S071003	Priya Patel	PST(GEL)	—	—	C_1 (SP-10 → E_1)	OVERDUE	No	OUTPATIENT
☐	P240507	08:31	S071004	Arun Kumar	PST(GEL)	—	—	C_1 (SP-10 → E_1)	AT RISK	No	OUTPATIENT
☐	P240507	08:31	S071005	Neha Gupta	PST(GEL)	—	—	C_1 (SP-10 → E_1)	AT RISK	No	OUTPATIENT
☐	P240507	08:32	S071006	Santosh Yadav	PST(GEL)	—	—	C_1 (SP-10 → E_1 (Loc 4))	AT RISK	No	OUTPATIENT
☐	P240507	08:32	S071007	Pooja Sharma	PST(GEL)	—	SODIUM, K, CHLOR, T.BIL, T.P, A/G	C_1 (SP-10 → E_1)	AT RISK	No	OUTPATIENT
☐	P240507	08:33	S071008	Rajiv Mehta	PST(GEL)	—	—	C_1 (SP-10 → E_1)	AT RISK	No	OUTPATIENT
☐	P240507	08:33	S071009	Ankita Verma	PST(GEL)	—	—	C_1 (SP-10 → E_1)	AT RISK	No	OUTPATIENT
☐	P240507	08:34	S071010	Deepak Joshi	PST(GEL)	—	—	C_1 (SP-10 → E_1 (Loc 4))	AT RISK	No	OUTPATIENT
☐	P240507	08:34	S071011	Sneha Reddy	PST(GEL)	—	—	C_1 (SP-10 → E_1)	AT RISK	No	OUTPATIENT
☐	P240507	08:35	S071012	Vikram Nair	PST(GEL)	—	SODIUM, K, CHLOR, T.BIL, T.P, A/G	C_1 (SP-11)	ON TIME	No	OUTPATIENT
☐	P240507	08:35	S071013	Kavita Singh	PST(GEL)	—	UREA, CREA, T.BIL, D.BIL, T.P, A/G	C_1 (SP-11)	ON TIME	No	OUTPATIENT
☐	P240507	08:36	S071014	Manoj Kumar	PST(GEL)	—	T3, T4, TSH, FT3, FT4, Anti-TPO, Tg Ab	C_1 (SP-11)	ON TIME	No	OUTPATIENT
☐	P240507	08:36	S071015	Sunita Devi	PST(GEL)	—	—	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT
☐	P240507	08:37	S071016	Ashok Bose	PST(GEL)	—	—	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT
☐	P240507	08:37	S071017	Rita Malhotra	PST(GEL)	—	—	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT
☐	P240507	08:38	S071018	Karan Oberoi	PST(GEL)	—	SODIUM, K, CHLOR, T.BIL, T.P, A/G	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT
☐	P240507	08:38	S071019	Meera Iyer	PST(GEL)	—	UREA, CREA, T.BIL, D.BIL, T.P, A/G	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT
☐	P240507	08:39	S071020	Amit Tiwari	PST(GEL)	—	T3, T4, TSH, FT3, FT4, Anti-TPO, Tg Ab	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT
☐	P240507	08:39	S071021	Nisha Jain	PST(GEL)	—	—	C_1 (SP-11 → E_1)	ON TIME	No	OUTPATIENT

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Find

Advanced Save Filter

Department

Select Department All

Apply Filter Reset Filter

Racks

Status All Rack ID From Rack ID To

Apply Filter Reset Filter

Duration

Select Custom From 07/05/2024 To 07/05/2024

RAJAGIRI SMART LAB IS BACK BONE



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- ❖ The Rajagiri smart lab is the backbone of a more responsive healthcare ecosystem where technology optimizes processes, reduces risk of errors, and delivers the highest level of diagnostic accuracy. The pre-analytical automation uses high-definition cameras and laser technology to perform a comprehensive pre-analytical sample quality and sufficiency checks. This ensures near-zero pre-analytical errors by flagging and holding samples with errors early in the workflow.
- ❖ Powered by advanced robotics, the end-to-end smart automation integrates multiple disciplines including clinical biochemistry, immunoassay, infectious serology and hematology. The automation track is complete with a high-throughput post-analytical automation. This helps us minimize manual touchpoints and decision barriers. The analytical systems are designed to be future-ready using high-throughput, scalable cobas modules with lowest required sample volumes, shortest assay turnaround times, and an expanded test menu.

