ERNDIM

QUALITY ASSURANCE IN LABORATORY TESTING FOR IEM

2017 Participant Survey Report:

[2016 scheme year]

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European Research Network for evaluation and improvement of screening, Diagnosis and treatment of Inherited disorders of Metabolism

1. Introduction

- Participants (781 contacts from 393 centres) were sent the link to the ERNDIM Participant Survey on the Survey Monkey website (www.surveymonkey.com) on 27th March 2017. We asked participants to answer questions relating to the 2016 EQA schemes. The closing date for the survey was 5th May 2017.

2. Summary

- Thank you to everyone who took the time to complete this survey. This report is a summary of all the responses we received. The results from the survey will help us to continue to improve the quality and efficiency of the ERNDIM EQA schemes.
- 61% of the laboratories that participated in the 2016 schemes responded to the survey with the response rate for each of the schemes being between 55-85%.
- The survey has again highlighted areas where we need to improve such as the lack of website reporting for all of the qualitative schemes and low sample volume for some of the qualitative schemes. Some participants are also unhappy with the analyte concentrations in some schemes and specific comments from ERNDIM for the relevant schemes can be found in the summary of 'Remarks, comments or suggestions for improvements' on pages 10 to 13.
- However it is gratifying to see that 34% of respondents rate the quality of products and services we provide as excellent and that 72% of respondents believe that the quality of service we offer is getting better. We will continue to make further improvements to the service that we offer as we work towards applying for accreditation.
- We are still working towards moving all the qualitative schemes to website reporting and website reporting for the CDG and Qualitative Organic Acids scheme will be launched in 2018, with the Acylcarnitines in DBS scheme moving to website reporting in 2019.
- The issue of sample volume is more difficult. The schemes that use real clinical samples as the EQA materials are dependent on the Scientific Advisors sourcing suitable clinical samples of sufficient volume either by direct contact with clinicians or via donations from participating laboratories. However we are investigating alternative routes for sample donation. Information on the types of samples that would be useful to ERNDIM can be found on the website (www.erndim.org) under EQA schemes\sample donations. If you would be interested in donating a sample please contact the Administration Office.
- We are currently reviewing the method documents which are on the ERNDIM website under Training & Education\Educational Documents (www.erndim.org/home/training.asp?m=4&s=7). We were interested in how useful people found the documents that are currently on the website so some questions on this were included in the survey. The responses to these questions can be found on pages 7 to 9.
- We are especially pleased that so many of you took the time to complete the survey and to send comments on the schemes. We hope you find the summary where we answer some of your comments, interesting (see pages 10 to 13) and we would welcome any other comments or suggestions for improvements.

3. Survey Responses

- 264/781 contacts from 238/393 centres in 54 countries responded to the survey. The response rate by centre was 61% (compared to 62% in the last survey) and the individual response rate was 34% (compared to 35% in the last survey).

Question 1: Please rate the following aspects for each of the ERNDIM quality assurance schemes that you subscribe to

- Number of centre responses = 224 centres (= 94% of all responses)
- The response rate for each EQA scheme is shown in Figure 1 and Table 2. For the individual schemes the highest response rate was for Neurotransmitters in CSF (85% of 2016 scheme participants) and the lowest was for Cystine in WBC (55% of 2016 scheme participants). The response rate for 10 of the 13 EQA schemes was higher than in the 2016 survey (= 2015 scheme year, Figure 1).

