ERNDIM DPT Center Eastern Europe

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Proficiency Testing Center Eastern Europe: Annual Report 2003

1. Introduction

Proficiency testing in the Center Eastern Europe was running as a regular ERNDIM scheme in 2003.

2. Geographical distribution of participants

Twenty laboratories from 11 countries of Eastern, Central and Southern Europe have participated in our DPT scheme in 2003.

Country	Number of participants
Austria	2
Croatia	1
Cyprus	1
Czech Republic	1
France	1
Germany	5
Greece	1
Poland	1
Slovakia	3
Switzerland	3
Turkey	1
TOTAL	**20**

3. Logistics of the scheme

- ✓ Two surveys: 2003/1 – samples A, B and C
  2003/2 – samples D, E and F
- ✓ Origin of samples: Five urines obtained from the patients with known diagnoses (samples were provided by the DPTC participants and by the organizers) and a common sample (distributed in all four DPT schemes); all samples have been reanalyzed in our lab after heat-treatment, diagnostically relevant metabolites were detected in all six samples.
- ✓ Shipment of samples: Six heat-treated urines were shipped at once by express courier service together with results protocols. Samples were shipped at ambient temperature.
- ✓ Tests required: amino acids, organic acids, mucopolysaccharides, oligosaccharides and purines/pyrimidines

- ✓ Communication between the organizers and the participants occurred by e-mail, fax and regular mail.

4. Schedule of the scheme in 2003

Sample distribution	February 18
Survey 2003/1 – results submission	March 14
Survey 2003/1 – report	April 16
Survey 2003/2 – results submission	June 3
Survey 2003/2 – report	July 15
Annual meeting of the participants	October 10
Annual report 2003	November 15

5. The receipt of samples and results

Date of receipt of samples (samples sent on February 18, 2003)

Date (reported by participants)	Number of participants	Date (reported by courier service)	Number of participants
1 day	9	1 day	13
2 days	8	2 days	6
3 days	1	lost sample	1
not indicated	2		

Deadlines of the results submission

	2003/1	2003/2
in time	18	18
4 days delay	1	-
11 days delay	1	-
no reply	-	2

6. Scoring of results

A new DPT evaluation and scoring system has been implemented in all four DPT Centers in 2003. Three criteria (analytical performance, interpretative proficiency and recommendations) were scored, the total score was calculated as a sum of these three criteria. The maximum score that could have been achieved was 5 points per sample, i.e. 15 points per survey.

The overview of scoring criteria is as follows:

A	Analytical performance	Correct results of the appropriate tests	2
		Partially correct or non-standard methods	1
		Unsatisfactory or misleading	0
I	Interpretative proficiency	Good (diagnosis was established)	2
		Helpful but incomplete	1
		Misleading/wrong diagnosis	0
R	Recommendations	Helpful	1
		Unsatisfactory or misleading	0

The scoring system is still evolving and the goal to harmonise the scoring system has not been achieved yet. For the success of the scoring system it is needed to consent on criteria, which will be respected by both the participants and the organisers. The current opinion of participants on scoring in the Eastern Europe Center is given in more detail below (this opinion includes conclusions from the Annual meeting of our center)

Analytical performance:

- ➢ an appropriate test/tests should be performed (non-standard methods obtain lower score)

- correct results are understood as follows
    - Quantitative methods should demonstrate either the presence of key abnormal metabolites, which are under the usual detection limit of the routine method or abnormal concentrations of normally occurring metabolites; the DPT scheme does not evaluate the concentrations per se and only the interpretation of these findings (i.e. normal, abnormal low, abnormal high) is taken into account for scoring
    - If the biochemical phenotype allows several diagnoses, which may be differentiated by demonstrating presence or absence of additional metabolites, the highest analytical performance is achieved only after evaluating these additional metabolites (e.g. determination of xanthine and hypoxanthine in hyperuricosuria is needed to obtain 2 points)
    - Qualitative/semiquantitative methods are most problematic; the participants of the Annual meeting consented on scoring, in which the qualitative methods have to describe the most likely diagnoses based on the typical profile of analytes (e.g. the pattern of OLS and/or SOLS has to be reported as typical for sialidosis and/or galactosialidosis to obtain 2 points)
- lower scores are obtained if the above criteria are met only partially

