

Diagnostic Proficiency Testing, common sample 2026

**ERNDIM Participant meeting
August 25th, 2026**

George Ruijter (DPT-NL)

DPT 2026-A; Sample info & diagnosis

Clinical info provided:

Adult male with musculoskeletal pain since childhood and abnormal gait

Diagnosis: hypophosphatasia due to TNSALP deficiency
(OMIM 241510/146300)

Sample provided by Childrens Hospital, Sheffield UK

Sample in repository since 1999

No information available on age of diagnosis, additional clinical info or mutation testing

DPT 2026-A; background information

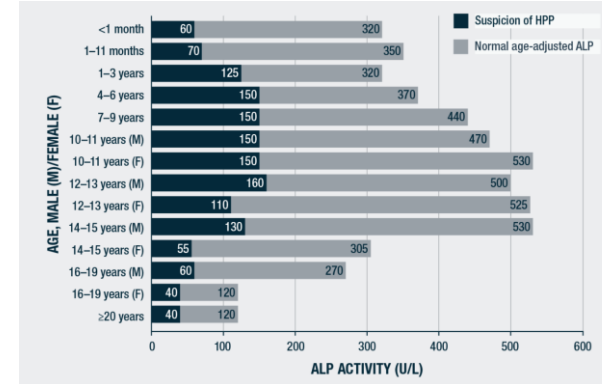
Pyrophosphate
Phosphoethanolamine
Pyridoxalphosphate
...R-OPO₃



Inorganic phosphate
Ethanolamine
Pyridoxal
...R-OH

Gene	Protein	Tissues	Function
ALPL	Tissue non-specific AP	Liver, kidney, skeletal, nervous	Bone and tooth deposition
ALPP	PLAP	Syncytiotrophoblast, reproductive tumours	Unknown
ALPPL2	GCAP	Testis, reproductive tumours	Unknown
ALPI	IAP	Intestine, enterocytes	Fatty acid absorption, lipopolysaccharide detoxification

DPT 2026-A; background information



Reference range
should include
lower limit

Hypophosphatasia phenotypes mentioned in literature:

Perinatal (lethal)

Infantile

Childhood

Adult (heterozygote?)