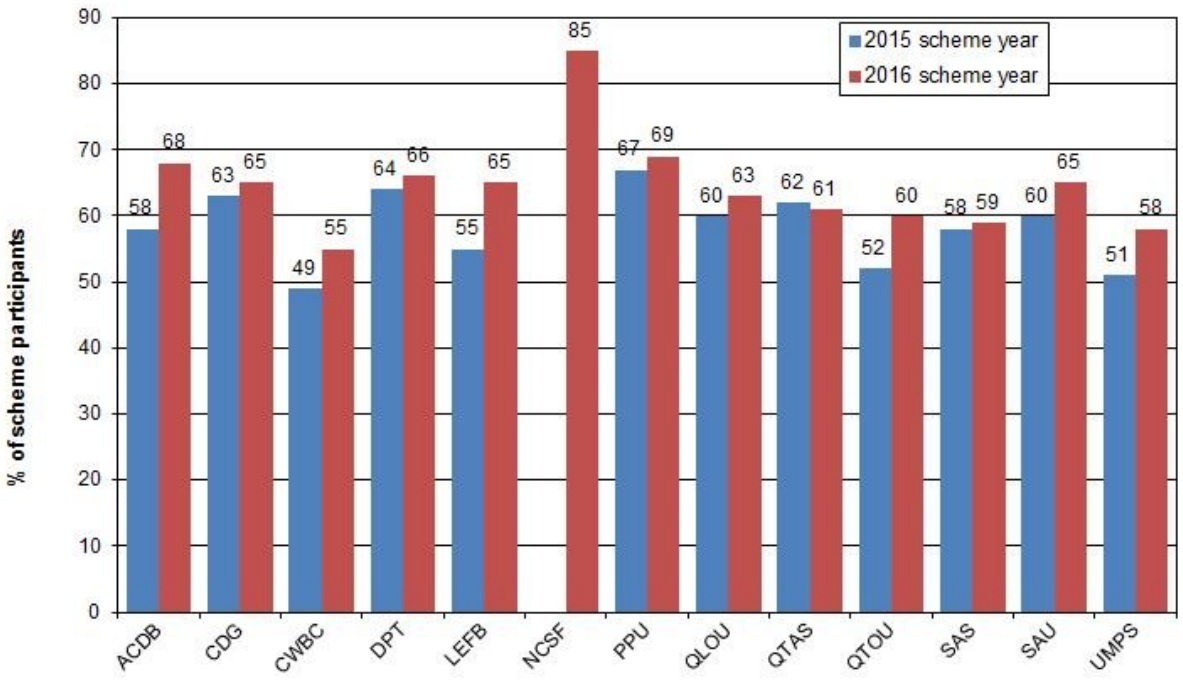


Figure 1. Survey responses per EQA scheme (Question 1) as a percentage of the EQA scheme participants
[no data for NCSF for 2015 scheme year as 2016 was the first year this scheme ran as a full EQA scheme]

Key

EQA Scheme	Code	EQA Scheme	Code
Acylcarnitines in DBS	ACDB	Qualitative organic acids (urine)	QLOU
Congenital disorders of glycosylation	CDG	Quantitative amino acids (serum)	QTAS
Cystine in white blood cells	CWBC	Quantitative organic acids (urine)	QTOU
Diagnostic Proficiency Testing (urine)	DPT	Special assays - serum	SAS
Lysosomal storage enzymes (fibroblasts)	LEFB	Special assays - urine	SAU
Neurotransmitters in CSF	NCSF	Urine Mucopolysaccharides	UMPS
Purines & pyrimidines (urine)	PPU		

- Participants were asked to rate the following aspects of each scheme:
  - Frequency of samples
  - Appropriateness of analyte concentration
  - Website display
  - Value for money
  - Sample volume
  - Adequacy of the report
  - Usefulness of the annual report
  - Billing arrangements
- Each of the aspects of individual EQA schemes was rated according to the following scoring system:
  1 = Excellent 2 = Good 3 = Poor 4 = Very poor
- The average scores per scheme since 2001 are shown in Table 1 and Figure 2 and scores ≤ 1.5 are highlighted in blue and scores ≥ 2.0 are highlighted in red.
- The overall score for all aspects of all schemes was 1.7, which is the same as in the 2016 survey. Eight of the EQA schemes had the same score as in the 2016 survey, 1 scheme had a worse score than the 2016 survey (UMPS) and 3 schemes had better scores (ACDB, LEFB, and PPU).
- The best scoring schemes were CWBC, DPT, PPU, QLOU, QTOU, QTAS and SAU, which all scored 1.7. The worst scoring scheme was the CDG scheme which scored 1.9.
- The scores for each scheme in each of the individual aspects are given in Table 2. The score for 6 out of the 8 of the individual aspects have improved or stayed the same since the 2016 survey, while both 'Value for money' and 'Billing arrangements' have slightly worse scores than the 2016 survey.
- The worst scoring aspect was 'Value for money' which scored 1.9; with the best scoring aspect being 'Frequency of samples' which scored 1.6.

Table 1. Average scores per scheme (Question 1) *[See Figure 1 for key to scheme codes]*

	Average Scores									
EQA Scheme	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2007**	**2004**	**2001**
All schemes	**1.7**	**1.7**	**1.8**	**1.7**	**1.7**	**1.7**	**1.8**	**1.7**	**2.0**	**2.0**
ACDB	1.8	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.3	-
CDG	1.9	1.9	2.0	2.0	1.9	1.8	1.9	-	-	-
CWBC	1.7	1.7	1.8	1.8	1.6	1.7	1.6	1.4	-	-
DPT	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.7	2.0	2.0
LEFB	1.8	1.9	1.9	2.0	1.9	2.0	2.1	-	-	-
NCSF	1.7	-	-	-	-	-	-	-	-	-
PPU	1.7	1.8	1.8	1.7	1.7	1.7	1.9	1.6	1.8	2.1
QLOU	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	2.0	1.9
QTAS	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.9	2.0
QTOU	1.7	1.7	1.8	1.7	1.7	1.7	1.9	1.7	1.9	2.1
SAS	1.8	1.8	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.0
SAU	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.9	2.1
UMPS	1.8	1.7	1.8	1.8	1.8	1.8	-	-	-	-

- The score for 'Value for money' is slightly worse than in the 2016 survey (1.9 compared to 1.8) with one scheme (LEFB) scoring 2.0 for this aspect. While the score for 'Frequency of samples' is slightly better than in the 2016 survey (1.6 compared to 1.7) with 4 schemes scoring 1.5 (QLOU, PPU, DPT & NCSF).
- The 'Sample volume' score for CDG, was again the worst score in the survey although it has improved slightly compared to previous years (2.4 in 2016, 2.5 in 2016 and 2015, 2.6 in 2014).
- There were only 4 scores over 2.0 in this survey, compared to 7 in 2016 and 17 in 2015. The other 3 scores of 2.0 or more were LEFB ('Sample volume' = 2.0; 'Value for money' = 2.0) and ACDB ('Website display' = 2.1).
- The best scores of the whole survey (all 1.5) were for 'Frequency of samples' (DPT, PPU, NCSF and QLOU), 'Sample volume' (PPU) and 'Usefulness of the annual report' (DPT and QLOU).
- The most improved score of the whole survey was for ACDB ('Frequency of samples', 1.9 compared to 2.2 in the 2016 survey).

