

BM1/22: Bone Markers

This EQA round was accomplished according to the document *EQA Plan 2022*.

Note for the participants from the abroad

We are using comma as a decimal separator and dates in day.month.year format.

Samples

We used commercial samples in this round.

Supervisor's comment

There were 169 participants in this round, 30 of them from Slovakia, and 1 from Korea.

For the purposes of the evaluation, the participants' results were divided into **groups according to the reagent manufacturers (code R)** and for each group the assigned value was determined as a robust average. Only groups with the number of participants $n \geq 5$ were evaluated. Smaller groups were not evaluated (for tests that were not evaluated, participants will find the mark \pm in the result sheet).

Possible exceptions are described below.

Parathyrin intact (PTH)

Large differences persist between the averages of the results of the individual groups and thus the overall reproducibility remains unsatisfactory (average CV was 35 %).

Parathyrin biointact (PTH 1-84)

The overall reproducibility (average CV was 9 %) is significantly better than that of PTH, approximately 80 % of the participants used Roche reagents and 20 % DiaSorin.

The results of PTH 1-84 have a higher clinical effectiveness than the results of intact PTH, especially in patients with chronic renal disease (especially in patients on haemodialysis). Especially in cases where the manufacturer offers both analytes, the transition to PTH 1-84 measurement is appropriate. The portion of the more progressive PTH 1-84 method within the BM programme did not grow a long time (approximately 40 participants for many years), but it increased to the 50 participants during the last year which is a gratifying fact.

CTx, P1NP, osteocalcin

These parameters show a long-term success rate of over 95 %.

25-hydroxyvitamin D

For groups with the number of participants $n \geq 10$ the reproducibility (CV) values ranged over a wide interval from 4 to 16 %.

Roche: The users of Roche kits must also report the generation of the kit. Based on this data, their results were divided into 2 groups:

- R = 60 = Roche: 2nd + 3rd generation (some of these generations were reported by most participants)
- R = 256 = Roche (2): 1st generation (6 participants)

The results provided by the 2nd and 3rd generations of the kits were comparable, the 1st generation provided approximately 50 % lower results.

Beckman Coulter: Traditionally, the results measured by the participants who reported the use of Beckman Coulter kits (R = 12) were significantly higher (approximately 2 times compared to the total average). This phenomenon may be due to the matrix of EQA samples or the possible presence of 25(OH)vitamin D epimers in these samples. According to the available information, this effect does not appear when measuring patient samples.

Further information concerning the activities of the IFCC in the field of the standardisation of the bone metabolism parameters you can find here: <https://www.ifcc.org/ifcc-scientific-division/sd-committees/c-bm>

Long term success rate

You can find the overview of the total success of the participants of this round over last 2 years in the following table. Particular ranges of success are defined in the column headers (0 % ... no success; 50 % ... success from 1 to 50 %; 75 % ... success from 51 to 75 % etc.). Next 2 lines contain both absolute and relative number of participants that reached the success from the header.

Success		0 %	50 %	75 %	80 %	85 %	90 %	95 %	99 %	100 %
Count	absolute	0	2	6	1	1	10	16	0	131
	relative	-	1,2 %	3,6 %	0,6 %	0,6 %	6 %	9,6 %	-	78 %

Note: You can find your individual success over last 2 years in your result sheet.

Overall success of most participants of this round over the last 2 years is higher than 80 %.

Success rates of 80 % or less should be considered to be an impulse to improve.

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Scientific supervision: RNDr. Zdeněk Švagera, Ph.D., EuSpLM
University Hospital Ostrava
Institute of Laboratory Medicine
Department of Clinical Biochemistry
e-mail: zdenek.svagera@fno.cz

Supplements

As a supplement to this report individual participants receive:

<i>Name of the supplement</i>	<i>Remark</i>
Confirmation of attendance	Issued only to those participants that fulfilled the criteria.
Result sheet (quantitative results)	Issued only to those participants that reported quantitative results.
Complex statistics	Only for tests with quantitative results and two samples.

The supplements are identified by their name, EQA round identification and participant code and are intended for the needs of the participant.

Additional information

The final report, with the exception of the supplements, is public. Further information is freely available to the participants and other professionals at www.sekk.cz, in particular:

- The summary of the results of this round, including this final report.
- The criteria (D_{max}) for quantitative results assessment.
- The document *EQA Plan* (contains information that applies both to this round and also the EQA in general).
- Explanation of the content of the particular supplements mentioned above.
- Contact to the EQA provider and the EQA coordinator and the list of all supervisors, including contacts.