Odontohypophosphatasia

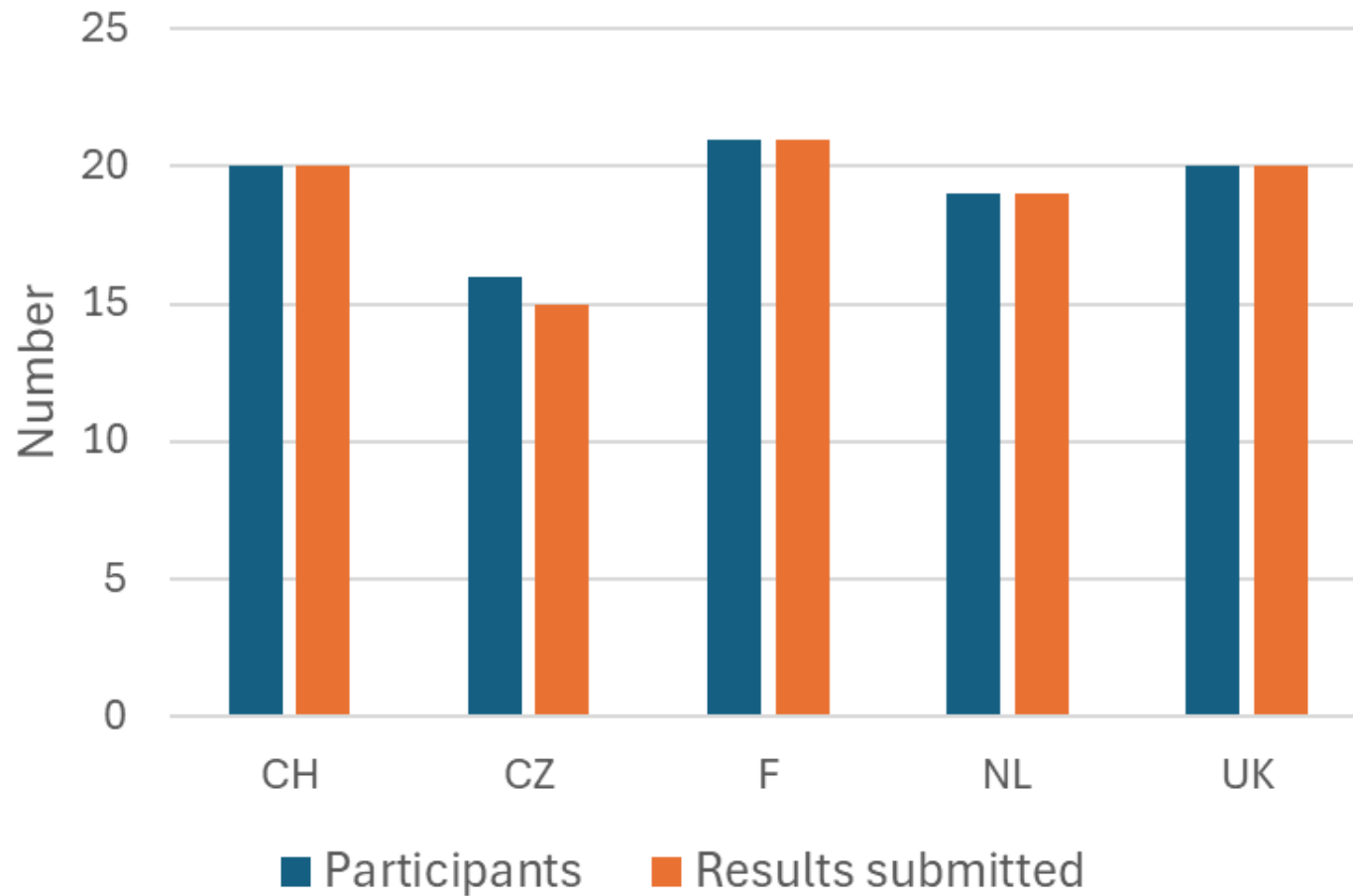
Severely reduced bone mineralization, seizures