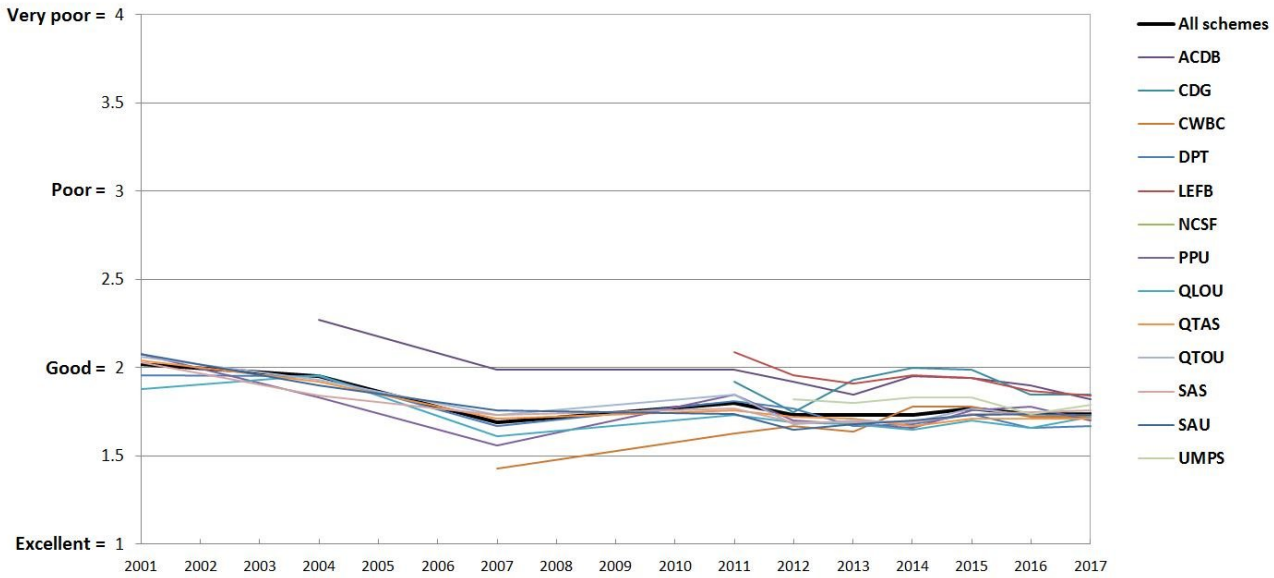


Figure 2. Average score per EQA scheme (Question 1) *[See Figure 1 for key to scheme codes]*

Table 2: Average scores per aspect of each scheme (Question 1) *[See Figure 1 for key to scheme codes]*

Scheme Aspects / EQA Schemes	Frequency of samples	Sample volume	Appropriateness of analyte concentration	Adequacy of the report	Website display	Usefulness of the annual report	Value for money	Billing arrangements	Average per scheme	No. of responses (% of scheme participants)
ACDB	1.9	1.8	1.7	1.7	2.1	1.7	1.9	1.8	**1.8**	81 (68.1%)
CDG	1.6	2.4	1.8	1.8	1.8	1.8	1.9	1.8	**1.9**	40 (64.5%)
CWBC	1.6	1.6	1.8	1.8	1.7	1.8	1.9	1.7	**1.7**	21 (55.3%)
DPT	1.5	1.8	1.6	1.6	1.8	1.5	1.8	1.7	**1.7**	71 (65.7%)
LEFB	1.6	2.0	1.9	1.8	1.8	1.8	2.0	1.9	**1.8**	49 (65.3%)
NCSF	1.5	1.7	1.9	1.9	1.7	1.7	1.7	1.9	**1.7**	22 (84.6%)
PPU	1.5	1.5	1.8	1.8	1.7	1.8	1.9	1.7	**1.7**	35 (68.6%)
QLOU	1.5	1.9	1.7	1.6	1.9	1.5	1.8	1.8	**1.7**	134 (62.9%)
QTAS	1.6	1.6	1.8	1.7	1.7	1.7	1.8	1.8	**1.7**	158 (60.8%)
QTOU	1.6	1.6	1.8	1.7	1.8	1.8	1.8	1.8	**1.7**	73 (60.3%)
SAS	1.6	1.7	1.9	1.7	1.7	1.7	1.9	1.8	**1.8**	137 (58.5%)
SAU	1.6	1.8	1.8	1.7	1.7	1.7	1.8	1.8	**1.7**	109 (64.9%)
UMPS	1.6	1.9	1.8	1.8	1.8	1.7	1.9	1.8	**1.8**	57 (57.6%)
Average for all schemes	**1.6**	**1.8**	**1.8**	**1.7**	**1.8**	**1.7**	**1.9**	**1.8**		

Questions 2 to 8: Analytes in Quantitative Schemes

- A total of 103/264 individuals (39%) made suggestions for analytes to be added to or removed from the Quantitative schemes.
- Where possible we do try to incorporate suggestions for additional analytes but unfortunately this is not always possible. A summary of the suggestions for analytes to added or removed, with some responses from ERNDIM, is below.

