New study defines analytical performance specifications for 24,25-dihydroxyvitamin D examinations

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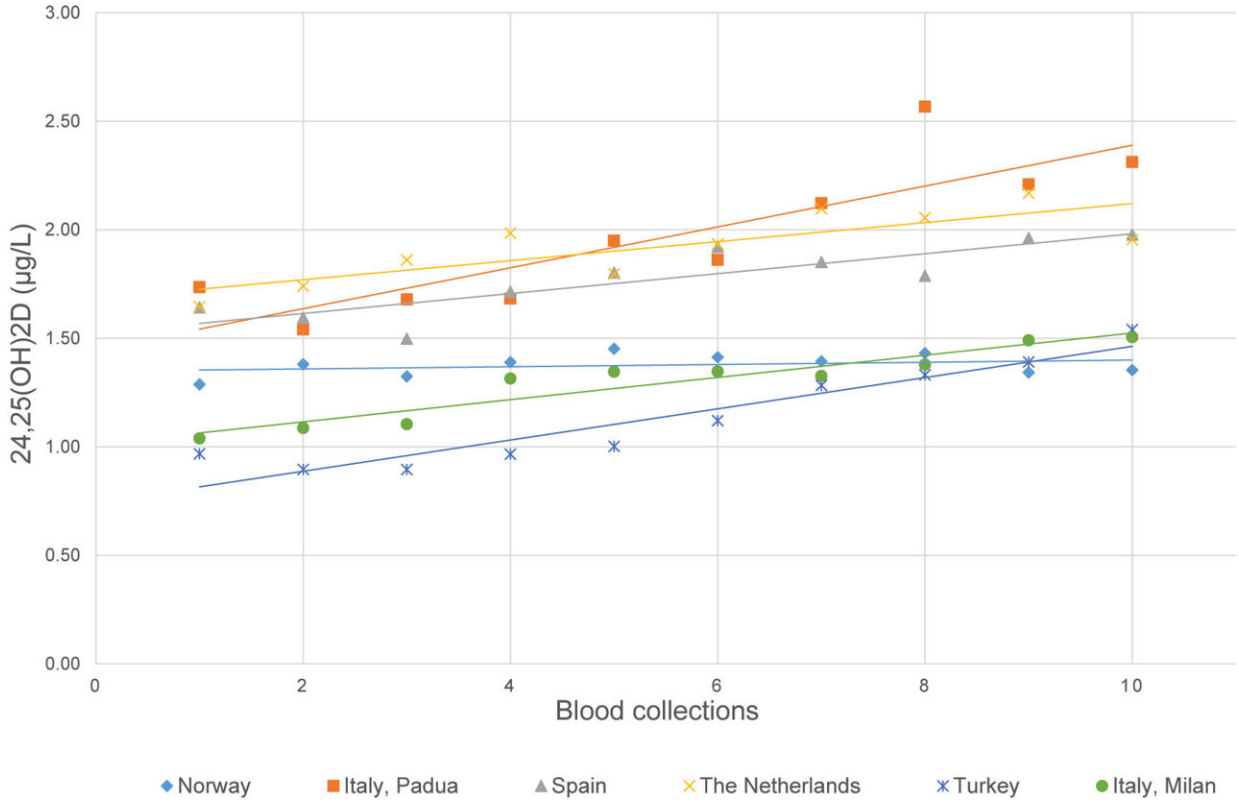

Evolution of 24,25(OH)2D over a 10 weeks period in ostensibly healthy participants from six different European cities during spring 2015. Credit: *Clinical Chemistry and Laboratory Medicine (CCLM)* (2023). DOI: 10.1515/cclm-2023-0176

The first study to define analytical performance specifications for 24,25-dihydroxyvitamin D examinations has been published by an expert working group of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) and the International Osteoporosis Foundation (IOF).

The publication has appeared in the journal *Clinical Chemistry and Laboratory Medicine (CCLM)*.

The exploration of the metabolites in the degradation pathways of vitamin D has gained importance in recent years and simultaneous quantitation of 25-hydroxy vitamin D (25(OH)D) with 24,25-dihydroxyvitamin D (24,25(OH)2-D) has been proposed as a newer approach to define vitamin D deficiency. Yet, to date, no data are available on 24,25(OH)2-D biological variation (BV).

In the study, the Working Group evaluated the biological variation of 24,25(OH)2-D on the European Biological Variation Study (EuBIVAS) cohort samples to determine if analytical performance specifications (APS) for 24,25(OH)2-D could be generated. The study involved six European laboratories which recruited 91 healthy participants.

25(OH)D and 24,25(OH)2-D concentrations in EDTA plasma were examined weekly for up to 10 weeks in duplicate with a validated liquid chromatography coupled with mass spectrometers (LC-MS/MS) method. The Vitamin D Metabolite Ratio 24,25(OH)2-D divided by 25(OH)D × 100 was also calculated at each time point.

The findings were that the linear regression of the mean 24,25(OH)2-D concentrations at each blood collection showed that participants were not in steady state. Variations of 24,25(OH)2-D over time were significantly positively associated with the slopes of 25(OH)D concentrations over time and the concentration of 25(OH)D of the participants at inclusion,

and negatively associated with body mass index (BMI).

The variation of the 24,25(OH)2-D concentration in participants over a period of 10 weeks was 34.6%. Methods that would detect a significant change linked to the natural production of 24,25(OH)2-D over this period would need a relative measurement uncertainty (MU%) < 14.9%, while at p