



CLINICAL LABORATORY

End-to-end Automation with a Focus on Patients

The Inpeco holistic view of a fully automated Clinical Lab, where the benefit of traceability starts at the sample collection point

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In Portugal the Center for Laboratory Medicine Germano De Sousa (CML GS) is well known and has a presence throughout whole country: 6 centers, strategically distributed, and a great reference hub in Lisbon, processing over 4000 patient samples per day. Its director and founder - prof. Germano de Sousa - is an internationally renowned doctor and, above all, a visionary who, at 74, has not stopped striving to innovate and expand upon his work. *“I do what I have to as a doctor. My goals? For patients to get their results on time, complete and without errors”*, he says, recalling the Hippocratic Oath, the North Star that has guided him in so many choices, even in business. Always regarding patient care as his ethical goal, as a pioneer, he has been able to seize market opportunities and catch a glimpse of its changes (for example, investments made in the genomic field, research partnerships with two universities and significant investments in a Precision Medicine startup company, Ophiomics, operating in the field of Molecular Oncology and Genetics).

Prof de Sousa with Mr. Pedrazzini, President of Inpeco



This **attention to quality** is at the core of many operational decisions in processes and controls throughout the organization; *“Actually, we have got a Black Belt Six Sigma quality system certification. Quality is a not-reimbursable item in our financing system, but I see that our investments in this area meet the requirements of medical staff, who recognize and appreciate it highly – so it generates a return”*. It’s in light of this that the center got in touch with Inpeco, through a contract extension with Siemens that installed an automation track in February 2016.

The 4 key challenges in modern labs



Increase workload and earn patients

Implement cost-effective lean processes



Keep HR costs under control

Invest in sample traceability



Convinced that **investing in quality brings loyalty**, Germano De Sousa has invested in various educational programs for general practitioners, with lectures on clinical topics, open doors for specialists and hands-on sessions and insights for primary interlocutors. Doctors know they can trust the results of tests processed at this center; *“We are positioning ourselves as consultants for the medical community – not just those who ‘push the button’ of the analyzer. Becoming the expert in lab tests takes us to a higher level, above average.”*



“I was already familiar with Task Targeted Automation but I soon realized that a Total Laboratory Automation was the only way to achieve the best quality whilst increasing the workload”

The Automation adoption curve in the lab



CML GS considered automation as the only feasible option that would allow for a more effective and traceable daily process while also allowing for further growth; *“Inpeco has given me a key tool to expand my activity, and this was the first reason why I considered FlexLab in the first place.”*

The challenging feature of the installation at CML GS was the **architectural constraints**, which forced the project managers to ‘frame’ the route within a limited space, designing it in such a way that extensions would still be possible. *“Inpeco has really surprised me,”* - said Prof. Germano De Sousa, *“first of all because of the quality they offer. I had always dreamt of a system like this! We are now far more organized, cleaner and quicker. Take a look inside the lab; the room is rather narrow, but everything is perfectly tidy and in order.”*

Before



After



The benefits introduced by the FlexLab automation system were evident from the outset; *“Turn Around Time (TAT) efficiency has increased and we are improving production without adding new technicians; the overall process is fully controllable – especially aliquoting, which is a critical phase.”* With this automation, the average TAT for Chemistry and Immunochemistry stabilized at approximately 35 minutes from check-in to result, with more than 90% of the results being delivered in less than 60 minutes. These indexes are critical when providing results to partner hospitals.

FlexLab™ deep impact

The 3 key benefits of TLA

BEFORE

2 h



TURN AROUND TIME

AFTER

35 min

3,6%



NON-COMPLETED TESTS

0,4%

3 days



ARCHIVING LENGTH

4 days

Total Lab Automation (TLA) has improved processes in other areas as well, especially in relation to aliquoting, where manual operations created a bottleneck; thanks to FlexLab, now the last work shift ends at 22:30, and the automated storage connected to the track saves 4 hours of work per day, per technician. *“I have discovered an unexpected benefit: automated storage. Before the track was installed, the entire process was done manually; we kept tubes for 3 days at most, which is a very short time span for servicing hospitals’ inpatients. Now we keep them for at least 4 days, and it’s very easy to retrieve tubes on demand.”*

Taking advantage of Inpeco’s ability to provide flexible and tailor-made solutions, the lab is considering an extension of the track outside the Serum area, through a hole in the wall, to let it run through the Hematology area.

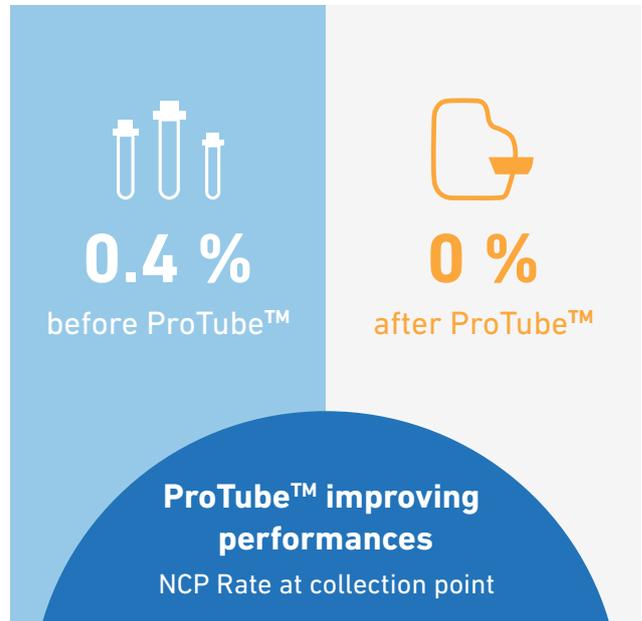
Prof. Germano De Sousa chose its TLA solution because it would allow for possible further expansion of his work: *“I can recommend the Inpeco track for a very simple reason: I can connect all the systems that I choose to adopt in my lab. It’s a technical choice that lets me select additional analyzers in the future. Its openness is the key value.”*

CML GS is one of the first Labs in Europe to take full advantage of the **Inpeco extended concept of automation**, from patient check-in to results delivery.

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The advantages of an error-free process inside the lab are actually at risk if tubes are received with incorrect labels, mislabeled or with samples in the wrong tube, etc. In fact, the literature claims that almost 65% of clinical lab errors are generated in the pre-analytical phase [source: Carraro, Plebani, Clinical Chemistry, Errors in stat laboratory – Types and frequency 10 years later, 2007].

Since February 2017, the center has been using the Inpeco ProTube solution for the correct matching of patients, tubes and tests, as well as to streamline the chain of traceability of the results. Three Inpeco ProTube units guarantee the right match of patient ID, test request, type of tubes to be used; *“These smart units support us by eliminating poorly collected samples and all those non-compliant tubes that won’t be read by the automation system or the analyzers. Today, the Non-conformance product rate is down to zero.”*



The full integration of the process, ‘before’ the lab area as well as within it, is a key element for achieving top quality standards; *“ProTube is contributing in a fundamental way to our journey towards maximum process quality; thanks to ProTube, we now benefit from seamless integration between the sample collection phase and the analytical phase, and we can access the full history of a sample.”*



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Centro de Medicina Laboratorial Germano de Sousa

(www.germanodesousa.com) is a well-known Portuguese network of 6 clinical labs, with 400 collection points distributed throughout the country and its headquarters in Lisbon. The group was established by physicians specialized in clinical pathology, and its mission is to provide 24-hour lab service for patients and colleagues.