Q.2: Quantitative amino acids (50 responses, 18.9% of all respondents)

Suggested Analytes to be added

Total suggested = 28

Analytes with >1 response

Argininosuccinic acid	n = 18
tryptophan	n = 8
sulfocysteine	n = 7
Homocitruline	n = 5
1-Methylhistidine	n = 3
3- Methylhistidine	n = 3
Alloisoleucine	n = 3
sarcosine	n = 3
Ethanolamine	n = 2
Homocystine	n = 2
phosphoethanolamine	n = 2
Phosphoserine	n = 2
pipecolic acid	n = 2

Suggested Analytes to be removed

Total suggested = 11

Analytes with >1 response

homocitrulline	n = 6
Saccharopine	n = 5
Homocysteine	n = 3

ERNDIM Response:

- Argininosuccinic acid will be included in the 2018 samples.
- The addition of phosphoethanolamine was trialled in 2016 but it was not stable.

Q.3: Quantitative organic acids (22 responses, 8.3% of all respondents)

Suggested Analytes to be added		Suggested Analytes to be removed	
Total suggested = 49		Total suggested = 3	
Analytes with >1 response		**All Analytes suggested**	
3 hydroxybutyric acid	n = 5	2-ketoglutaric acid	n = 2
isovalerylglycine	n = 5	vanillactic	n = 1
3 hydroxypropionic acid	n = 4	D,L-glyceric acid	n = 1
Suberylglycine	n = 4		
orotic acid	n = 3		
2-methylbutyrylglycine	n = 2		
Citric acid	n = 2		
isobutyrylglycine	n = 2		
Lactic acid	n = 2		

Q.4: Purines & pyrimidines (8 responses, 3.0% of all respondents)

Suggested Analytes to be added		Suggested Analytes to be removed
Total suggested = 6		Total suggested = 0
Analytes with >1 response		**All Analytes suggested**
2,8-dihydroxyadenine	n = 3	
SAICAR	n = 3	

ERNDIM Response:

- Adding 2,8-dihydroxyadenine is not possible due to its insolubility.
- SAICAR is not available commercially and it is not financially viable to manufacture it privately.

Q.5: Lysosomal Enzymes (18 responses, 6.8% of all respondents)

Suggested Analytes to be added		Suggested Analytes to be removed	
Total suggested = 40		Total suggested = 3	
Analytes with >1 response		**All Analytes suggested**	
aryl sulfatase A	n = 7	Galactocerebrosidase	n = 2
Iduronate 2 sulfatase	n = 4	hex A	n = 1
arylsulfatase B	n = 3		

Q.6: Special assays – serum (33 responses, 12.5% of all respondents)

Suggested Analytes to be added		Suggested Analytes to be removed	
Total suggested = 55		Total suggested = 5	
Analytes with >1 response		**All Analytes suggested**	
aceto acetate	n = 5	Acylcarnitine	n = 2
biotinidase	n = 3	Galactose	n = 2
desmosterol	n = 2	7-Ketocholetserol	n = 1
succinyl acetone	n = 2	Cholestanetriol	n = 1
total Carnitine	n = 2	Lyso-GB3	n = 1

ERNDIM Response:

Suggested additions

- Acetoacetate is a very unstable analyte. It was spiked in the first years of running this scheme (until 2003) with very poor results (low recovery, bad precision and linearity), and it was decided to stop the addition.
- Biotinidase is not commercially available so it cannot be added. CDC (www.cdc.gov/nsqap) provides an EQA scheme for biotidinase in dried blood spots.
- The addition of desmosterol is unfortunately not financially feasible.
- Succinylacetone is useful for diagnosis of Tyr I but not for follow-up and its addition to the scheme does not seem reasonable.

- Total carnitine: The possibility of reporting this data is being investigated for the Acylcarnitines in serum scheme.

Suggested removals

- 7-Ketocholesterol: Marker for diagnosis and follow-up of Niemann-Pick type C disease spiked since 2014. There are 8-10 labs reporting results.
- Cholestanetriol: Marker for diagnosis and follow-up of Niemann-Pick type C disease spiked since 2014. There are 10-13 labs reporting results.
- LysoGb3: Marker for diagnosis and follow-up of Fabry disease spiked since 2015. There are 8-11 labs reporting results.

Q.7: Special assays – urine (23 responses, 8.7% of all respondents)

Suggested Analytes to be added		**Suggested Analytes to be removed**	
Total suggested = 34		Total suggested = 6	
Analytes with >1 response		**All Analytes suggested**	
Arabitol	n = 3	Glycolic acid	n = 1
delta aminolevulinique acid	n = 3	Orotic acid	n = 1
Galactose	n = 3	Oxalic acid	n = 1
acylglycine	n = 2	pipecolic acid	n = 1
fructose	n = 2	Succinylacetone	n = 1
ribitol	n = 2	sulfocysteine	n = 1
Vanylmandelic acid	n = 2		

ERNDIM Response:

Suggested additions

- Arabitol, Fructose Ribitol and Vanylmandelic acid were all rejected by the SAB in 2014.
- The addition of galactose was rejected by the SAB in 2015.
- The addition of acylglycine to the Quantitative Orgnaic Acids scheme is being investigated.
- The addition of Delta-aminolevulinic acid was approved by the SAB in November 2016. It will be added to the samples from 2018.