Musculoskeletal symptoms

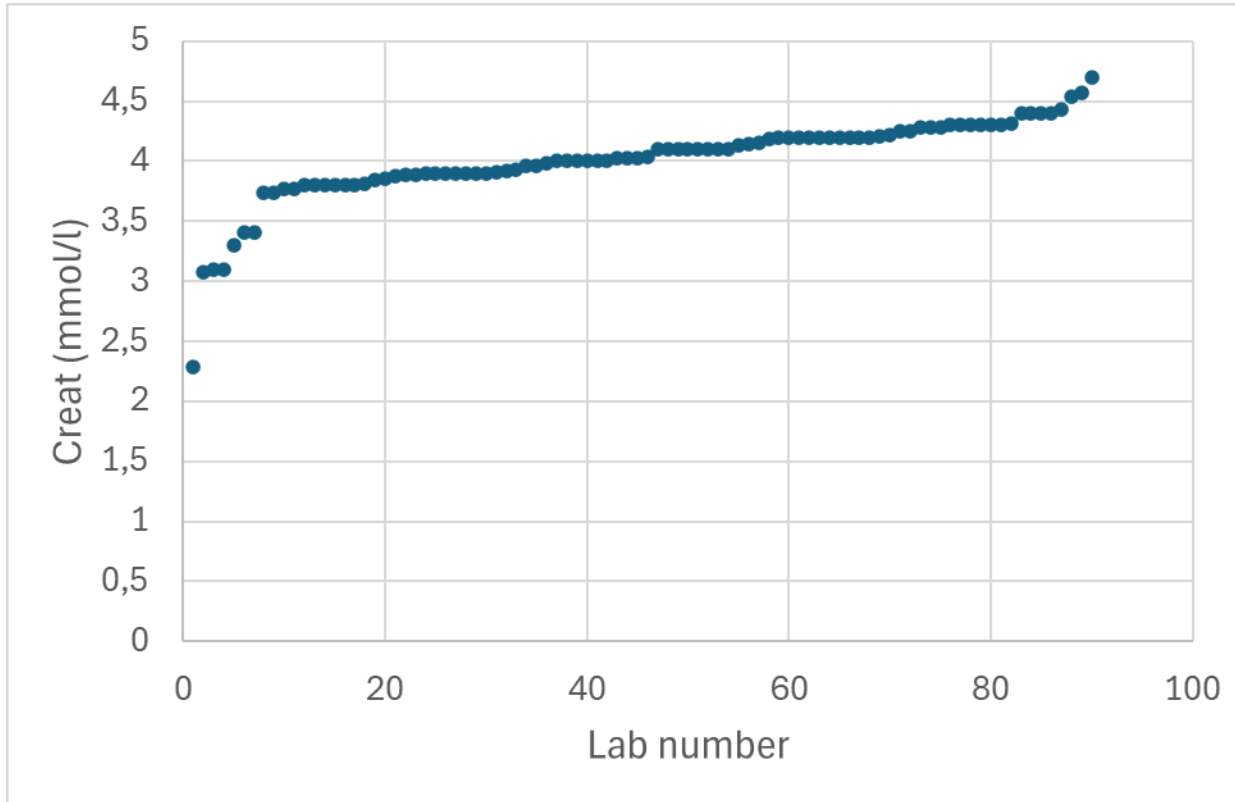
Premature loss of teeth

DPT 2026-A; Number of participants



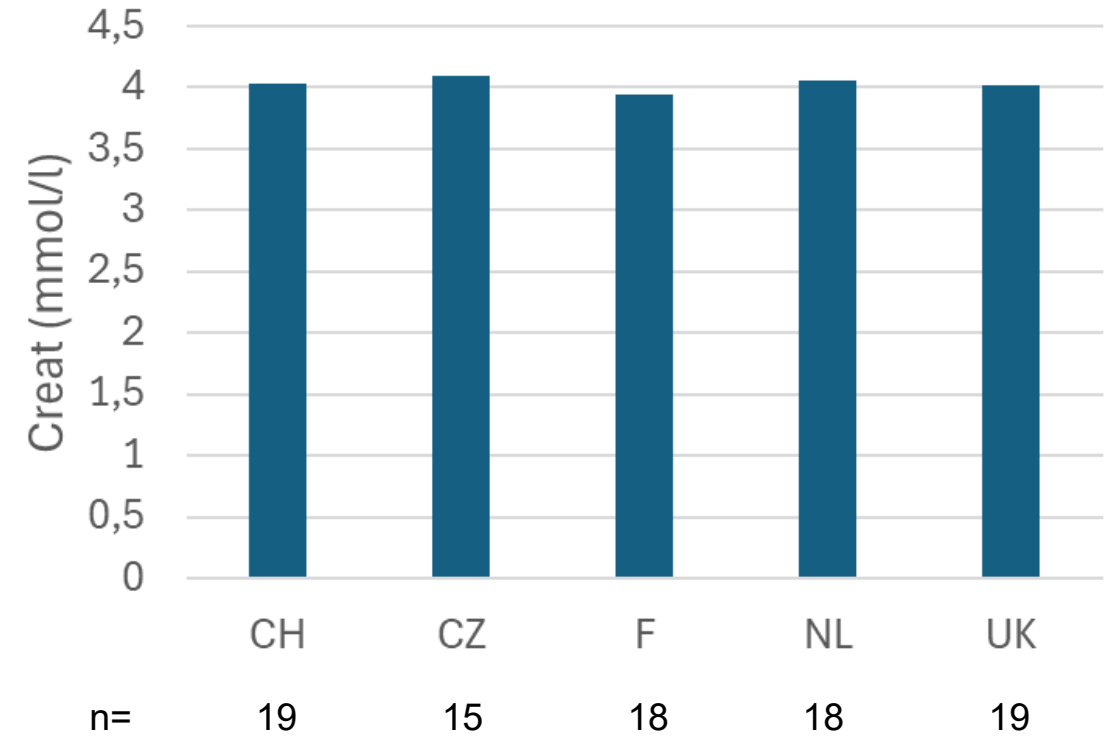
