Newborn Screening Quality Assurance Program

Quarterly Report
Volume 3, No.2

X-linked Adrenoleukodystrophy in Dried Blood Spots Proficiency Testing Program (XALDPT)

2017 Quarter 3 August

Introduction

This is a summary of data reported within the specified data-reporting period for Quarter 3, 2017, for the detection of X-ALD by analysis of the biomarkers 24:0-Lysophosphatidylcholine (24LPC) and 26:0-Lysophosphatidylcholine (26LPC) in dried blood spots (DBS). It is distributed to all participants, state laboratory directors, and program colleagues by request. The tables within this report provide certification profiles for the distributed specimens, statistical analysis of participant quantitative data, and frequency of clinical assessments. An evaluation of your laboratory's data is attached to this summary.

Certification of PT Specimens

This panel of DBS specimens was prepared from Type A+ human whole blood, which was adjusted to a hematocrit of 50 ± 1% and subsequently enriched with the biomarkers 24LPC and 26LPC. Expected values for each were determined by LC-MS/MS in units of µmol/L blood. Clinical assessments were based on the NSQAP cut-offs of 0.47 µmol/L blood (24LPC) and 0.39 µmol/L blood (26LPC). Table 1 shows the NSQAP expected values and clinical assessments for each specimen.

Table 1. Specimen Certification – 24LPC and 26LPC (µmol/L blood)

Specimen	Expected 24LPC	24LPC Assessment Code*	Expected 26LPC	26LPC Assessment Code*
31721	0.61	2	0.55	2
31722	0.11	1	0.04	1
31723	1.61	2	1.55	2
31724	3.11	2	3.05	2
31725	0.11	1	0.05	1

*1 = Within Normal Limits
2 = Outside Normal Limits

Distribution of PT Specimens

On July 10, 2017 a PT panel of five unknown DBS specimens was distributed to 11 domestic laboratories and 13 foreign laboratories.

Participant Results

- Quantitiative Data

We processed data from 15 participants. Laboratories were asked to report concentrations of 24LPC and 26LPC results in µmol/L blood. In order to expedite the issuance of this report, data that are not submitted in the requested units are not accepted. The conversion factor from µg/mL to µmol/L blood is provided on the XALDPT Data Report Form. Participants may contact us for guidance on conversion factors if needed.

Overall statistics from MS/MS methods were combined so as to not identify an individual laboratory. We also did not include data that were outside the 99% confidence interval. The statistical summary analysis for all methods is provided in Table 2.

Five participants reported using Flow Injection Analysis (FIA) MS/MS non-kit, nine reported using LC-MS/MS and one reported a two-tier assessment scheme utilizing both FIA– and LC-MS/MS. Thirteen laboratories reported quantitative results for 24LPC, with four not reporting a clinical assessment. Fifteen reported quantitative results and clinical assessments for 26LPC. One participant reported cutoffs for 24LPC using female, indeterminate, and male categories. Table 2b shows the reported cutoffs for 24LPC and 26LPC by method.

Table 2. Screening Results for 24LPC and 26LPC — All MS/MS methods

Analyte	Specimen	N	Mean (µmol/L)	SD
24LPC	31721	13	0.64	0.21
	31722	13	0.14	0.11
	31723	13	1.67	0.53
	31724	13	2.41	0.60
	31725	13	0.14	0.09
26LPC*	31721	16	0.87	0.30
	31722	16	0.14	0.14
	31723	16	1.86	0.52
	31724	16	2.88	0.99
	31725	16	0.18	0.22

*One participant submitted quantitative data for two methods (First- and Second-tier).

Table 2b. Reported Cutoffs by Reported Method (µmol/L)

	53– LC-MS/MS		67 FIA-MS/MS	
	24LPC	26LPC	24LPC	26LPC
N	4	9	2	5
Mean	0.44	0.34	0.37	0.40
Max	0.55	0.50	0.40	0.47
Min	0.25	0.10	0.33	0.30
Median	0.49	0.39	0.37	0.40
Mode	NA	0.40	NA	0.40

- Clinical Assessments

Laboratories were asked to report qualitative results as “Within Normal Limits” or “Outside Normal Limits”. Qualitative assessments may differ because of specific assessment practices. The frequency distribution of participants’ clinical assessments is shown in Table 3.

Table 3. Frequency Distribution of reported Clinical Assessments

Analyte	Specimen	Within Normal Limits	Outside Normal Limits
24LPC	31721	1	8
	31722	8	1
	31723	0	9
	31724	0	9
	31725	9	0
26LPC*	31721	0	16
	31722	16	0
	31723	0	16
	31724	0	16
	31725	15	1

*One participant submitted clinical assessments for two methods (First- and Second-tier).

Evaluations

One False-negative and one False-positive were reported for 24LPC and one False-positive was reported for 26LPC.

Future Shipments

The Newborn Screening Quality Assurance Program will ship next quarter's XALDPT specimens on October 2, 2017.

Direct Inquiries

If you have any comments or questions about XALDPT MS/MS analysis, contact Dr. Christopher A. Haynes at 770-488-7019 or by e-mail at cph7@cdc.gov

For data reporting questions, contact Irene Williams at nsqapdmt@cdc.gov

The content of this report may also be located on our website at:
http://www.cdc.gov/labstandards/nsqap_reports.html

The identity of participants in any NSQAP proficiency testing scheme are considered confidential and known only to persons involved in the operation of the NSQAP proficiency testing scheme. Confidentiality may be waived by the participant upon written request only.

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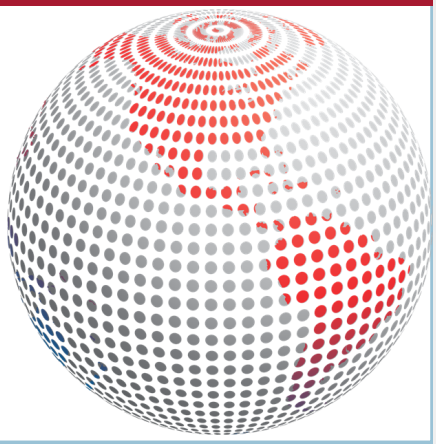

This *NEWBORN SCREENING QUALITY ASSURANCE PROGRAM* report is an internal publication distributed to program participants and selected program colleagues. The laboratory quality assurance program is a project cosponsored by the Centers for Disease Control and Prevention (CDC) and the Association of Public Health Laboratories.

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