Interpretative performance:

- correct diagnosis has to be established: either the presence of a specific inborn error of metabolism or absence of any known IEM should be reported
- correct diagnosis is understood by the participants as a name of disease linked to a specific locus (e.g. MPS II or iduronate sulfatase deficiency; fumaric aciduria or fumarate hydratase deficiency); in other words, the diagnosis should pretty much equal a specific enzymatic/transporter deficiency, an OMIM entry or disease name in Scriver
- if the sample was obtained from a patient with an established IEM, this specific inborn error of metabolism should be reported (only occasionally, more than one disease may be reported if the urinary analytes do not permit to differentiate between several diagnoses); the participants are discouraged from reporting several diagnoses for each sample ("just to make sure")
- a sole description of the biochemical phenotype is only partially correct (e.g. hyperuricosuria or mucopolysaccharidurias are not understood as specific diseases as several enzymatic deficiencies may exist as the cause of these two biochemical phenotypes); in contrast, isovaleric aciduria is considered a correct diagnosis as this term is used for isovaleryl-CoA dehydrogenase deficiency
- samples obtained from individuals without any known IEM may be included in the scheme, these samples have to be scored as "no known IEM" unless the biochemical phenotype permits other interpretation (e.g. hyperglycinuria in a patient with seizures, who is treated by valproate, permits the possibility of nonketotic hyperglycinemia)

Diagnostic recommendations:

- one point for recommendations was given if further investigations, that would lead to the correct diagnosis, were proposed
- the suggested test/s should be as specific as possible (e.g. a nonspecified "enzymatic or DNA analysis" is not a satisfactory recommendation while "analysis of iduronate sulfatase activity" is a satisfactory recommendation)
- it is the view of the organisers that enzymatic analysis (if available and needed for the specific disease) is preferable over the DNA analysis (due to inherent difficulties in genetic analyses and in genotype/phenotype correlations)

Therapeutic and other recommendations:

- recommendations pertaining to treatment or prevention are not evaluated in proficiency tests, however, they are still reported and summarized by the scheme organizers.

7. Score of participants for individual samples

Survey 2003/1

Lab no	Sample A Lesch-Nyhan				Sample B Citrullinaemia				Sample C "No known IEM"			
	A	**I**	**R**	**Total**	**A**	**I**	**R**	**Total**	**A**	**I**	**R**	**Total**
301	0	0	0	**0**	2	2	0	**4**	2	2	1	**5**
302	2	2	1	**5**	2	2	1	**5**	2	2	0	**4**
303	2	2	1	**5**	2	2	1	**5**	2	2	0	**4**
304	2	2	1	**5**	2	2	1	**5**	2	2	0	**4**
305	2	2	1	**5**	2	2	1	**5**	2	0	0	**2**
306	0	0	1	**1**	0	0	0	**0**	2	2	0	**4**
307	2	0	1	**3**	2	2	1	**5**	2	1	1	**4**
308	2	0	0	**2**	2	2	1	**5**	1	1	1	**3**
309	1	1	1	**3**	2	2	1	**5**	2	1	1	**4**
310	2	2	1	**5**	2	2	1	**5**	2	2	0	**4**
311	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
312	2	2	1	**5**	2	2	1	**5**	0	2	0	**2**
313	2	2	1	**5**	2	2	1	**5**	0	1	1	**2**
314	1	2	1	**4**	2	2	1	**5**	2	2	0	**4**
315	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
316	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
317	2	2	0	**4**	2	2	1	**5**	2	1	1	**4**
318	0	0	0	**0**	2	2	0	**4**	0	0	0	**0**
319	2	1	0	**3**	2	2	1	**5**	2	2	0	**4**
320	0	0	1	**1**	2	2	1	**5**	2	2	0	**4**