Total:
96 participants
95 reports

Creatinine results

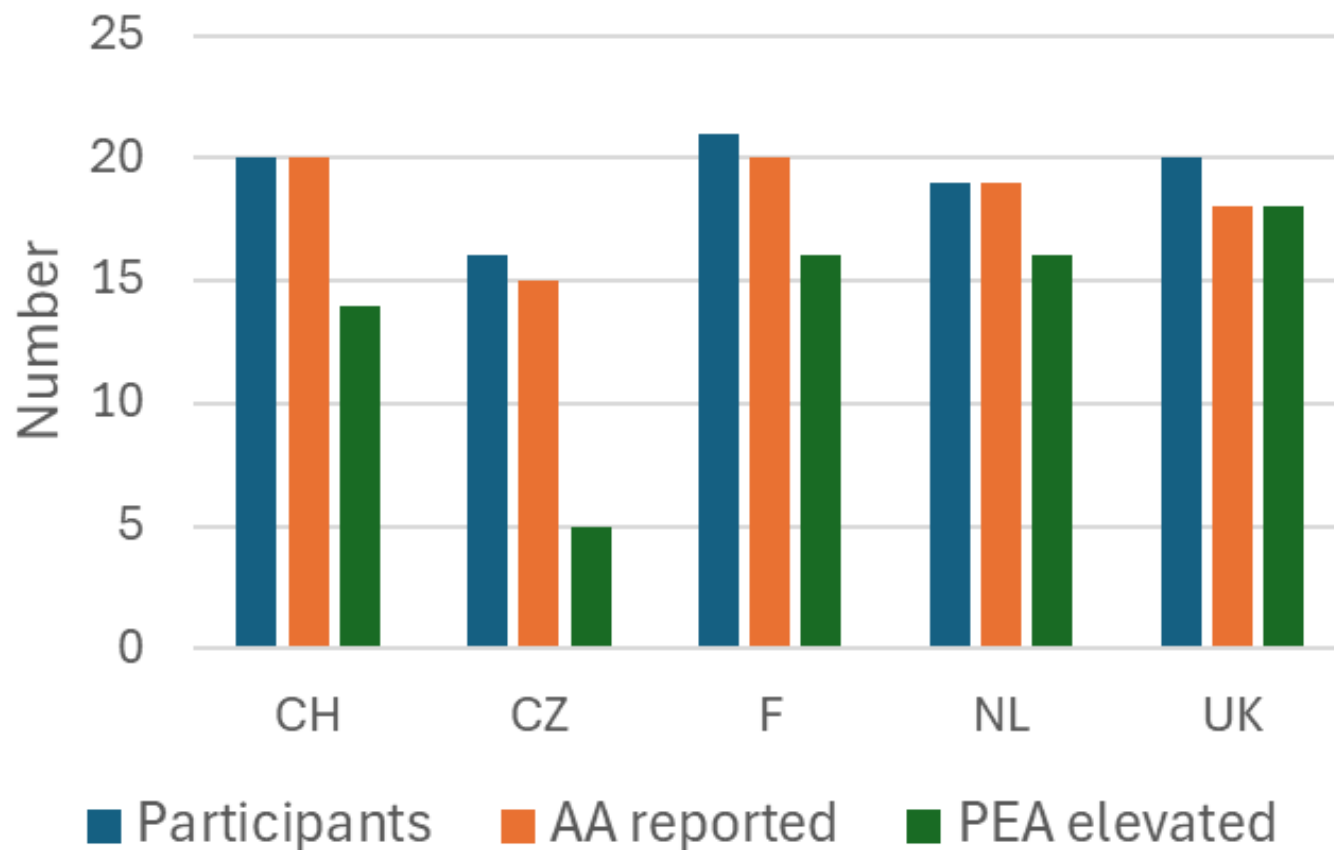


Creatinine: 4.03 ± 0.30 mmol/L (n=89)

