

How to Read Classification Tables (S/N/O Notation) Neonatal Abstinence Syndrome (23-MCH-01)

Technical Supplement

The case ascertainment and case classification criteria for Neonatal Abstinence Syndrome are described in sections VI (case ascertainment) and VII (case classification) of the position statement 23-MCH-01.

Tables VI, VII.A and VII.B from the Technical Supplement within the position statement also describe the case ascertainment and classification criteria. The tabular format is intended to translate these criteria into a machine-processable format. These tables help guide the development of computerized algorithms for electronic case reporting processes.

Criteria Categories

The rows within these tables contain the criteria described in the narrative section. The criteria are separated into categories representing different types of evidence. Table VI, below, contains **3 categories of criteria**:

1) Clinical Criteria

2) Laboratory Criteria

3) Healthcare Record Criteria

Table VI. Table of criteria to determine whether a case should be reported to public health authorities.

	Criterion	NAS					
		Tier 1 - Clinical Records			Tier 2 - Administrative Data		
1	<i>Clinical Criteria for Reporting</i>						
	At least two of the following clinical signs:						
	<ul style="list-style-type: none"> • high-pitched cry • irritability or inability to console (e.g., excessive crying) • hypertonia (increased muscle tone) • tremors • myoclonus • hyperactive Moro reflex • poor sleep • alterations in feeding (e.g., hyperphagia, poor feeding) 	<ul style="list-style-type: none"> • seizures • excoriation • excessive sucking • excessive sneezing • nasal congestion/stuffiness • frequent yawning • fever • cutaneous mottling • sweating • feeding intolerance (e.g., excessive regurgitation and/or vomiting) • loose or watery stools • tachypnea or respiratory rate > 60/min • respiratory distress or nasal flaring 	N				
	Age < 28 days	N	N		N	N	N
	Hospitalization	O			O		
	Admitted to residential pediatric recovery center	O			O		
	Evidence of <i>in utero</i> substance exposure through documentation of maternal substance use during pregnancy and/or a positive neonatal or maternal laboratory test collected in the current pregnancy through one day post-delivery	N					
	2	<i>Laboratory Criteria for Reporting</i>					
		Any detected or positive results for opioids, benzodiazepines, or barbiturates, or their metabolites in a neonatal clinical specimen by any laboratory test		N			
		Any detected or positive results for opioids, benzodiazepines, or barbiturates, or their metabolites in a maternal clinical specimen by any laboratory test included in the maternal delivery record collected within the current pregnancy through one day post-delivery			S		
3	<i>Healthcare Record Criteria for Reporting</i>						
	Healthcare record contains information about NAS or suspected NAS in either a diagnosis, chief complaint, or discharge code				O		
	Healthcare record contains information about <i>in utero</i> exposure to opioids, benzodiazepines, or barbiturates				O		
	Born to a mother whose delivery record contains information about use of opioids, benzodiazepines, or barbiturates during the pregnancy of the neonate					N	
	Healthcare record contains an ICD-10-CM diagnosis of NAS from maternal use of drugs of addiction within the birth hospitalization or a hospitalization (or similar clinic admission).						N

Notes: S = This criterion alone is SUFFICIENT to report a case.
 N = All "N" criteria in the same column are NECESSARY to report a case.
 O = At least one of these "O" (ONE OR MORE) criteria in each category (categories=clinical, laboratory, healthcare record, vital records, etc.) in the same column—in conjunction with all "N" criteria in the same column—is required to report a case.

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Logic Sets

These tables contain columns, called logic sets, that indicate distinct combinations of criteria that a case would need to meet to be reported to public health (case ascertainment) or counted by public health as a confirmed or suspect case (case classification).

Table VII.A, below, contains 9 logic sets that describe when a neonate is classified as a confirmed or suspect case.

Table VII.A. Classification Table: Criteria for defining a case of NAS.

