



Newborn Screening Quality Assurance Program

PROFICIENCY TESTING

Cystic Fibrosis Mutation Detection Quarterly Report

Volume 6, No. 2

June 2012

INTRODUCTION

This report is the quarterly summary of all data reported within the specified data-reporting period for the Quarter 2, 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 distributions summary for expected interpretations. We distribute this PT report to all participants, state laboratory directors, and program colleagues by request.

On April 2, 2012 a panel of five unknown dried-blood-spot (DBS) specimens was distributed to 30 laboratories in the United States and 33 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 212C1, 212C2, 212C3, 212C4, and 212C5).

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 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 58 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 212C5. Sample failure was reported for specimen 212C1 from two laboratories and one laboratory did not report any clinical assessments. The Newborn Screening Quality Assurance Program will ship next quarter's Cystic Fibrosis Mutation Detection PT specimens on July 9, 2012.

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 2 - JUNE 2012

FREQUENCY OF REPORTED CLINICAL ASSESSMENTS

Specimen	Screen Negative (Normal)	Screen Positive (1 or 2 mutations detected)	Sample Failure	Clinical Assessment Not Evaluated
212C1	55	0	2	1
212C2	57	0	0	1
212C3	0	43	0	15
212C4	0	57	0	1
212C5	1	56	0	1

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LABORATORY METHODS

Method	Number of Laboratories
65 Abbott Molecular CF Genotyping Assay (DNA)	3
55 Hologic Inplex Assay	21
44 Luminex Molecular Diagnostics CFTR IVD	11
41 Innogenetics Inno-LiPA	5
37 Gen-probe Elucigene (ARMS)	3
19 Other *	16

* Other Methods Include:
Allele-specific oligonucleotide PCR
Amplification / gel electrophoresis
Autogenomics INFINITI® CFTR-15 Assay
Capillary electrophoresis visualization
High Resolution Melt Technology
In-house assay
In-house single nucleotide primer extension assay (SNuPe)
Matrix Assisted Laser Desorption /Ionization- Time Of Flight (MALDI-TOF) mass spectrometry
PCR/Restriction fragment length polymorphism analysis
Real-time allelic discrimination assay (i.e. TaqMan assay)
Sequencing

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SPECIMEN CERTIFICATION

Specimen	Allele 1	Allele 2	Expected Clinical Assessment
212C1	Wild type	Wild type	1
212C2	Wild type	Wild type	1
212C3	Wild type	3120+1G→A (c.2988+1G→A)	2
212C4	F508del (p.508del)	3659delC (c.3528delC)	2
212C5	F508del (p.508del)	3849+10KbC→T (c.3717+12191C→T)	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.

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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