CV 7.4%

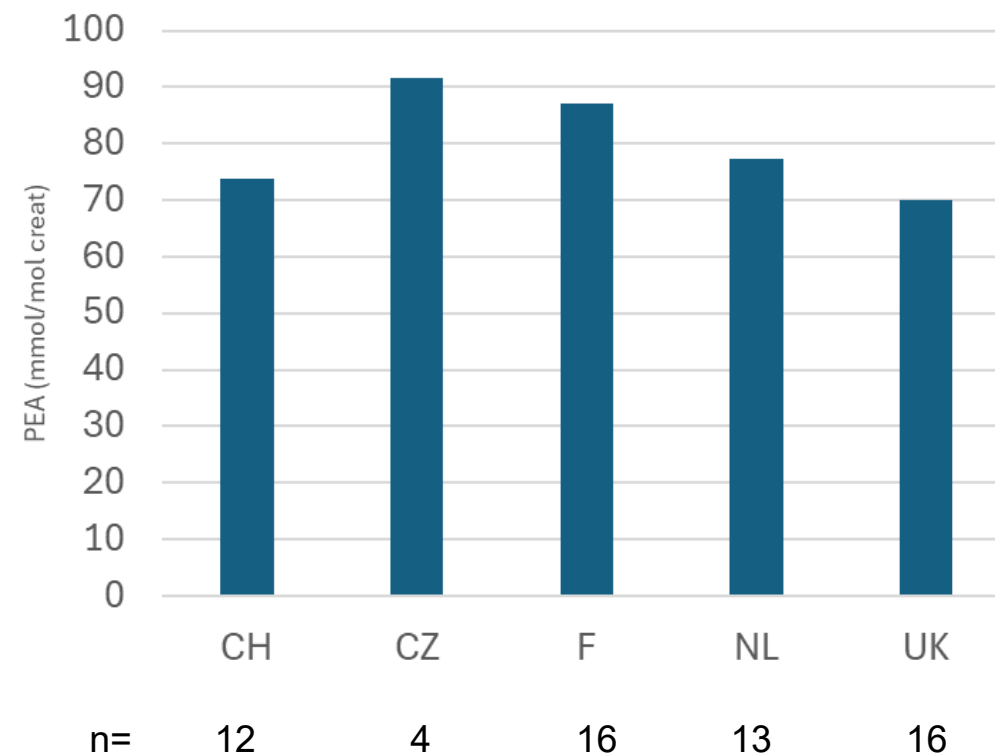
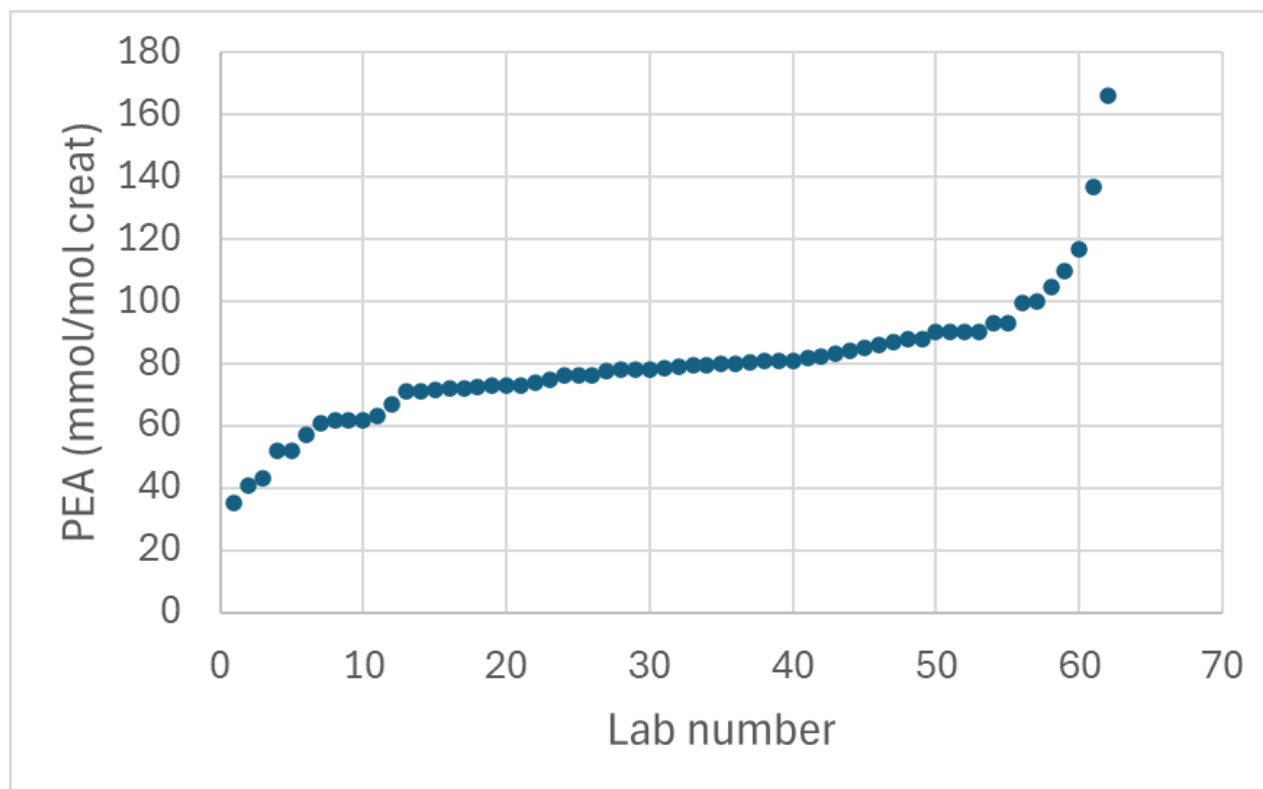