Suggested removals

- The following analytes will not be considered for removal from the scheme:
  - Glycolic acid: 26-28 labs report results.
  - Orotic acid: approximately 100 labs report results.
  - Oxalic acid: 30 labs report results.
  - Pipecolic acid: 25 labs reports results.
  - Succinylacetone: marker for Tyrosinemia type I, over 50 labs report results.
  - Sulfocysteine: marker for Sulphite Oxidase deficiency, over 50 labs report results.

Question 9: Do you have any other remarks, comments or suggestions for any of the schemes you subscribed to?

- Number of individual responses = 49 (= 18% of all responses).
- These comments are summarised on pages 10 to 13 with the comments made in response to Q18.

Q.10 to Q.13: We are reviewing the method documents on the ERNDIM website with the aim of updating these were needed. We'd like to know if this is a resource that you find useful or not.

- 247/264 individuals (93.7%) from 220/225 centres (97.8%) answered these questions and of these 76/247 individuals (30.8% of centres that answered these questions) answered 'Yes' to the question "Have you ever used the method documents on the ERNDIM website".

Question 10: Have you ever used the method documents on the ERNDIM website?

- Number of individual responses = 247 (92.2% of all responses).

Yes	**No**	**Did not know they were available**
76 (30.8%)	66 (26.7%)	**105 (42.5%)**

Question 11: If you have used the method documents how useful did you find them?

- Number of individual responses = 98 (39.7% of all responses for this section).

Very helpful	Helpful	Neither helpful or unhelpful	Unhelpful	Very unhelpful
18 (18.4%)	**62 (63.3%)**	17 (17.3%)	0 (0.0%)	1 (1.0%)
Responses to Q.11 only from the 76 people who replied 'Yes' to Q.10				
17 (22.4%)	***52 (68.4%)***	*6 (7.9%)*	*0 (0.0%)*	*1 (1.3%)*

Question 12: Please give the reason for your answer to Q.11.

- Number of individual responses = 80; 35 responses from individuals who answered Q.11 (= 35.7% of Q.11 responses) & 45 responses from individuals who did not answer.

Table 3: Summary of the number of comments received for Q.12, sorted by the response to Q.11. *[Where an individual included more than one comment in their response these have been counted under each category that applies]*

	Answer to Q.11					Did not answer Q.11
	Very helpful	Helpful	Neither helpful or unhelpful	Unhelpful	Very unhelpful	
General Comments:						
Very useful/helpful	2	2				
Not needed			2			8
Available documents not relevant		2	2			2
Using lab's own methods						9
Documents are out of date		1				1
Do not visit website very often						4
Did not know these were available			4			19
Could not find the documents						2
Method documents used:						
White Cell Cystine Method	1	1				
Amino Acids	2	2				
Oligosaccharides	2	3				
Purines and Pyrimidines		1				
Control of Accuracy and Precision		1				
Theoretical aspect of QC in IEM and Method validation		1				
Role of EQA in special assays for IEM		1				
Reasons for using the methods:						
Method improvement or validation	1	5	1			
Laboratory management or accreditation		3				
Training	2					
Will use for future method validation						1
Suggested additions:						
A good biomarker for diagnosis of CoQ deficiencies and also for treatment monitoring purposes in the field of mitochondrial disorders						1

Question 13: How could the method documents on the ERNDIM website be improved?

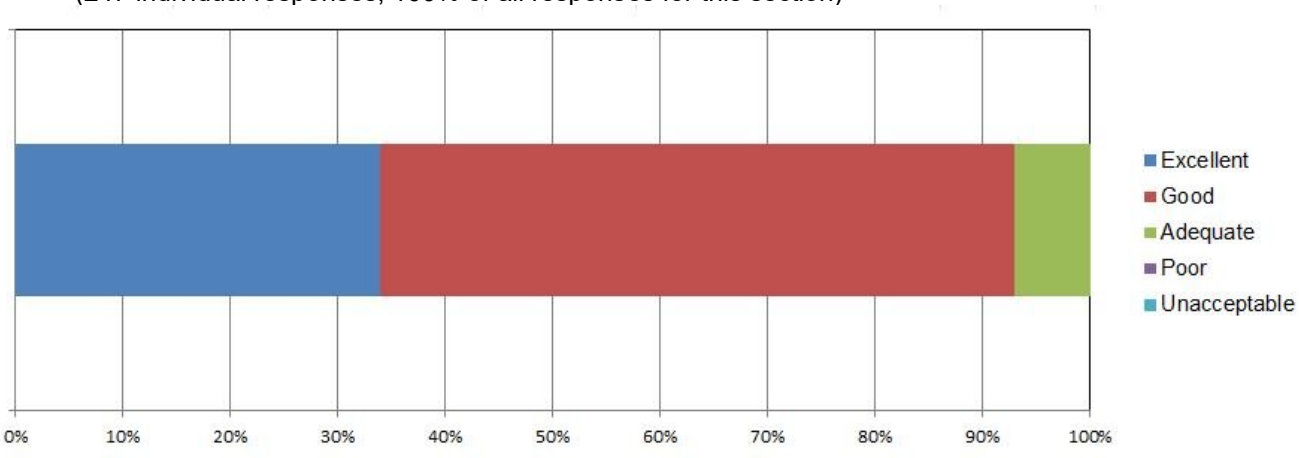
- Number of individual responses = 35 (= 36% of centre responses to Q.11).
- **Summary of comments:** *[Where an individual included more than one comment in their response these have been counted under each category that applies]*
  - Current methods are useful (n = 2)
  - Did not know the documents were available (n = 3)
  - Should be better advertised / easier to find (n = 8)
  - The documents should be updated regularly (n = 9)
  - More methods should be available (n = 7)
  - Suggested information to include in the methods (n = 9)
    - Consistent format (n = 1)
    - Data to include: validation criteria (n = 1); cut offs of analytes (n = 1); acceptable limits for bias and CV for each analyte (n = 1); age related reference ranges (n = 1)
    - Include information about artefacts and stability of analytes (n = 1)
    - Comment about the advantages and disadvantages of different methods (n = 1)
    - Methods from good performers to help poor performers to improve (n = 1)
    - Separate pre-analytical and analytical methods (n =1)

