

Newborn Screening Quality Assurance Program

PROFICIENCY TESTING

Cystic Fibrosis Mutation Detection Quarterly Report

Volume 6, No. 4

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INTRODUCTION

This report is the quarterly summary of all data reported within the specified data-reporting period for the Quarter 4, 2012 program for cystic fibrosis (CF) mutation detection. The attached tables provide the certification profiles for the distributed specimens, the verification of your reported data, the summary of reported genotypes, and the frequency distribution summary for expected interpretations. We distribute this PT report to all participants, state laboratory directors, and program colleagues by request.

On October 1, 2012 a panel of five unknown dried-blood spot (DBS) specimens was distributed to 31 laboratories in the United States and 32 laboratories in other countries to detect mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) gene.

PARTICIPANT RESULTS

This panel consisted of five DBS specimens prepared from adult CF patients, carriers or unaffected individuals (specimens 412C1, 412C2, 412C3, 412C4, and 412C5).

Evaluations are based on the clinical assessment of each specimen. Expected genotypes may differ by participant because of the panel of mutations tested. In these cases, an answer of “no mutation detected” is acceptable. A specimen is considered not evaluated when one or both of the expected mutations are not detected by the laboratory’s method or if the specimen cannot be assayed (sample failure).

We processed data from 60 participants. Laboratories were asked to report the method used and the genotype for each specimen. Methods varied widely with regard to the panel of mutations detected and the algorithm used for testing.

The specific methods and the number of laboratories that use them are shown in the Laboratory Methods Table. Some laboratories screen specimens for a limited number of mutations and if a mutation was present, continue testing with an expanded panel. Laboratories were not asked to report the maximum number of mutations that could be detected.

One incorrect clinical assessment was reported for specimen 412C3. Two laboratories reported sample failure for specimen 412C1. The Newborn Screening Quality Assurance Program will ship next quarter’s Cystic Fibrosis Mutation Detection PT specimens on January 7, 2013.

In an effort to better serve our participants, as of July 1, 2013 we are changing the evaluation criteria to include both clinical assessment and genotype results (see next page for an explanation). We are changing the data report form for the January, 2013 shipment but the criteria for evaluating panels will remain the same until July, 2013. Please note that all methods will have a method code. **Be careful when completing the data report form as some items have changed. Do NOT use an old data report form. Beginning in July your results will not be evaluated if an old form is submitted.** Thank you for your continued participation and support.

ACKNOWLEDGMENTS

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CDC/APHL

This program is cosponsored by the Centers for Disease Control and Prevention (CDC) and the Association of Public Health Laboratories (APHL).

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NEWBORN SCREENING QUALITY ASSURANCE PROGRAM
CYSTIC FIBROSIS MUTATION DETECTION SURVEY
QUARTER 4 - NOVEMBER 2012
FREQUENCY OF REPORTED CLINICAL ASSESSMENTS

Specimen	Screen Negative (Normal)	Screen Positive (1 or 2 mutations detected)	Sample Failure
412C1	14	43	2
412C2	0	59	0
412C3	1	58	0
412C4	0	59	0
412C5	0	59	0

*One laboratory did not report any clinical assessments.

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CYSTIC FIBROSIS MUTATION DETECTION SURVEY

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SPECIMEN CERTIFICATION

Specimen	Allele 1	Allele 2	Expected Clinical Assessment
312C1	2184delA (c.2052delA)	394delTT (c.262_263delTT)	2
312C2	F508del (p.Phe508del)	R334W (p.Arg334Trp)	2
312C3	F508del (p.Phe508del)	Wild type	2
312C4	F508del (p.Phe508del)	F508del (p.Phe508del)	2
312C5	F508del (p.Phe508del)	2183AA->G (c.2051_2052delAAinsG)	2

1 = screen negative (normal)

2 = 1 or 2 mutations detected

3 = Sample failure

Alleles were determined/confirmed by CDC and/or were included with the samples from the provider.

NEWBORN SCREENING QUALITY ASSURANCE PROGRAM

CYSTIC FIBROSIS MUTATION DETECTION SURVEY

QUARTER 4 - NOVEMBER 2012

LABORATORY METHODS

Method	Number of Laboratories
65 Abbott Molecular CF Genotyping Assay (DNA)	4
55 Hologic Inplex Assay	21
44 Luminex Molecular Diagnostics CFTR IVD	10
41 Innogenetics Inno-LIPA	5
37 Gen-probe Elucigene (ARMS)	5
19 Other *	17

* Other Methods Include:
Allele-specific oligonucleotide PCR
Amplification / gel electrophoresis
CF Strip Assay, ViennaLab Diagnostics
High Resolution Melt Technology
In-house ARMS assay
In-house assay
Matrix Assisted Laser Desorption /Ionization- Time Of Flight (MALDI-TOF) mass spectrometry
Modified Luminex-based assay
PCR/Restriction fragment length polymorphism analysis
Real-time allelic discrimination assay (i.e. TaqMan assay)
Sequencing

Some laboratories report more than one method.

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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