Survey 2003/2

Lab no	Sample D Fumaric aciduria				Sample E Isovaleric acidemia				Sample F Sialidosis			
	A	**I**	**R**	**Total**	**A**	**I**	**R**	**Total**	**A**	**I**	**R**	**Total**
301	0	0	0	**0**	2	2	0	**4**	1	2	1	**4**
302	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
303	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
304	2	2	1	**5**	2	2	1	**5**	1	1	1	**3**
305	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
306	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
307	2	2	1	**5**	2	2	1	**5**	1	1	1	**3**
308	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
309	2	2	1	**5**	2	2	1	**5**	0	0	0	**0**
310	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
311	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
312	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
313	2	2	1	**5**	2	2	1	**5**	1	1	1	**3**
314	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
315	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**
316	2	2	1	**5**	2	2	1	**5**	1	2	1	**4**
317	2	2	1	**5**	2	2	1	**5**	1	0	1	**2**
318	2	0	0	**2**	2	2	0	**4**	0	0	0	**0**
319	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
320	2	2	1	**5**	2	2	1	**5**	2	2	1	**5**

8. Score summary in 2003

Sample	Diagnosis	Analytical [%]	Interpretative [%]	Recommen-dations [%]	Total [%]
A	***Lesch-Nyhan***	75	65	75	71
B	***Citrullinaemia***	95	95	85	93
C	***"No known IEM"***	83	78	45	73
D	***Fumaric aciduria***	94	89	89	91
E	***Isovaleric aciduria***	100	100	89	98
F	***Sialidosis***	72	75	89	77

9. Performance scores for individual participants [% of maximum achievable]

Lab no	Survey 2003/1				Survey 2003/2				Sliding window (the last 3 surveys)			
	A	I	R	T	A	I	R	T	A	I	R	T
301	67	67	33	60	50	67	33	53	61	61	17	50
302	100	100	67	93	100	100	100	100	100	100	92	98
303	100	100	67	93	100	100	100	100	100	100	92	98
304	100	100	67	93	83	83	100	87	94	94	92	94
305	100	67	67	80	100	100	100	100	100	89	92	94
306	33	33	33	33	0	0	0	0	22	22	33	25
307	100	50	100	80	83	83	100	87	94	78	100	90
308	83	50	67	67	100	100	100	100	94	72	83	83
309	83	67	100	80	67	67	67	67	72	67	75	71
310	100	100	67	93	100	100	100	100	89	89	75	85
311	100	100	100	100	100	100	100	100	100	100	100	100
312	67	100	67	80	100	100	100	100	78	89	75	81
313	67	83	100	80	83	83	100	87	83	89	92	88
314	83	100	67	87	100	100	100	100	94	100	92	96
315	100	100	100	100	100	100	100	100	89	89	92	90
316	100	100	100	100	83	100	100	93	94	100	100	98
317	100	83	67	87	83	67	100	80	83	61	58	69
318	33	33	0	27	67	33	0	40	50	33	0	33
319	100	83	33	80	0	0	0	0	50	42	17	40
320	67	67	67	67	100	100	100	100	83	83	83	83

The DPT system should enable identification of poor performers, who should be offered special assistance from the organisers with an aim of detecting problems and improving the diagnostic proficiency. At present there is no consensus on the borderline between good and poor performance within ERNDIM. The participants of our DPT centre agree that a long-term proficiency of each lab should be evaluated (the sliding window reflects the performance in the last 3 surveys, i.e. 9 samples in the past 1 ½ year). The Scientific Advisory Board of ERNDIM suggested that 50% performance should be still considered satisfactory. In contrast, participants in our scheme felt that performing at 75% of the maximum achievable is the appropriate threshold for good performance as more than ¼ of missed diagnoses/wrong analytical results/inappropriate recommendations may be harmful for the patients.

10. Annual meeting of the participants

The participants met on October 10, 2003 in Prague, for details see the minutes of meeting.

11. Tentative schedule of DPT scheme and fee in 2004

Sample distribution	March 22
Survey 2004/1 – results submission	April 16
Survey 2004/1 – report	May 14
Survey 2004/2 – results submission	June 18
Survey 2004/2 – report	July 23
Annual meeting of the participants	August 31 – September 3?
Annual report 2004	October 31

The next annual meeting will be held in Amsterdam during the 41st Annual symposium of SSIEM in September 2004; the date will be specified in due course.

The fee for 2004 was determined by the Executive Board of ERNDIM in the amount of 263 Euro.

12. Certificate of participation in Proficiency Testing for 2003

The certificate of participation will be provided by the ERNDIM to all participants, who returned the results of both surveys. At present the certificate does not contain any statement on the performance of the participant as the criteria for poor performance have not yet been accepted within ERNDIM.

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