Questions 14 to 17: Comments on the overall performance of ERNDIM

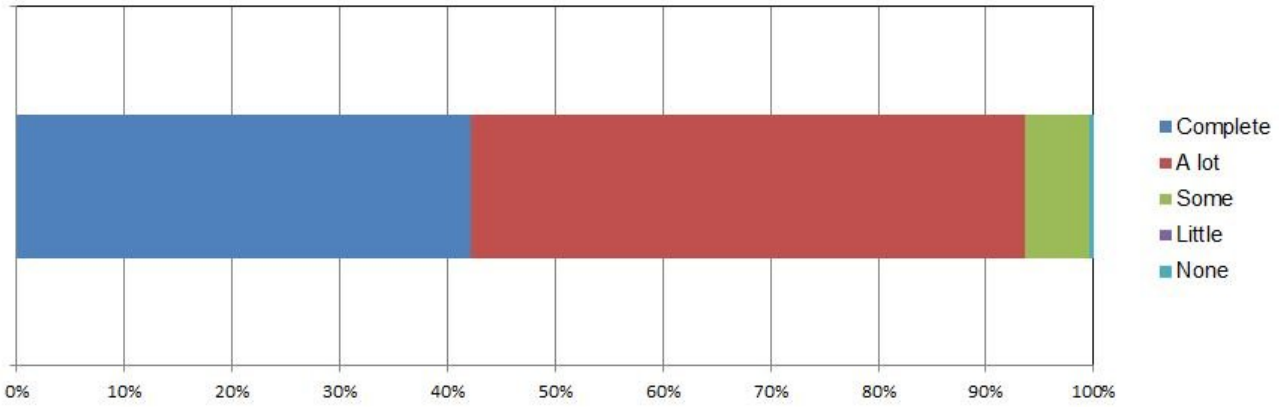
- The aim of this section is to assess participants' perception of the overall performance of ERNDIM.
- In summary:
  - 93% of respondents rated the quality of services provided by ERNDIM as 'excellent' or 'good'; with 94% of respondents having 'complete' or 'a lot' of confidence that ERNDIM can deliver the service required by participants.
  - 72% of respondents agreed that overall ERNDIM's performance is 'getting better' or 'getting much better'; with 96% of respondents stating that it was 'certain' or 'very likely' that they would use ERNDIM services in the future.

Q.14: Overall, how do you rate the quality of products and services we provide?

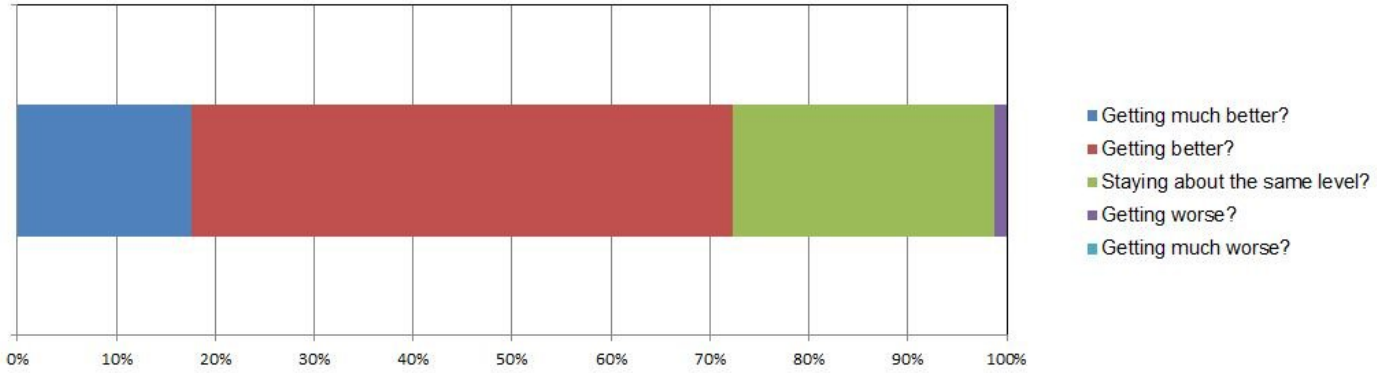
(247 individual responses, 100% of all responses for this section)