Lab Backbone - Smart Lab Infrastructure



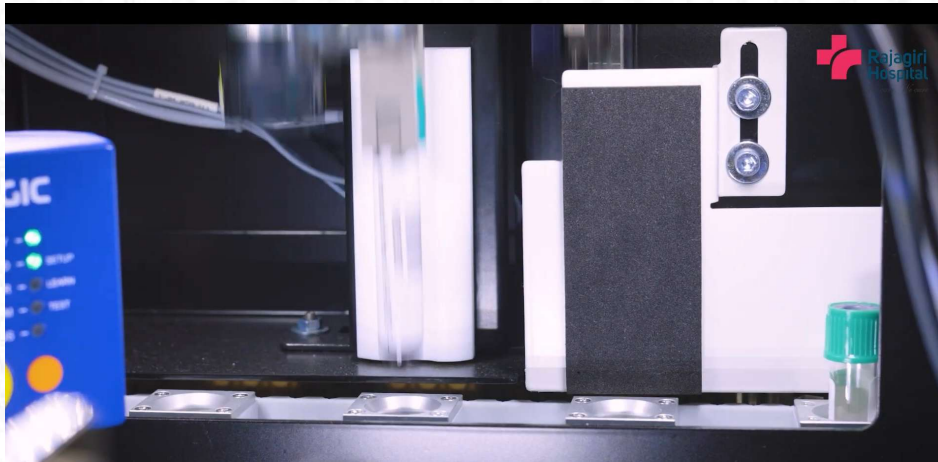
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Technology Interface - Touchscreen Operations



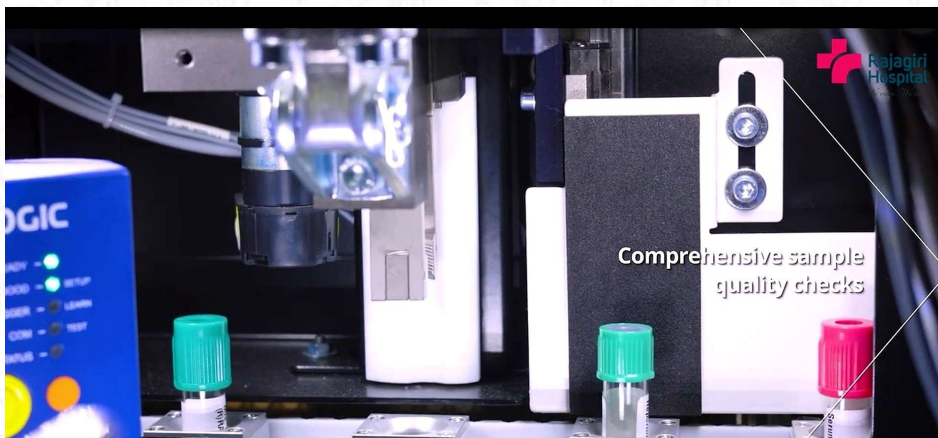
The Smart Laboratory Automation system is equipped with an intuitive touchscreen interface designed to simplify laboratory operations and enhance user experience. The user-friendly dashboard provides real-time visibility into sample processing, system status, workflow progress, and analyzer performance, enabling laboratory staff to monitor and manage operations efficiently.