Criterion	Tier 1								Tier 2
	Confirmed				Suspect				Confirmed
<i>Clinical Evidence</i>									
At least two of the following clinical signs:	1	2	3	4	5	6	7	8	9
<ul style="list-style-type: none"> high-pitched cry irritability or inability to console (e.g., excessive crying) hypertonia (increased muscle tone) tremors myoclonus hyperactive Moro reflex poor sleep alterations in feeding (e.g., hyperphagia, poor feeding) seizures excoriation excessive sucking excessive sneezing nasal congestion/stuffiness frequent yawning fever cutaneous mottling sweating feeding intolerance (e.g., excessive regurgitation and/or vomiting) loose or watery stools tachypnea or respiratory rate > 60/min respiratory distress or nasal flaring 									
Signs have not been explicitly attributed by a provider to an alternative diagnosis or condition	N	N			N	N			
Age < 28 days	N	N	N	N	N	N	N	N	
Hospitalization	O	O	O	O	O	O	O	O	
Admitted to residential pediatric recovery center	O	O	O	O	O	O	O	O	
Maternal use of prescribed and/or non-prescribed opioid (including medication used for OUD treatment or withdrawal), benzodiazepine, or barbiturate use in the current pregnancy	N		N						
Maternal use of prescribed and/or non-prescribed substance use in the current pregnancy of unknown substance type, OR of a known non-opioid, non-benzodiazepine, non-barbiturate substance					N		N		
<i>Laboratory Evidence</i>									
Detection of opioids**, benzodiazepines, or barbiturates in a neonatal clinical specimen from a screening or other laboratory test***, e.g., positive immunoassay results or confirmatory testing based on liquid or gas chromatography-mass spectrometry		O		O					
Detection of opioids**, benzodiazepines, or barbiturates in maternal clinical specimen from a screening or other laboratory test in the current pregnancy through one-day post-delivery***, e.g., positive immunoassay results or confirmatory testing based on liquid or gas chromatography-mass spectrometry		O		O					
Detection of a non-opioid, non-benzodiazepine, or non-barbiturate substance, including cocaine, methamphetamine, amphetamine, or cannabinoid in a neonatal clinical specimen from a screening or other laboratory test***, e.g., positive immunoassay results or confirmatory testing based on liquid or gas chromatography-mass spectrometry						O		O	

Each logic set uses “S”, “N”, and “O” to denote if the information in a row is “sufficient” on it’s own, “necessary” in combination with other rows, or “one or more”, meaning at least one of multiple O rows in a category must be true.

S = This criterion alone is SUFFICIENT to report a case.

N = All “N” criteria in the same column are NECESSARY to report a case.

O = At least one of these “O” (ONE OR MORE) criteria in each category (categories=clinical, laboratory, healthcare record, vital records, etc.) in the same column—in conjunction with all “N” criteria in the same column—is required to report a case.

Table VII.A Classification Table

These are the first few rows of Table VII.A on page 17 of 23-MCH-01. This table describes the different combinations of criteria that classify a neonate as a confirmed or suspect case.

Table VII.A. Classification Table: Criteria for defining a case of NAS.

Criterion	Tier 1				Tier 2			
	Confirmed		Suspect		Confirmed			
<i>Clinical Evidence</i>								
At least two of the following clinical signs:								
<ul style="list-style-type: none"> • high-pitched cry • irritability or inability to console (e.g., excessive crying) • hypertonia (increased muscle tone) • tremors • myoclonus • hyperactive Moro reflex • poor sleep • alterations in feeding (e.g., hyperphagia, poor feeding) 								
<ul style="list-style-type: none"> • seizures • excoriation • excessive sucking • excessive sneezing • nasal congestion/stuffiness • frequent yawning • fever • cutaneous mottling • sweating • feeding intolerance (e.g., excessive regurgitation and/or vomiting) • loose or watery stools • tachypnea or respiratory rate > 60/min • respiratory distress or nasal flaring 	N	N			N	N		

Table VII.A –Logic Rule 1

<i>Clinical Evidence</i>	1
At least two of the following clinical signs: <i>Signs removed to save space</i>	N
Signs have not been explicitly attributed by a provider to an alternative diagnosis or condition	N
Age < 28 days	N
Hospitalization	O
Admitted to residential pediatric recovery center	O
Maternal use of prescribed and/or non-prescribed opioid (including medication used for OUD treatment or withdrawal), benzodiazepine, or barbiturate use in the current pregnancy	N