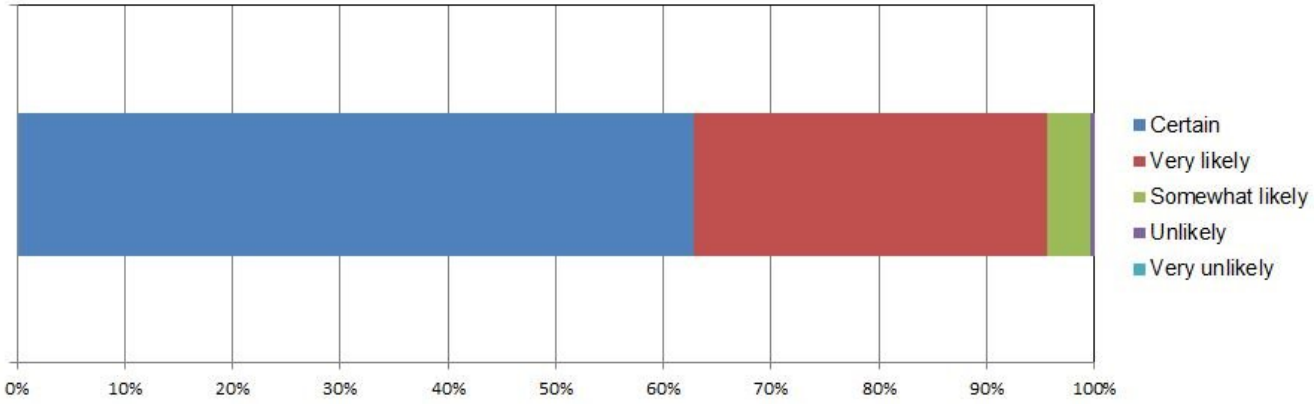
Q.15: What level of confidence do you have in us to deliver the products and services that you require? (244 individual responses, 98.8% of all responses for this section)



Q.16: Overall, is our performance...
(243 individual responses, 98.4% of all responses for this section)



Q.17: Based on our performance, how likely is it that you will use us in the future?
(246 individual responses, 99.6% of all responses)



Question 18: Do you have any other remarks, comments or suggestions for how we could improve the services we provide?

- Number of individual responses = 61 (= 23% of all responses).
- These comments are summarised pages 10 to 13 with the comments made in response to Q9.

Questions 9 & 18: Remarks, comments or suggestions for improvements

- Total number of responses was 110 from 83 individuals (= 31% of all responses).
- There were a large number of comments and suggestions for improvement. Below is a summary of some of the most frequent comments with responses from ERNDIM.

Participant Comment	ERNDIM Response
1. Administration	
• Delays in contact changes being made for some EQA schemes. There should be one contact point to make changes which feeds into all the schemes.	• After scheme registration has closed, any change in contacts should be sent to the Administration Office who will make the necessary changes on the Registration Website and inform the scheme organisers of the changes. If you find a contact change has not been made please do let us know (admin@erndim.org) and we will check that the relevant schemes have updated the details.
2. EQA Schemes	
2.1. General	
• There were, again, a number of comments on the frequency of submission deadlines – some wanting more frequent deadlines and some wanting less frequent deadlines.	• Increasing the number of submission deadlines so that there were 12 submissions per year would make running the schemes extremely difficult. • Decreasing the number of submissions per year would mean very long periods without EQA coverage which would not be acceptable.
• Decrease the gap between the end of one scheme year and the beginning of the next scheme year.	• For the quantitative scheme, the gap in EQA (November – March) relates to organisation issues. This cannot be changed easily however, we are working on a modified scheme calendar which will partially address this. • For the qualitative schemes, sample availability is the main reason for the gaps long between the end one scheme year and the beginning of the next.
• Many quantitative markers have too broad variation. Report of reference intervals for the different users, or alternatively report of percentiles would greatly improve this.	• Unfortunately, reference laboratories are not available for most, if any, metabolites included in the ERNDIM schemes so statistics based on values reported by participants is the best we can currently offer.
• Certificates of Participation to be sent earlier.	• We have made changes to the EQA scheme calendar with the aim of producing the 2017 Certificates of Participation in April/May 2018 and we are investigating further changes which would allow the Certificates to be produced in the first quarter of each year.
• The website access to the ERNDIM schemes is confusing. Please could we have one website with a link to all the schemes? It can be difficult to find the correct place to enter results.	• There are links to both results submission websites from the EQA page of www.erndim.org (www.erndim.org/home/qascheme.asp). The front page of each results website will show the schemes you can submit results for on that website.
2.2. Acylcarnitines in DBS	
• Delivery of samples is delayed.	• The EQA materials for the scheme are real clinical samples and delays in sample dispatch are often due to difficulties obtaining suitable samples. However we are aiming for the 2018 samples to be dispatched centrally which should solve some of the dispatch issues.
• Online submission of results.	• We are working towards online submission of results for this scheme and hope to make this available in 2019.
2.3. CDG scheme	
• On-line results submission.	• The aim is for online submission to be available for the 2018 scheme. Information will be sent to all participants later in the year.
• Low sample volume.	• This scheme uses real clinical samples and at least 3ml plasma is needed for each sample. The difficulty obtaining suitable samples of a large enough volume means that the volume per EQA sample is restricted. It is possible to order additional sample volume at a reduced fee but the availability of this is limited. The Scientific Advisor is investigating alternate sources for samples however there are also regularly appeals to participants for sample donations but with few responses. Please contact the Administration office if you would be interested in donating a sample.