Quality Assurance - Sample Quality Checks

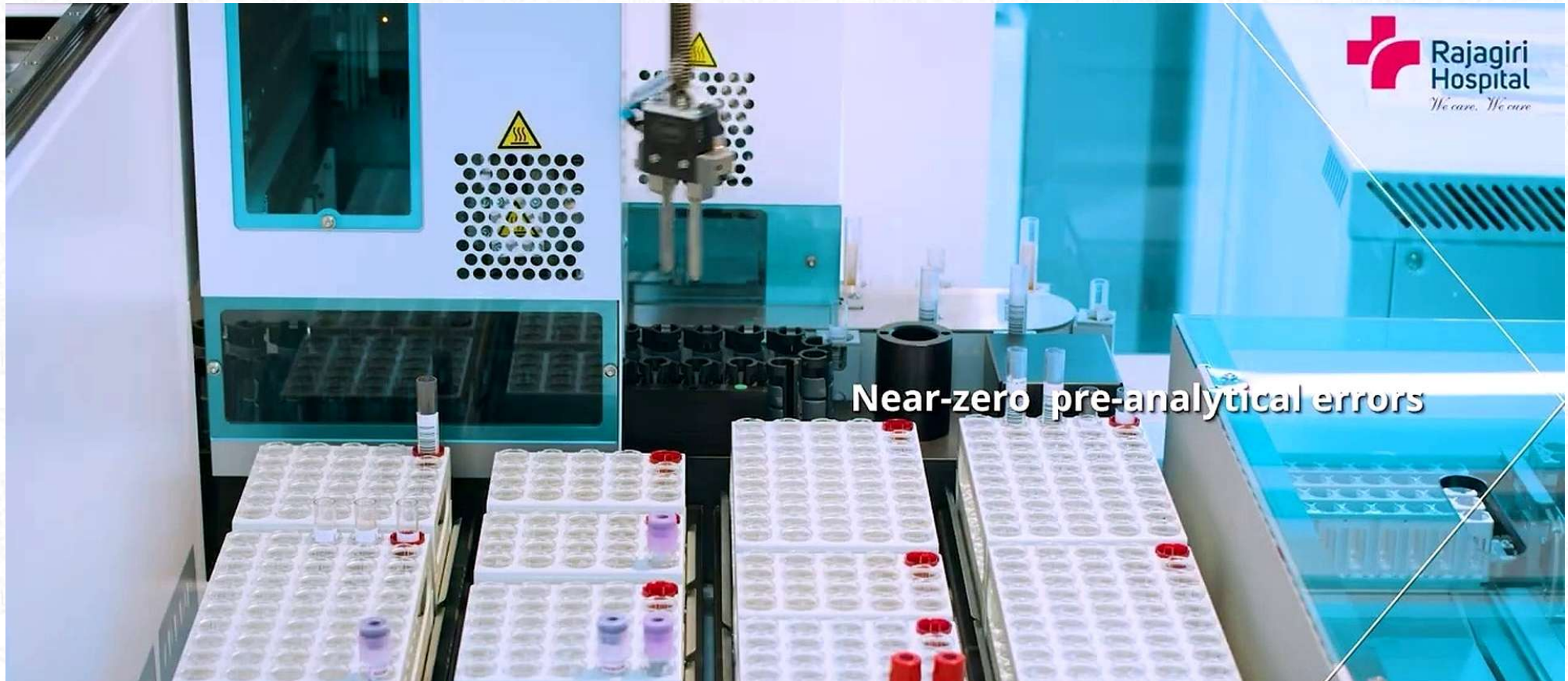


Ensuring the integrity and accuracy of every sample is fundamental to delivering reliable diagnostic results. The Smart Laboratory Automation system incorporates advanced quality assurance mechanisms that continuously monitor and validate sample quality throughout the testing process.

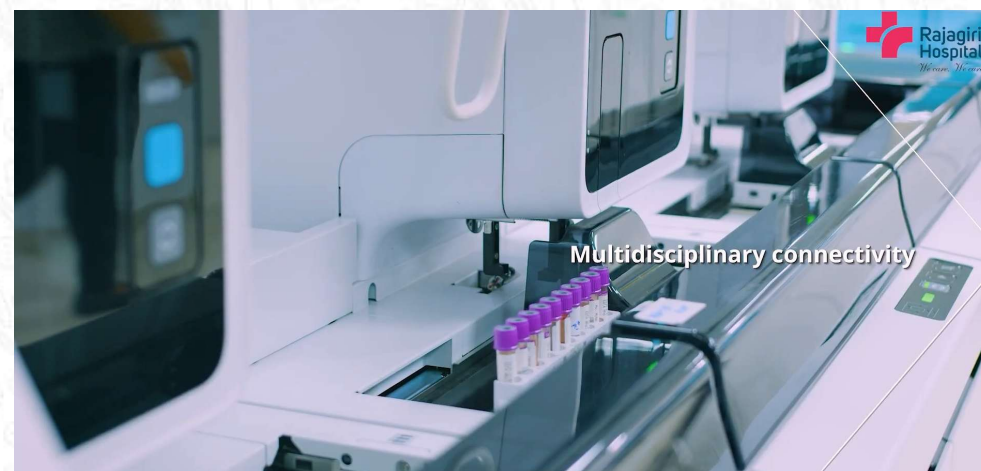
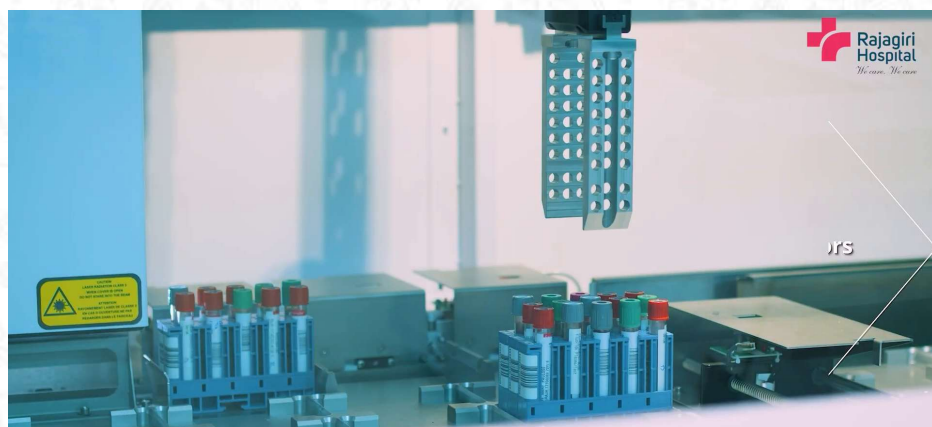
Automated quality checks help identify potential issues at an early stage, reducing errors, minimizing repeat testing, and maintaining the highest standards of laboratory excellence.