Four “N” rows: all four of these criteria must be met

Two “O” rows: at least one of these two clinical criteria must be met

One option for classification as confirmed case of NAS is:

A neonate with age < 28 days, with at least two clinical signs of NAS that have not been attributed to an alternative diagnosis, with maternal OBB use in the current pregnancy

and is either hospitalized or admitted to a residential pediatric recovery center

Table VII.A –Logic Rule 2

<i>Clinical Evidence</i>	2
At least two of the following clinical signs: <i>Signs removed to save space</i>	N
Signs have not been explicitly attributed by a provider to an alternative diagnosis or condition	N
Age < 28 days	N
Hospitalization	O
Admitted to residential pediatric recovery center	O
<i>Laboratory Evidence</i>	
Detection of opioids, benzodiazepines, or barbiturates in a neonatal clinical specimen from a screening or other laboratory test	O
Detection of opioids, benzodiazepines, or barbiturates in maternal clinical specimen from a screening or other laboratory test in the current pregnancy through one-day post-delivery	O

Three “N” rows: all three of these criteria must be met

Two “O” rows: at least one of these two clinical criteria must be met

Second two “O” rows: at least one of these two laboratory criteria must be met

At least one “O” criterion in each category must be met.

One option for classification as confirmed case of NAS is:

A neonate with age < 28 days, with at least two clinical signs of NAS that have not been attributed to an alternative diagnosis,

and is either hospitalized or admitted to a residential pediatric recovery center,

and has either positive neonatal OBB laboratory results or positive maternal OBB laboratory results

Table VII.A –Logic Rule 3

<i>Clinical Evidence</i>	3
Age < 28 days	N
Hospitalization	O
Admitted to residential pediatric recovery center	O
Maternal use of prescribed and/or non-prescribed opioid (including medication used for OUD treatment or withdrawal), benzodiazepine, or barbiturate use in the current pregnancy	N
<i>Healthcare Record Evidence</i>	
Diagnosis of Neonatal Abstinence Syndrome/NAS	O
Chief complaint mentions Neonatal Abstinence Syndrome/NAS	O

Two “N” rows: both of these criteria must be met

Two “O” rows: at least one of these two clinical criteria must be met

Second two “O” rows: at least one of these two healthcare record criteria must be met

At least one “O” criterion in each category must be met.

One option for classification as confirmed case of NAS is:

**A neonate with age < 28 days, with maternal use of OBBs in the current pregnancy,,
and is either hospitalized or admitted to a residential pediatric recovery center,
and has either a diagnosis or chief complaint of NAS**

Table VII.A –Logic Rule 4

<i>Clinical Evidence</i>	4
Age < 28 days	N
Hospitalization	O
Admitted to residential pediatric recovery center	O
<i>Laboratory Evidence</i>	
Detection of opioids, benzodiazepines, or barbiturates in a neonatal clinical specimen from a screening or other laboratory test	O
Detection of opioids, benzodiazepines, or barbiturates in maternal clinical specimen from a screening or other laboratory test in the current pregnancy through one-day post-delivery	O
<i>Healthcare Record Evidence</i>	
<i>Diagnosis of Neonatal Abstinence Syndrome/NAS</i>	O
Chief complaint mentions Neonatal Abstinence Syndrome/NAS	O

One “N” row: this criterion must be met

First two “O” rows: at least one of these two clinical criteria must be met

Second two “O” rows: at least one of these two laboratory criteria must be met

Third two “O” rows: at least one of these two healthcare record criteria must be met

At least one “O” criterion in each category must be met.

One option for classification as confirmed case of NAS is:

A neonate with age < 28 days

who is either hospitalized or admitted to a residential pediatric recovery center,

and has either positive neonatal OBB laboratory results or positive maternal OBB laboratory results,

and has either a diagnosis or chief complaint of NAS