

# Optimizing independent QCs on Roche cobas® platforms with Bio-Rad IntelliQ

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## Background

Laboratory medicine plays a fundamental role in ensuring the quality of healthcare for the individual and for the general population. The modern clinical laboratory must provide a high-quality service based on the optimal organizational strategies and the best available technologies and instruments available. In this regard, the Central Laboratory of Clinical Pathology (Core-Lab) of the Provincial Hospital of Bolzano strives to implement the best quality control systems for optimal instrument performance and best patient outcome. To achieve these objectives, the Bolzano hospital laboratory uses third-party internal quality controls (IQC), as recommended in ISO 15189:22 norm., to monitor the performance of over 80% of their tested analytes. The IQCs currently used are supplied by the diagnostic company Bio-Rad Laboratories, which was awarded the quality control tender for all clinical laboratories within 7 hospitals in the province of Bolzano.

## The Challenge

Streamlining the QC workflow to enhance efficiency while preserving confidence in patient results was paramount. We believed this could be achieved by optimizing QC preparation by minimizing all sample preparation steps, reducing QC consumption, and minimizing potential errors due to extensive handling by technicians.

## Solution

The best solution was to replace the IQCs in standard glass vials with the Bio-Rad IntelliQ quality controls. IntelliQ controls are supplied in ready-to-use plastic tubes that are compatible with the analyzer's racks allowing it to be loaded directly onto the instrument. Since the QC was ready to use without the need for further preparation, they helped prevent potential manual errors that might occur during technician handling and preparation. The tubes were also pre-labeled with barcodes that allowed automatic recognition by the analyzer allowing direct programming on the analyzers management software enhancing efficiencies within the QC testing workflow.

### Lab Details

<b>Name:</b>	Provincial Hospital of Bolzano
<b>Location:</b>	Bolzano, Italy
<b>Size:</b>	865 beds
<b>Total Volume:</b>	4.5 M tests/year
<b>Core-Lab Volume:</b>	8,767 tests/day
<b># of Analytes:</b>	123 including 51% in Clin.Chem., 12% in Tumor, 34% in IA and 3% in Cardiac



IntelliQ QCs in the cobas racks

## Results

The introduction of this new type of IQC format has provided significant improvements in terms of testing efficiency by reducing the time necessary to prepare and run the control as well as improving and simplifying the workflow and management of the analyzers by the technical staff.

- Staff Benefits**  
 By making the QC operations easier, it has significantly improved the training of new technical staff in programming the IQC on the most complex analytical platforms helping to minimize laboratory technician turnover and improve staff retention.
- Reduction of manual activities and improvement of quality control performance**  
 There was a 28.3% reduction in weekly manual activities required to run the IQCs which resulted in a 33.3% reduction in the time required to complete these activities. The significant reduction in manual activities also lead to a 28.3% decrease in the risk of error by removing steps within the QC workflow that may have contributed to error. This was achieved through the integration of IntelliQ controls directly into the analyzer's management system which enabled automated recognition of the IQC and the different control levels.
- Reduction of quality control consumption**  
 Using the new control format, it was possible to reduce the number of weekly control aliquots by 32.5%, with total weekly control consumption reduced by 20.8%.

Results of workflow optimization with Bio-Rad's IntelliQ on Roche cobas® systems				
<b>20.8%</b>	<b>32.5%</b>	<b>28.3%</b>	<b>33.3%</b>	<b>28.3%</b>
Decrease in QC volume in use	Decrease in # QC aliquots in use	Decrease in manual steps required	Decrease in manual time required	Decrease in risk for error
Save money	Streamline process Save money	Streamline process Reduce error Optimize resources	Streamline process Optimize resources	Reduce test repetition Save time and money

Decrease in QC volume from 168.4 ml to 133.4 ml

Decrease in # of QC aliquots from 163 to 110

Decrease in # of manual steps from 187 to 134

Decrease in manual time from 45 min to 30 min

Decrease in the risk for error from 187 to 134

### Conclusion

The introduction of IntelliQ IQCs in the management of quality control on the Roche instruments allowed us to further optimize our QC workflow making it a more efficient and safe process. This represents a step forward to achieve the goal of providing increasingly reliable laboratory information to guarantee the health of patients while enhancing efficiency within our laboratory.

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