Precision Robotics - Zero Pre-analytical Errors



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Advanced robotic automation ensures precise sample handling, identification, and routing with minimal human intervention. This significantly reduces pre-analytical errors, enhances workflow efficiency, and ensures consistent, reliable diagnostic outcomes.

Lab Operations - Technician Workstations



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Ergonomically designed workstations provide technicians with real-time access to sample status, system updates, and workflow controls, enabling efficient and seamless laboratory operations.

Advanced Analytics - cobas e 801 Module

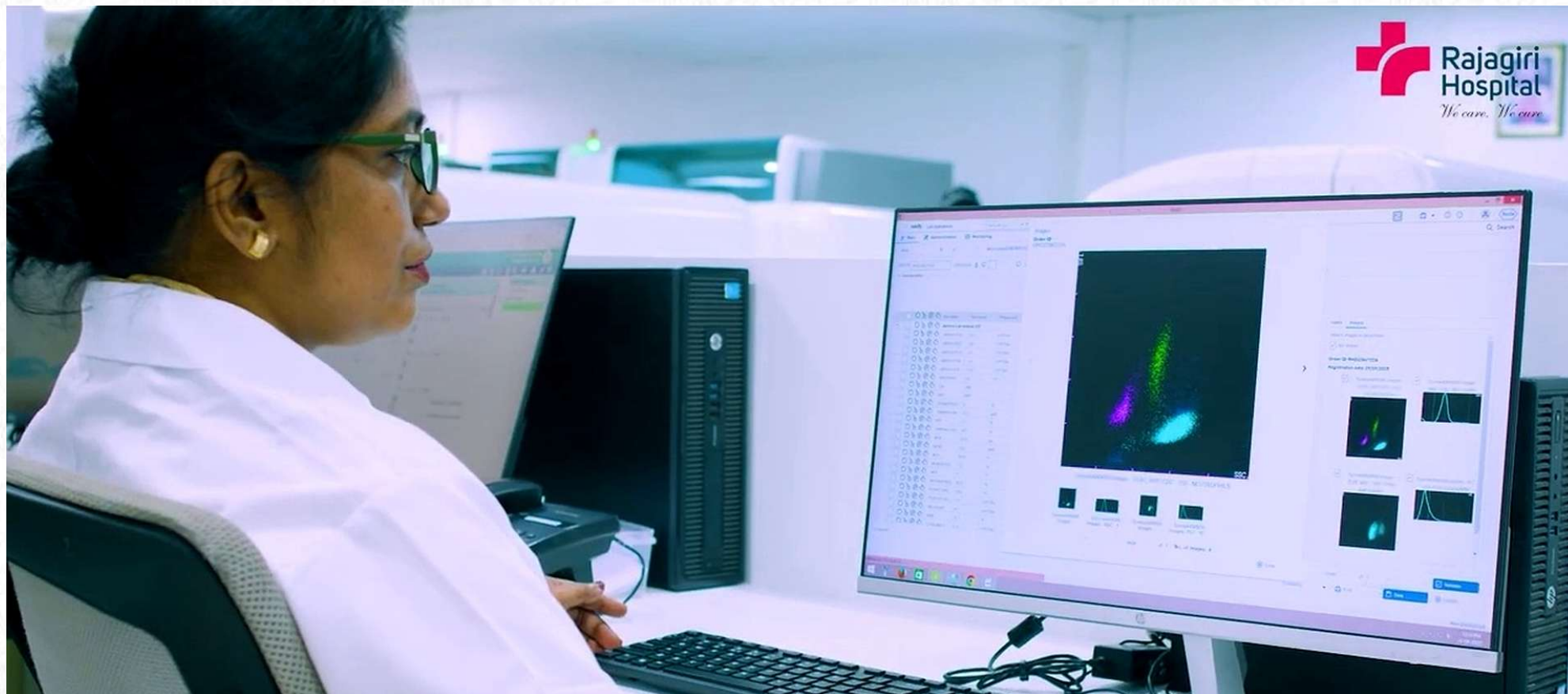


The cobas e 801 module delivers high-throughput immunoassay testing with exceptional precision, enabling faster, reliable, and clinically confident results.

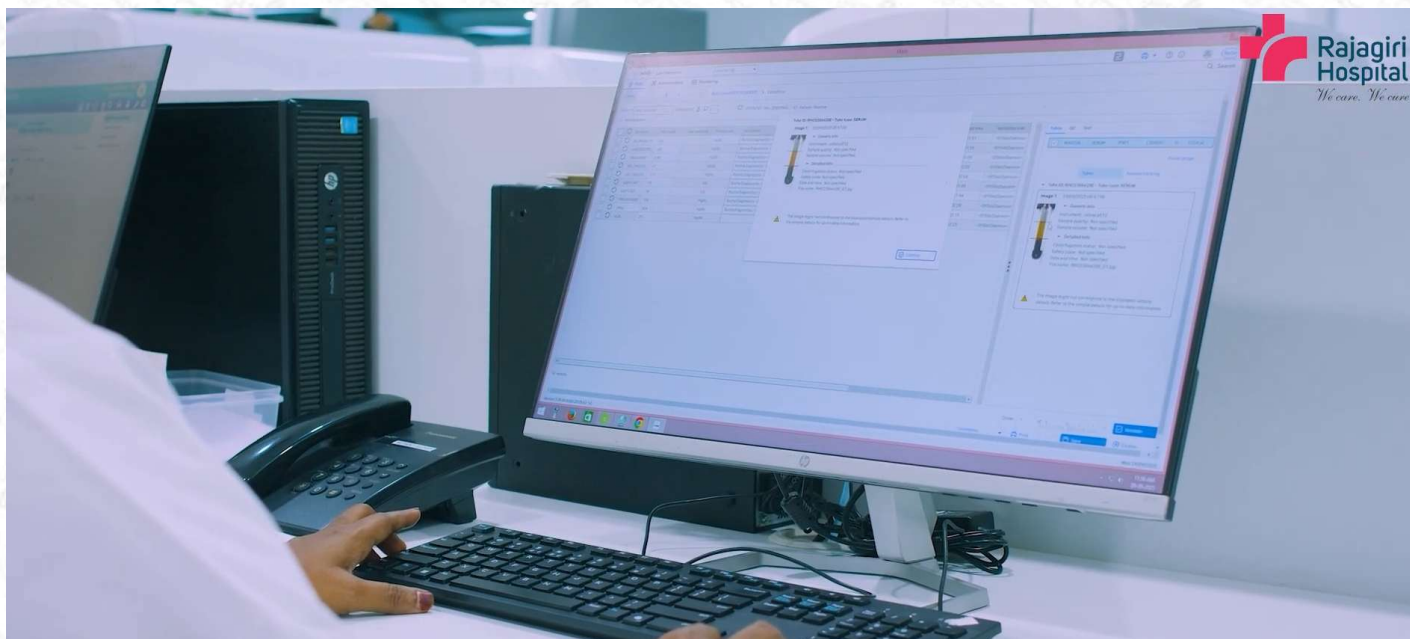




Digital Pathology - Lab & Cytometry



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Advanced digital pathology and cytometry solutions enable accurate sample analysis, streamlined workflows, and faster diagnostic insights for improved patient care.

