SUSTAINABILITY VALUE IN CHOOSING A HIGHLY CONSOLIDATED QUALITY CONTROL MATERIAL

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Introduction

Quality control (QC) is essential within medical laboratories for providing highly reliable tests results.

To date, no studies had been undertaken to improve and describe efficiency in daily routine work in regard to QC protocols. It involves a number of resources such as space for QC materials, handling time, secondary tubes and disposables.

The present study investigated the use of a highly consolidated QC material in order to optimize the workload and to improve sustainability in our lab.

Methods & Materials

For the evaluation, we used an Abbott Alinity instrument according the instructions of the manufacturer.

QC materials from two different QC material providers were compared over a period of 10 days (twice per day) analyzing efficiency (costs, cold storage space, handling time, dead waste volume, consumable waste) as well as analytical performance.

Quality control materials

Immunoassay	Provider
Multichem IA plus (Level 1,2,3)	Technopath
Liquichek Immunoassay plus control (Level 1,2,3)	Bio-Rad
Lyphochek Tumor Markers plus Control (Level 1,2,3)	Bio-Rad
Liquichek Cardiac Marker Plus Control LT (Level 1,2,3)	Bio-Rad
Liquichek Specialty Immunoassay (Level 1,2,3)	Bio-Rad

Chemistry	Provider
Multichem S plus (Level 1,2,3)	Technopath
Lyphochek Assayed Chemistry Control (Level 1,2)	Bio-Rad
Liquichek Immunology Control (Level 1,2,3)	Bio-Rad

Analytes

Thyroid-stimulating hormone (TSH), free thyroxine, follicle-stimulating (FSH), vitamin D, ferritin, high-sensitive cardiac troponin I, C-reactive protein, glucose, creatinine, calcium, total protein, alanine aminotransferase, alkaline phosphatase, potassium and sodium.

Results

The performance of all the analytes we tested showed similar results and were within our lab specifications which we prepared in close cooperation with the clinicians following the Milan hierarchy concept.

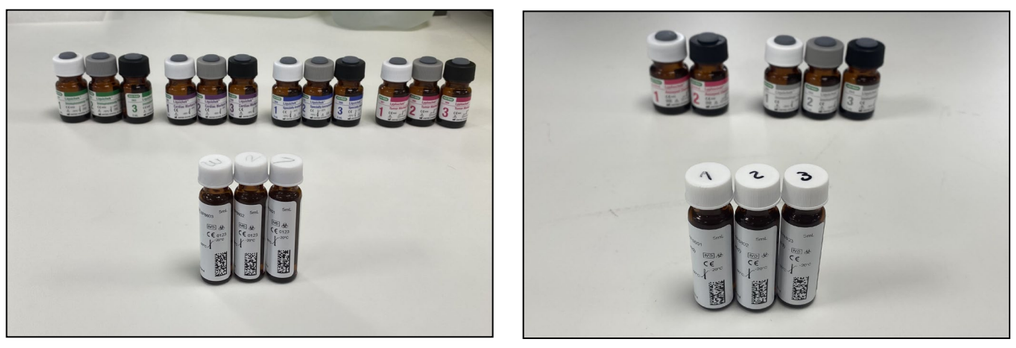
The CV´s over the 10 days ranged from 0.0 to 12.3 % depending on the concentrations and analytes used.

By using a highly consolidated QC material, the waste costs for consumables are over 20 times lower compared to the current solution. In regard to efficiency (cold storage space, handling time, dead waste volume), we found savings between 40 and 100 %.

Results, continued

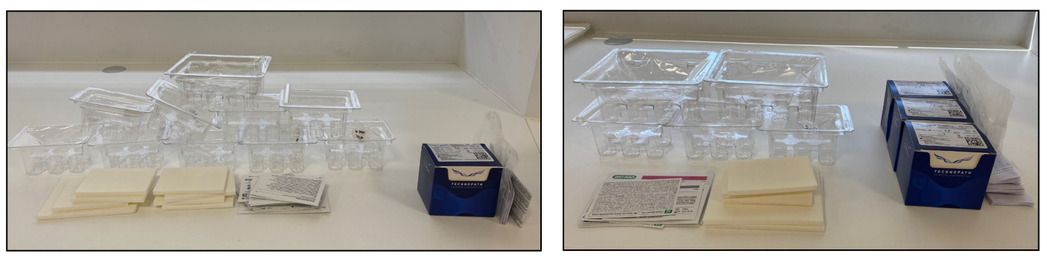
Immunoassay **Chemistry**

Controls materials needed for each test event



Tubes/ Vials waste

Packaging waste



Consumable waste Immunoassay

Metric	% Saving	
	Immunoassay	Chemistry
Freezer storage space requirements	**91**	**52**
QC sample handling time	**99**	**99.8**
Dead waste volume	**79**	**-**
Waste from vials	**50**	**40**
Waste from cups	**100**	**100**
Waste from pipette tips	**100**	**100**

Conclusions

The overall analytical performance fulfilled our requirements.

Our approach to decrease the costs associated with QC products and to improve efficiency while using a highly consolidated QC material was achieved.

With this concept we also contribute to better sustainability in laboratory medicine, and it is a step forward toward running QC procedures in a very smart and efficient way.

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