Amino acid analysis; reports



PEA = phosphoethanolamine

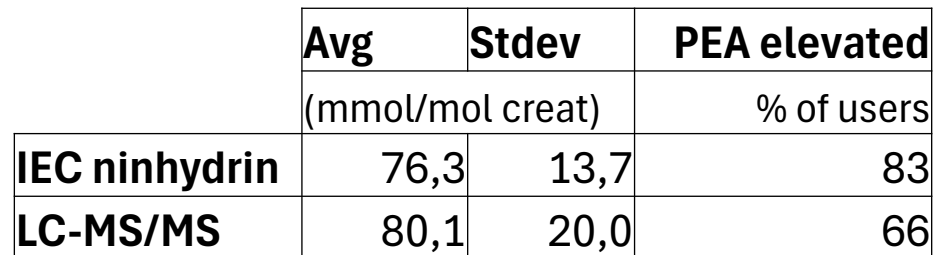
Amino acid analysis; phosphoethanolamine - quantitative results



Phosphoethanolamine: 78.2 ± 16.9 mmol/mol (n=61)
CV 22%

PEA = phosphoethanolamine

ERNDiM
QUALITY ASSURANCE IN LABORATORY TESTING FOR IEM

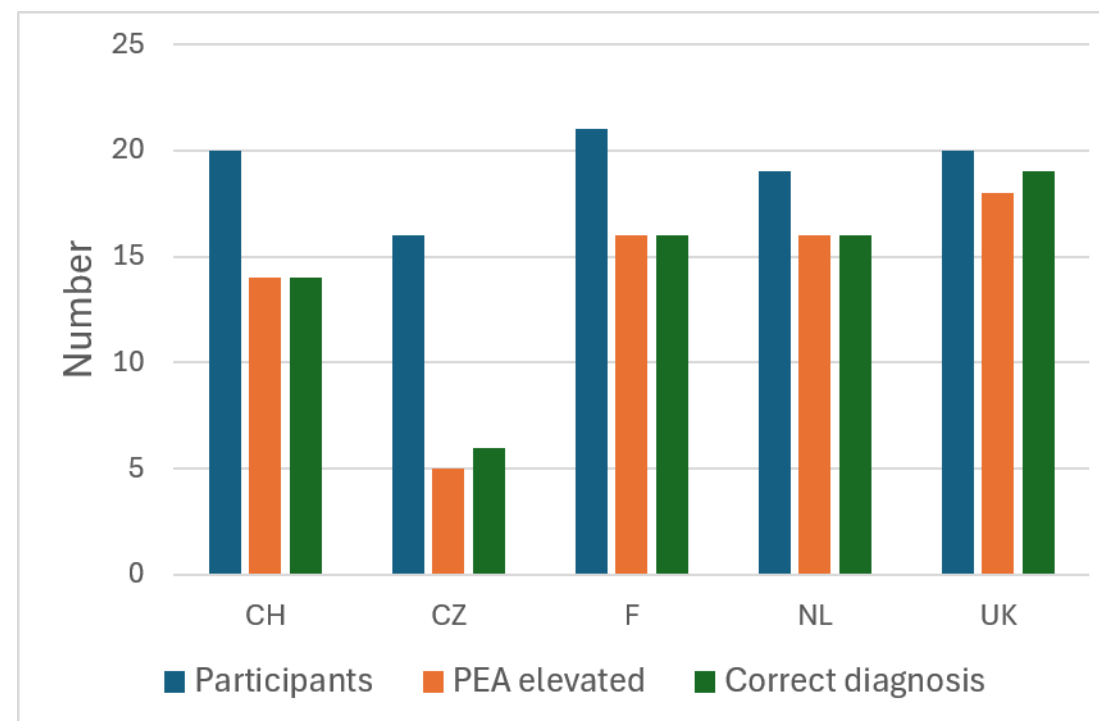


Interpretation of results

Most likely diagnosis	n
Hypophosphatasia	54
Hypophosphatasia childhood	9
Hypophosphatasia adult	8
Normal/no diagnosis	14
Mucopolysaccharidosis	6
Various	4