Real-time Monitoring - NAVIFY Dashboard



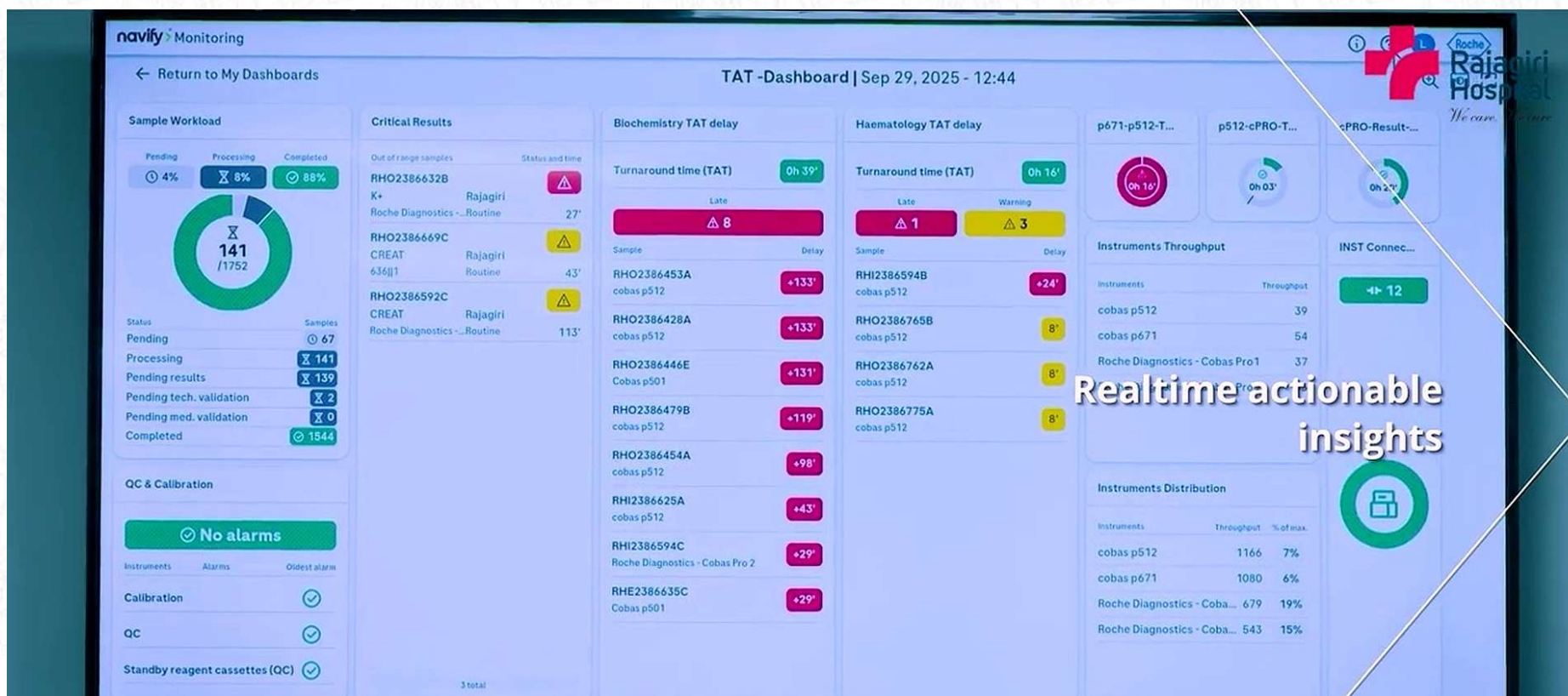
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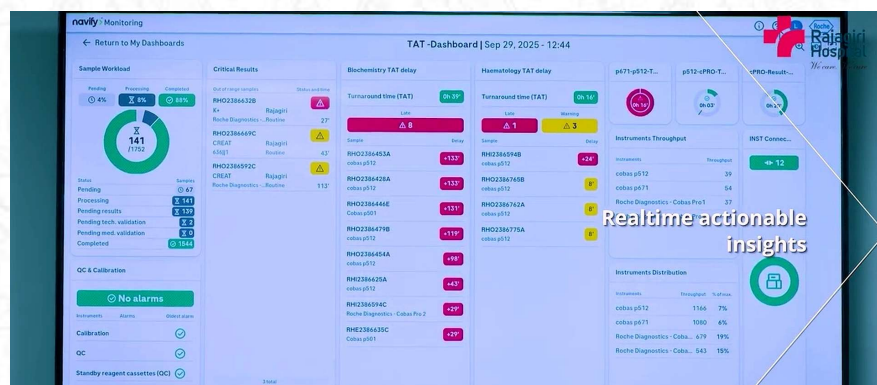
Navify Dashboard

Rajagiri Smart Lab's digital command center consists of NAVIFY Lab Operations and NAVIFY Monitoring. This elevates the lab transformation into a digitally enabled, automated, decision-supported setup. The proactive NAVIFY Lab Monitoring dashboard provides real-time actionable insights to the on-ground technical team and a consolidated operations overview to the management team.