Participant Comment	ERNDIM Response
2.4. DPT scheme	
• The DPT results website needs to be improved.	• Please contact the Scientific Advisor for this scheme to suggest improvements to the results website. A full list of all the ERNDIM Scientific Advisors can be found on the ERNDIM website under About\Organisation & Key Persons (http://www.erndim.org/home/about.asp?m=1&s=4).
2.5. Neurotransmitters in CSF	
• The scoring for the interpretation for the Neurotransmitters in CSF scheme it not specified in the yearly report.	• Interpretation is not currently scored in this scheme. However, changes to the scoring scheme which would allow the interpretation to be scored are being currently investigated.
2.6. Qualitative Organic Acids.	
• Online submission of results.	• The aim is for online submission to be available for the 2018 scheme. Information will be sent to all participants later in the year.
• It would be useful to have a feedback meeting for participants.	• A participants' workshop was held during the ERNDIM workshop in Manchester in November 2017. The presentation from the workshop is on the ERNDIM website under Meetings & Reports\Meetings (http://www.erndim.org/home/meetingsDetails.asp?i=21).
• Is it possible to get a list of the disorders a lab is supposed to diagnose or a list of the compounds we have to be able to detect in the samples?	• The aim of the scheme is to replicate clinical practice so we do not provide a list of disorders or compounds for this scheme.
2.7. Quantitative Amino Acids	
• Saccharopine causes serious interferences.	• This is understood by the Scientific Advisor. It is included in the scheme to see if/how labs deal with this difficulty.
2.8. Special Assays in serum	
• Would it be possible to have a range of concentrations for NEFA?	• NEFA are not added to the samples for this scheme but are present in the sample matrix so the concentrations do not vary, however results can be submitted for comparison between labs.
• The highest concentration of methylmalonic acid in serum might be lower.	• The possibility of lowering the highest concentration of MMA was discussed by the Scientific Advisory Board in November 2016. However, the decision was to keep the highest concentration as it is and the highest concentration of MMA has not been changed for samples in 2018.
• Reporting for total carnitine to be added?	• The possibility of reporting this data is being investigated for the Acylcarnitines in serum scheme.
2.9. Special Assays in urine	
• It is more convenient to combine oxalate, glycerate and glycolate in one urine sample.	• Glyceric acid has been moved from the Quantitative Organic Acids scheme to the Special Assays in urine scheme for 2018 onwards.
2.10. Urine MPS	
• Some urine samples have a very low creatinine value.	• This has been addressed in the last years. Creatinine values are usually higher than 2 mmol/L. Since we use real patient samples in this scheme, low creatinine values may occur in the samples donated .
• Sample volume should be improved.	• The reason for sending 5 mL samples is the limited sample availability (both volume and number of samples). Hence, sample volumes can't be larger than 5 mL. The scheme organisers prepare 120 aliquots of 5 mL, which requires 600 mL of urine. Larger aliquots would require proportionally larger stock samples. Since the Urine MPS scheme uses authentic human urine samples, we depend on participants to contribute these and for this scheme only a very few participants donate samples. If you would be interested in donating a sample please contact the Administration office. • One possibility is to offer labs the option to purchase as second set of samples at a reduced fee however this will be possible only for 5-10 participants.

Participant Comment	ERNDIM Response
• The UMPS results website needs to be improved.	• Please contact the Scientific Advisor for this scheme to suggest improvements to the results website. A full list of all the ERNDIM Scientific Advisors can be found on the ERNDIM website under About\Organisation & Key Persons (http://www.erndim.org/home/about.asp?m=1&s=4).
• A report mentioning, on a single page, the number of participating labs, mean, standard deviation & Z-score for each analyte of a scheme (instead or in addition to the percentile distribution currently displayed) would be very useful.	• The interim reports of the urine MPS scheme contain this information starting in 2017.
• I haven't yet received the detailed individual report for the MPS scheme, only the annual report, and am unable to download it from the website.	• Please contact the Scientific Advisor for this scheme. A full list of all the ERNDIM Scientific Advisors can be found on the ERNDIM website under About\Organisation & Key Persons (http://www.erndim.org/home/about.asp?m=1&s=4).
3. Suggestions for future schemes	We do welcome suggestions for future schemes but unfortunately it is not possible to cater for every request.
• Cognitive scheme for amino acids.	• The first pilot for the Cognitive Amino Acids scheme ran in autumn 2017. The second pilot is due to run in spring 2018. If you are interested in taking part in future pilots of this scheme please contact the Administration office (admin@erndim.org).
• Blood spot assays.	• The first pilot of a Special Assays in DBS scheme ran in Autumn 2017. The samples for the second pilot are due to be dispatched in February 2018. If you are interested in taking part in future pilots of this scheme please contact the Administration office.
• Amino Acids in urine.	• Unfortunately it is not possible to offer all the schemes requested by participants and the samples sent for the DPT (urine) scheme do include amino acid disorders.
• Reintroduce the Lysosomal Enzymes in DBS pilot scheme.	• Unfortunately, it will not be possible to reintroduce this pilot scheme unless sufficient samples to run the scheme are donated by participating labs as there is a lack of suitable clinical materials to use as the EQA materials. Please contact the Administration office if you would be interested in donating a sample.
• An MPS urine Keratan sulfate pilot ran in 2015 but has not ran since – was this scheme terminated?	• ERNDIM provided a one-year pilot for urine keratan sulfate. Due to the small number of participants, the pilot was not extended. However this may be changed in the future

Question 19 Please complete your name and institute address details.

- Number of individual responses = 236 (= 88% of all responses).