

▶ Environmental Health

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▶ Global Health

▶ Infectious Diseases

▶ Informatics

▶ Laboratory Systems and Standards

▼ Newborn Screening and Genetics

Assuring Laboratory Quality

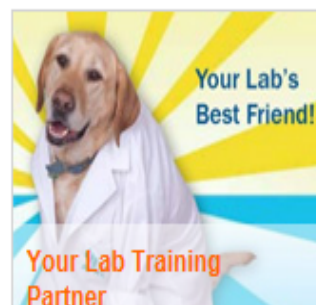
NBS Molecular Resources

Policy and Positions

▶ Public Health Preparedness and Response

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Assuring Laboratory Quality

Analyte Interference List

SAVED TOPICS: [Newborn Screening](#), [NSQAP](#), [Quality Assurance](#)

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The Newborn Screening (NBS) Analyte Interference list is a compilation of published and observed analyte interferences of NBS assays. This list can be used as a reference for quality control issues encountered in a NBS system. It is meant to be an interactive list, meaning users are able to add to it as appropriate, and a one-stop site for all known NBS assay interferences.

This page is currently in beta version. Please contact [Ruhiyyih Degeberg, ruhiyyih.degeberg@aphl.org](mailto:ruhiyyih.degeberg@aphl.org), to provide feedback.

Select Interference Category:

- Infant Conditions
- Infant Treatment
- Maternal Conditions
- Special Diets
- Specimen Treatment

Nominate Your Program's NBS Interference

If you have observed an NBS analyte interference in your laboratory, or if you know of a published one that you do not see represented on this list, please fill out a form to nominate it for inclusion to this public resource.

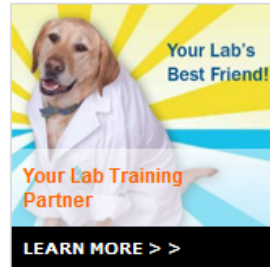
CONTACT

RUHIYYIH DEGEBERG, MPH

Specialist, Newborn Screening and Genetics

240.485.2718

ruhiyyih.degeberg@aphl.org



- Infant Conditions

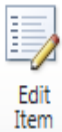
NBS ANALYTE AFFECTED	ROOT CAUSE	EFFECT ON NBS RESULTS
Low T4, normal TSH, delayed rise of TSH	Immature hypothalamic-pituitary thyroid axis	False negative for CH
Low T4, normal TSH - followed by elevated TSH	Hypothyroxinemia of preterm birth	Transient hypothyroidism; Mild CH
Transient elevations of tyrosine, methionine, and galactose, occasionally other amino acids	Liver enzyme immaturity	
Low T4, elevated TSH	Iodine deficiency	Transient hypothyroidism
Low T4, elevated TSH, elevated immunoreactive trypsinogen (IRT)	Acute illness	Transient hypothyroidism
Elevated IRT	Hypoxia	False positive for CF primary screen
Elevated tyrosine, methionine, galactose, depression of biotinidase enzyme activity	Liver disease	
Elevated 17-OHP (?), amino acids, organic acids	Renal immaturity; renal disease	
Lower biotinidase activity levels inversely related to gestational age	Preterm	
Acid α -glucosidase (GAA) (Pompe Disease) and other LSD's	High hematocrit	False negative
Varies (most if not all analytes, notably 17-OHP, TSH, IRT)	Baby screened too early after birth	False negative and false positive results
Lower biotinidase activity levels inversely related to gestational age	Preterm	
Low T4, normal TSH and FT4	TBG (thyroxine-binding globulin) deficiency	False positive for CH
Low T4, normal or low TSH	Central Hypothyroidism	False negative for CH if PTSH is used for screening
Elevated C3	Hyperbilirubinemia	False positive MMA/PA
Transient elevations of tyrosine	Vitamin C deficiency	Transient neonatal tyrosinemia
Butyrylcarnitine (C4)	Mild form of glutamate formiminotransferase deficiency	False positive for SCAD or IBD deficiency
GALT activity	G6PD Deficiency	False positive for Galactosemia
DNA, PCR	Elevated hematocrit?	Sample failure for CF, SCID and other molecular methods
DNA, PCR	Immunoglobulin G in plasma	Sample failure for CF, SCID and other molecular methods

Click on analyte of interest



- Maternal Conditions
- Special Diets
- Specimen Treatment

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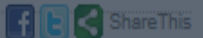
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NBS Analyte Affected	Low T4, normal or low TSH
Attachments	
Contributing Factor	Infant Conditions
Mode of Interference	Condition
Analyte Disruption Description	
Duration of Interference	Up to 6 weeks of age, may extend till 12 weeks (3 months)
Effect on NBS Results	False negative for CH if PTSH is used for screening
Test Method	
Notes	
Grade of Certainty	
Reference	
Root Cause	Central Hypothyroidism

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GEBERG, MPH

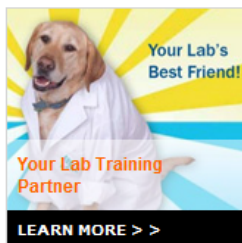
born Screening and

rg@aphl.org

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 - Policy and Position
- ▶ Public Health Preparedness and Response
- ▶ Research