Features

- navify® Lab Operations: Centralized workflow management, real-time tracking, decision support
- navify® Monitoring: TAT alerts, instrument throughput, proactive QC & maintenance alerts
- Consolidated operations overview for technical team and management

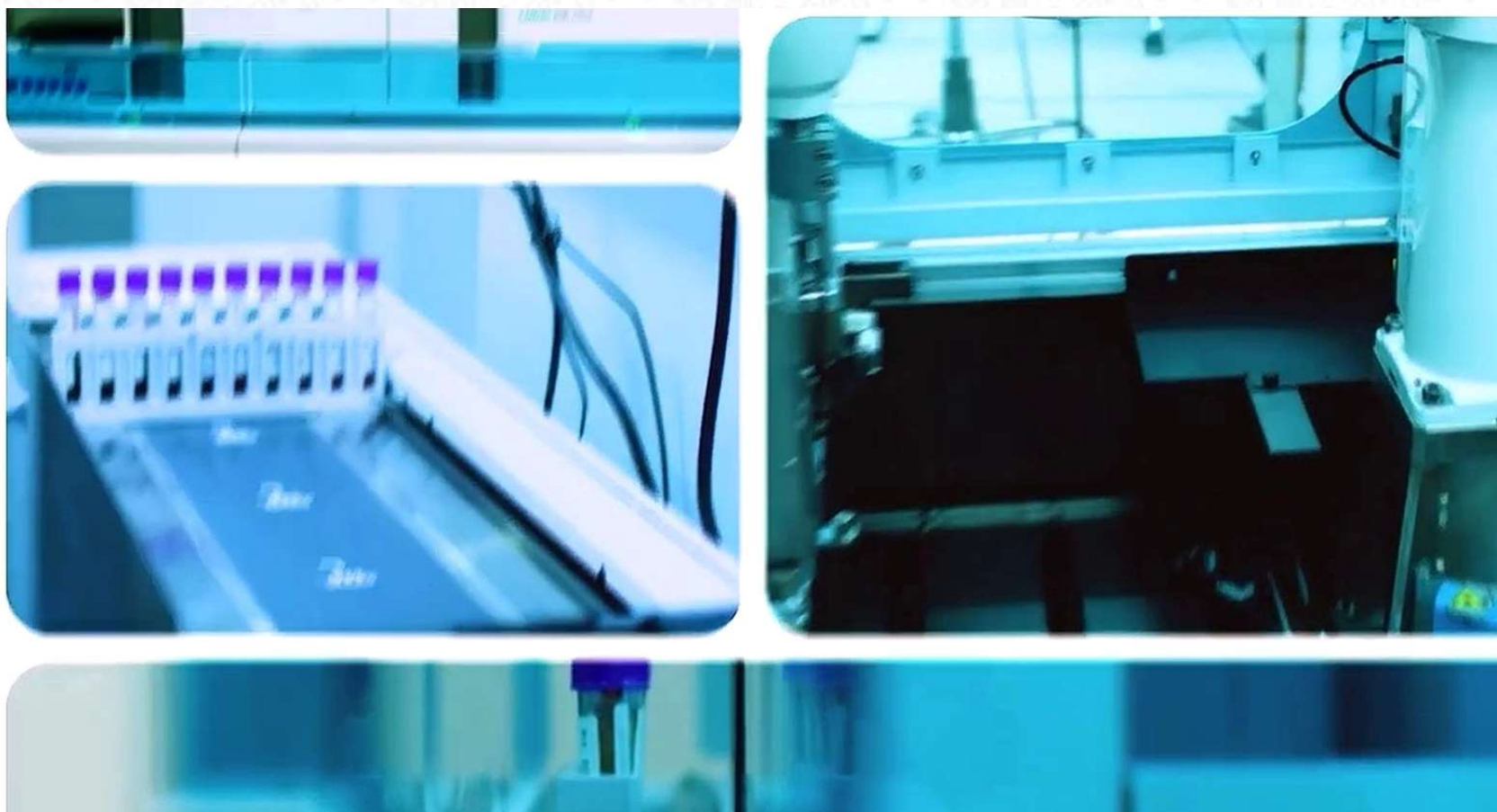




NAVIFY Lab Operations and NAVIFY Monitoring provide real-time visibility into sample status, turnaround times (TAT), and laboratory performance, enabling proactive decision-making and efficient workflow management.