Other possible diagnoses

Other metabolic bone disease
MPS/oligosaccharidosis/Pompe

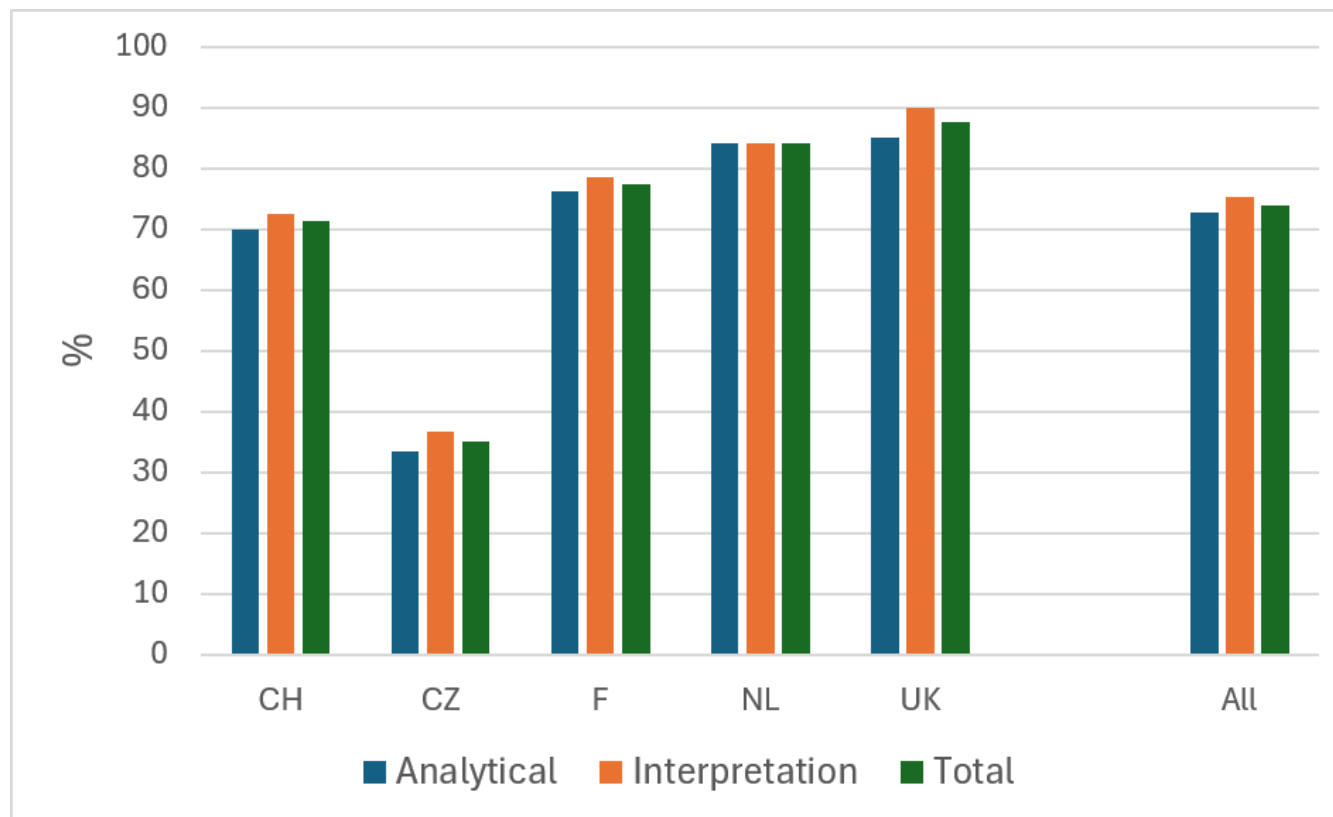


Scoring criteria

Analytical	points
Elevated phosphoethanolamine	2
Interpretation of results & advice for further testing	
Hypophosphatasia (any form)	2
Hypophosphatasia, PEA not reported	1
Recommendation to measure ALP	1
Maximum score	4

Potential critical error: to be discussed by the Scientific Advisory Board

Diagnostic proficiency



Overall proficiency: 74%

Advice for further investigations

- Alkaline Phosphatase testing in plasma/serum
 - Molecular analysis of the ALPL gene
 - Pyridoxal-P measurement in plasma/serum
 - Phosphoethanolamine in plasma
 - Pyrophosphate in urine
-
- Bone density measurement / X-ray
 - Dental review
 - Calcium, phosphate, PTH, vitamin D
-
- Family screening



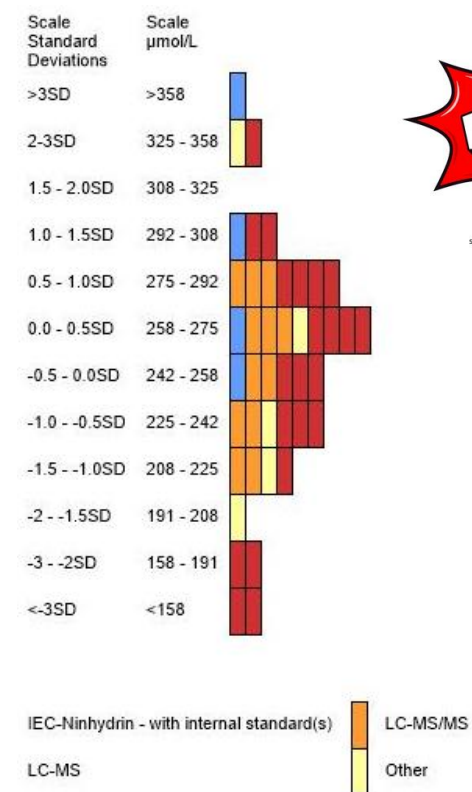
Strensiq[®]
(asfotase alfa) | 40
for injection mg/mL

Conclusions

- 69 labs reported elevated phosphoethanolamine
- Analytical proficiency: 73% - moderate
 - Include phosphoethanolamine MRM in LC-MS/MS test
- Interpretation of results: excellent
 - Correct diagnosis by all participants that reported elevated phosphoethanolamine
- Overall proficiency: 74%
- Hypophosphatasia is treatable
- ALP test: reference range should include lower limit

Thank You

ERNDIM SAU 2026.03 Phosphoethanolamine 258 $\mu\text{mol/l}$





Quality Assurance in Laboratory Testing for IEM

2026 Participant Workshop

Tuesday 25th August 2026

Programme	
11:00 – 11:10	Chair's update <i>George Ruijter, Netherlands (on behalf of Rafa Artuch)</i>
11:10 – 11:20	Common DPT sample <i>George Ruijter, Netherlands</i>
11:20 – 11:40	Peroxisomal Biomarkers in Blood and Urine <i>Fred Vaz, Netherlands</i>
11:40 – 12:00	Functional Testing for Peroxisomal Disorders <i>Sacha Ferdinandusse, Netherlands</i>
12:00 – 12:30	Clinical Presentation of Peroxisomal Disorders <i>Angeles García Cazorla, Spain</i>
12:30	Closing Remarks <i>George Ruijter, Netherlands (on behalf of Rafa Artuch)</i>