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TSH pituitary thyroid axis
 Low T4, normal TSH - followed by elevated TSH Hypothyroxinemia of preterm birth
 Transient hypothyroidism; Mild CH



• Maternal Conditions

NBS ANALYTE AFFECTED	ROOT CAUSE	EFFECT ON NBS RESULTS
Low T4, high TSH	Hyperthyroidism treated with PTU and Methimazole	Transient hypothyroidism
None	Radioactive iodine treatment during pregnancy before 8 weeks gestation	Hypothyroidism
Low T4, high TSH	Radioactive iodine treatment during pregnancy after 8 weeks gestation	
Low or normal 17-OHP	Steroids: prednisone, betamethasone/dexamethasone	False negative for CAH
Elevated 17-OHP	Maternal Congenital Adrenal Hyperplasia	False positive result
Elevated phenylalanine	Maternal PKU or moderate hyperphenylalaninemia (uncontrolled)	Transient hyperphenylalaninemia
Elevated C5OH, low free carnitine	Maternal 3-MCC deficiency	False positive 3-MCC
Elevated even-chain acylcarnitines	Fatty liver of pregnancy or HELLP syndrome	False positive, associated with LCHAD
Low carnitine levels	Maternal carnitine deficiency	False positive for CUD
Elevated propionylcarnitine (C3)	Maternal vitamin B12 deficiency	False positive PAMUT/Cbl A, B/Cbl D, E
Low free carnitine, elevated C5DC	Maternal GA-1	False positive for CUD
Elevated TSH	Hypothyroidism treated with carbamazepine Autoimmune (Hashimoto's) thyroiditis	Mild CH or Transient hypothyroidism

• Special Diets

• Specimen Treatment

NBS ANALYTE AFFECTED	ROOT CAUSE	EFFECT ON NBS RESULTS
17-OHP	Blood collection with EDTA	False positive for CAH
TSH, T4	Blood collection with EDTA	False negative for CH
Immunoreactive trypsinogen (IRT)	Blood collection with EDTA	False negative for CF by IRT
Malonylcarnitine (C3DC)	Use of Sani-Wipes	False positive for C3DC
Phenylalanine (Phe)	Benzocaine skin treatment prior to collection	False elevation of phenylalanine, false positive for PKU
DNA, low TREC	Blood collection with heparin	Sample failure for CF, SCID and other molecular methods
Prevent extraction of analytes/degrade protein markers	Heat and/or Humidity	False-positives and false-negatives for many disorders (see Analyte Disruption Description field)
Isovalerylcarnitine (C5)	Nipple-fissure cream containing neopentanoate esters	Elevated C5

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Assuring Laboratory Quality

Analyte Interference List

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Nominate Your Program's NBS Interference

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CONTACT

RUHIYYIH DEGERBERG, MPH

Specialist, Newborn Screening and Genetics

240.485.2718

ruhiyyih.degeberg@aphl.org

NBS Analyte Interference List - New Item

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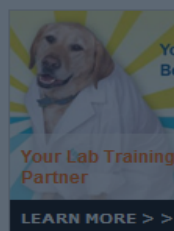
Complete the form below to submit your response

NBS Analyte Affected	<input type="text"/>
Attachments	Click here to attach a file
Contributing Factor	<input type="text"/>
Mode of Interference	<input type="text"/>
Analyte Disruption Description	<input type="text"/>
Duration of Interference	<input type="text"/>
Effect on NBS Results	<input type="text"/>
Test Method	<input type="text"/>
Notes	<input type="text"/>
Grade of Certainty	<input type="text"/>
Reference	<input type="text"/>
Root Cause	<input type="text"/>

- Environmental Health
- Food Safety
- Global Health
- Infectious Disease
- Informatics
- Laboratory Systems Standards
- Newborn Screening Genetics
- Assuring Laboratory Quality
- NBS Molecular Rest of Assay
- Policy and Positions
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Complete the form below to submit your response

NBS Analyte Affected	Amino acids Leucine, Methionine, Phenylalanine and others
Attachments	@ Click here to attach a file
Contributing Factor	Special Diets
Mode of Interference	Contamination
Analyte Disruption Description	Concentrated infant formula fed to baby can begin to elevate amino acids and/or carnitine.
Duration of Interference	Up to 48 hours after diet normalization
Effect on NBS Results	May elevate some amino acids and/or free carnitine
Test Method	MS/MS
Notes	Can mimic TPN feeding profile on MS/MS. May also elevate free carnitine. May be more prevalent on second screens.
Grade of Certainty	C- Possible
Reference	n/a
Root Cause	Highly concentrated infant formula feeding of baby

Submit

Degrees of Certainty Assigned by QA/QC Subcommittee

A	Definite	Well documented – multiple references
B	Probable	Documented – single reference
C	Possible	Not documented, but reported by personal communications or expert opinion
D	Not Likely	Interference is not reproducible or consistent
E	Unknown	No evidence to support or refute interference

NBS Analyte Inteference Site

- <http://www.aphl.org/aphlprograms/newborn-screening-and-genetics/quality-assurance/Pages/Analyte-Interference-List>

The APHL QA/QC Subcommittee