Smart Lab Showcase - Integrated Solutions With Roche



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More than a technological advancement, the Smart Lab represents our commitment to transforming diagnostics into a vital partner in patient care. Through seamless integration with Roche solutions, clinicians gain faster access to critical diagnostic information, enabling quicker diagnoses, timely interventions, and improved treatment outcomes.

By combining intelligent automation, advanced analytics, and digital connectivity, the Smart Lab enhances efficiency, accuracy, and the overall patient experience.



Impact on Patient Care & Clinical Outcomes

- Faster diagnosis leading to quicker treatment initiation
- Reduced need for repeat sampling due to errors
- Lower sample volume requirements — beneficial for pediatric patients
- More affordable care through operational efficiency
- Timely access to critical information for clinician decision-making
- Reliable results enabling appropriate treatment protocols
- Better patient management and outcomes overall

NABH Compliance Mapping Smart Lab Alignment

- ACC.1 — Access, Assessment & Continuity: Faster TAT improves care continuity
- COP.3 — Patient Safety Goals: Near-zero errors; early error flagging
- COP.5 — Infection Control: Reduced manual handling minimizes contamination
- MOM.4 — Laboratory Services: Standardized processes, validated methods, QC compliance
- MOM.5 — Imaging Services: Digital image archiving for haematology morphology
- MOM.6 — Patient Care: Accurate, timely diagnostics support clinical decisions
- FMS.4 — Quality Assurance: navify® enables continuous quality monitoring
- HIC.1 — Information Management: Digital integration ensures data integrity

Key Quality Indicators & Performance Metrics

- Pre-analytical error rate: Target <0.1% (near-zero achieved)
- Turnaround Time (TAT): Significantly reduced for all test categories
- Sample recollection rate: Minimized via entry-point quality checks
- Instrument downtime: Proactive monitoring reduces unplanned stops
- QC compliance: 100% automated QC tracking and documentation
- Staff productivity: Focus shifts to value-added activities
- Patient satisfaction: Faster reports, reduced waiting times

Leadership Vision & Commitment

"Adopting technology in healthcare is justified only if it increases patient safety."

— Fr. Johnson Vazhappilly CMI, Executive Director & CEO, Rajagiri Hospital

Total lab automation is a strategic investment in patient safety, quality, and affordable care.

Conclusion — Rajagiri Smart Lab

The Rajagiri Smart Lab marks a transformative step towards safer, smarter, and more efficient healthcare. Through total laboratory automation powered by Roche Diagnostics, we have built a future-ready diagnostic ecosystem that delivers greater accuracy, faster turnaround times, and enhanced patient safety.

By integrating intelligent automation, real-time digital monitoring, and advanced diagnostic technologies, the Smart Lab empowers clinicians with timely insights, supports better clinical decisions, and improves patient outcomes. Aligned with NABH quality standards, this initiative reflects Rajagiri Hospital's ongoing commitment to innovation, excellence, and compassionate care.

Doing now what patients need next.

**Transforming Diagnostics Today for a Healthier
Tomorrow.**

**Rajagiri Smart Lab – Powered by Innovation,
Driven by Care.**

"Smart Diagnostics. Trusted Care. Better Outcomes."



Diagnostics
Solutions

Thank You

for being part of our journey towards
Smarter Diagnostics. Better Outcomes.

Together, we're redefining the future of patient care.



**RAJAGIRI
SMART LAB**

Intelligent.
Integrated.
Impactful.



**Rajagiri
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We care. We cure



**Rajagiri
Hospital**
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Enhanced
Patient Safety



Accurate
Results



Faster
Turnaround Time



Operational
Excellence



Better Care.
Stronger Trust.

**POWERED BY INNOVATION.
DRIVEN BY COMPASSION.**

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