Centro Hospitalar do Porto, E.P.E.
Porto, Portugal

Dra Graça Henriques, Corelab Supervisor
Dr Luís Monteiro, Corelab Supervisor
Consolidating all tests that have more than 5 requests per day and that can be automated, both clinical chemistry and immunochemistry testing – as well as having capacity for STAT tests – is challenging enough. To then discover that this new laboratory has to serve not one, but four hospitals, brings a whole new level of complexity. None of the existing laboratories was closed and a new corelab was created to consolidate those most requested tests of all existing laboratories. And that is exactly what has been achieved at the Centro Hospitalar do Porto, thanks to the intelligence, power, precision and flexibility of the cobas® analyzer series from Roche.
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- Core Laboratory
- 800 beds
- 3 million results per year
In early 2008, a decision was taken at the Hospital Geral de Santo Antonio to improve the way it managed its laboratories – bringing several different functions into one core unit.

The idea was that the new laboratory would be able to meet both daily and urgent demands of the hospital in addition to improving sample management. The transformation was soon underway but, by the end of 2008, there was an added complication, as, Dra Graça Henriques, explains:

“In the latter part of 2008 it was decided that we should integrate with other hospitals in the local area. The first two were the Maternity Julio Dinis and the pediatrics Hospital Maria Pia. More recently, we have incorporated Hospital Joaquim Urbano, too. So, instead of our new laboratory serving just the existing hospital, we had to make allowances to meet the requirements of four hospital units.”

These four hospitals now make up what is known as the Centro Hospitalar do Porto. It is the second biggest hospital in Porto with 800 beds, specializing in both pancreatic and renal transplantation and generating up to 1,000 serum samples every day for the core laboratory.

The first steps towards integration

Given the initial volume requirements for the new laboratory, the team at Hospital Geral de Santo Antonio decided on the cobas® modular platform concept.

They installed a triple module for immunochemistry (3x MODULAR ANALYTICS E170 modules), a double module for clinical chemistry (2x cobas c 501 module) and another double module (cobas c 501 and cobas e 601 module) to cover STAT samples. Because of the need to improve their sample management they also decided to integrate the MODULAR PRE-ANALYTICS EVO (MPA) system.

Roche’s intelligent MPA system automates all pre-analytical steps including sample transportation to connected clinical chemistry, immunochemistry and coagulation analyzers. It is designed to improve workflow, which was a fundamental goal at the very beginning of the project as Dra Graça Henriques explains:
“The MPA is designed to improve workflow, which was a fundamental goal at the very beginning of the project.”
“With several different laboratories in various locations there was often a breakdown in communication which meant that a lot of tests were duplicated. We wanted to eliminate this and reduce the number of redundant tubes being used in the hospital. The MPA was an ideal solution that automated sample management and meant that we could coordinate everything from our new laboratory.”

However, while the MPA helped with sample management, the volume of samples from four hospitals was placing a strain on the initial laboratory configuration.

They needed a way to manage an even greater throughput of samples. So they decided to take a step up to the cobas® 8000 modular analyzer series. It was the first analyzer of its kind to be installed in Portugal and proved the real value of the cobas® modular platform concept. Two cobas c 701 modules replaced the two cobas c 501 modules.

**Flexibility you can build on**

With the cobas® modular platform, Roche has developed a solution that has similar architecture, regardless of size. Each machine uses the same reagents and the same software concepts.

The common reagent concept ensures comparable patient results and simplifies logistics. The standardized user interface improves staff flexibility. All of this meant that the technicians at Centro Hospitalar do Porto took very little time to get to grips with the cobas® 8000 modular analyzer series. In fact, they were up to speed within a week. Dr Luis Monteiro, was delighted:

“It’s not like introducing someone to a new machine. Everything is the same, people understand what they have to do and it makes everyone’s life easier. It didn’t take long to get things up and running. We were processing a lot of samples very quickly.”
“The cobas 8000 modular analyzer series made it possible for just four technicians to receive samples, process a range of tests and deliver accurate results to the physicians.”
When the idea of a core laboratory was first discussed, fifteen technicians from the existing sites moved across to the new setup. Given that there are three shifts per day, this meant that there were only four people at any one time that were responsible for the management of all disciplines available in the core laboratory (clinical chemistry, immunochemistry, hematology and urine).

This was not a problem. With its fully automated processes through MPA, simple user interface, reliability and speed the cobas® 8000 modular analyzer series made it possible for just four technicians to receive samples, process a range of tests and deliver accurate results to the physicians. Dr Luis Monteiro appreciates the benefits of redeploying technicians in this way:

“There was a real need for automation. It meant that we could set up our core laboratory to be a real production center and still leave enough staff at the other sites so they could operate as individual units, focusing on more investigative, esoteric tests.”

Like all good medical facilities, the Centro Hospitalar do Porto is keen to monitor the progress of its core laboratory to ensure it continues to deliver the standard of service its physicians have come to expect.

As part of this, the core laboratory is constantly assessed to see if it is performing in line with the hospital’s demanding turnaround targets. These are one hour for STAT samples and three hours for inpatient samples. For all other consultations the test must be turned around on the same day, before 5pm.

The turnaround time starts as soon as the sample reaches the laboratory – not just when the system starts processing – and concludes once the data is available on the hospital information system. Following the introduction of the cobas® 8000 modular analyzer series, the core laboratory team has hit its targets on every occasion and constantly exceeds all expectations.

“We show all of our response rates in real time on a dashboard in the laboratory. It’s a great boost for the team to see targets being hit.”
“With the cobas modular platform, Roche has developed a solution that has similar architecture, regardless of size. Each machine uses the same reagents and the same software concepts.”
Now that the corelab team, coordinated by Dra Graça Henriques and Dr Luís Monteiro, have successfully automated the pre-analytic and analytic stages of the laboratory’s workflow, their thoughts have turned to what they can do to enhance the storage and retrieval of samples.

As we have already seen, with centralized services the core laboratory has to deal with an increased workload. While this means more pressure on a daily basis - with more samples to process - it also means that there are extra samples to store. This can add up to a significant amount of tubes given that the standard policy at the Centro Hospitalar do Porto is to store serum samples for seven days.

In addition, there is a trend emerging that makes retrieval - as well as storage - a key consideration. Dr Luís Monteiro explains:

“As financial pressures increase, our doctors are being encouraged to request fewer tests up front. While this is fine if the initial tests are satisfactory, if they prove to be inconclusive we need to retrieve the initial sample and test all over again. As fewer initial tests are being requested, the number of subsequent tests is on the increase. We need a system in place that means we minimize time spent searching through thousands of samples. A fully automated storage and retrieval module is the perfect solution.”

And that is where Roche comes in.

The MPA has the flexibility to link up to a post-analytic unit that will allow the Centro Hospitalar do Porto to realize their goal of a fully automated process. The cobas p 701 post-analytical unit, for example, can store up to 27,000 tubes with a throughput of 400 tubes/hour. Ample capacity to keep pace with the ever increasing demands of a busy and successful core laboratory.

“We are completely satisfied with Roche solution and service – Roche behaves as a partner.”
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