SUBJECT: Abstinence Scoring **NUMBER: A-1** **PAGE: 1 OF: 5**

ORIG: 6/94 **REVISED:** 1/82, 7/84, 4/86, 11/87, 12/90, 7/98, 1/03, 12/05, **4/11**
REVIEWED: 1/97

RESPONSIBLE PARTY: Neonatal Executive Committee

APPROVED BY ASSISTANT VICE-PRESIDENT OF WOMEN'S AND CHILDREN'S SERVICES

NEONATAL ABSTINENCE SYNDROME AND SCORING SYSTEM

POLICY: A thorough evaluation of the infant is required in order to exclude other conditions that may present with symptoms similar to neonatal abstinence syndrome. Once the presence of these other conditions (sepsis, hypoglycemia, CNS hemorrhage, respiratory disorders, hypoxic-ischemic encephalopathy, bilirubin encephalopathy) have been excluded, evaluation for possible neonatal abstinence syndrome may be warranted in the face of persistent symptoms. Abstinence scoring may be initiated by an MD, NNP, RN or LPN. The objective is to document the signs and symptoms of neonatal abstinence syndrome in order to determine the need for non-pharmacologic and pharmacologic interventions.

The most commonly used tool to assess infants at risk of neonatal abstinence syndrome is the Neonatal Abstinence Scoring System (NAS) devised by Finnegan et al in 1986. This tool assesses the infants based on the presence and severity of the 21 symptoms associated with opiate withdrawal. This tool is used not only as a diagnostic tool, but also to monitor the effectiveness and ongoing need for pharmacologic and non pharmacologic interventions.

PROCEDURE:

1. A comprehensive maternal and neonatal history will be done to identify infants with prenatal or postnatal drug exposure at risk for neonatal abstinence syndrome.
2. If there is a known history of drug exposure or if drug exposure is suspected from the history or from physical signs suggestive of withdrawal, then assessment for neonatal abstinence scoring will be initiated.
   a) First, assess the infant at 2 hours after birth. Scores will reflect the symptoms observed during the entire interval, not just at a single point. Scores involving sleep and behavior will reflect any changes during the test period. For instance, if the child was awakened for the examination, do not score against the child for diminished sleep.
   b) Scoring is performed in 4-hour intervals. If the newborn receives a score of 8 or greater, then scoring will occur every 2 hours.
   c) If NAS scores in the first 96 hours of life are consistently 8 or less, then scoring can be discontinued and pharmacotherapy typically is not needed.

d) If NAS scores are consistently 8 or greater despite non-pharmacologic interventions, then consideration will be given to pharmacologic intervention.

e) Although NAS is designed primarily for withdrawal from opiates or CNS depressant drugs, it has been used for other drugs (cocaine, amphetamines). Although not validated in these situations, its efficacy in these situations is likely from a high incidence of the use of multiple different drugs of abuse in some mothers.

3. Initial treatment will be primarily supportive nursing care for those infants with neonatal abstinence syndrome. These interventions include;

a) Quiet environment and minimizing external stimuli.
b) Dim lighting.
c) Minimal handling.
d) Swaddling.
e) Encouragement of non-nutritive sucking.
f) Optimal nutrition will be provided with an increased calorie intake as needed.
g) Involvement of the developmental team will be considered to help establish self-calming techniques for the infant.

4. Pharmacologic therapy is individualized depending on the type and severity of withdrawal symptoms, as well as the type of drug from which the infant is withdrawing. Pharmacologic therapy may include oral morphine, methadone, or phenobarbital. It is usually reserved for infants with;

a) An inability to feed or gain weight despite adequate caloric intake due to diarrhea or vomiting.
b) Significant sleep disturbances.
c) Fever not related to infection.
d) Seizures.

DOCUMENTATION:

1. Cumulative NAS score on the appropriate interval based on symptom severity.
2. Any pharmacologic or non-pharmacologic interventions provided and the patient's response.
3. Parent teaching and understanding.

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SYSTEMS	SIGNS AND SYMPTOMS	SCORE	AM 2	4	6	8	10	12	PM 2	4	6	8	10	12	DAILY WT.
CENTRAL NERVOUS SYSTEM DISTURBANCES	High Pitched Cry Continuous High Pitched Cry	2 3													
	Sleeps < 1 Hour After Feeding Sleeps < 2 Hours After Feeding	3 2													
	Hyperactive Moro Reflex Markedly Hyperactive Moro Reflex	2 3													
	Mild Tremors Disturbed Moderate Severe Tremors Disturbed	2 3													
	Mild Tremors Undisturbed Moderate Severe Tremors Undisturbed	1 2													
	Increased Muscle Tone	2													
	Excoriation (specify area): _____	1													
	Myoclonic Jerks	3													
	Generalized Convulsions	3													
METABOLIC VASOMOTOR/ RESPIRATORY DISTURBANCES	Sweating	1													
	Fever < 101°F (39.3°C) Fever > 101°F (39.3°C)	1 2													
	Frequent Yawning (> 3-4 times/interval)	1													
	Mottling	1													
	Nasal Stuffiness	1													
	Sneezing (> 3-4 times/interval)	1													
	Nasal Flaring	2													
	Respiratory Rate > 60/min Respiration Rate > 60/min with Retractions	1 2													
GASTROINTESTINAL DISTURBANCES	Excessive Sucking	1													
	Poor Feeding	2													
	Regurgitation Projectile Vomiting	2 3													
	Loose Stools Watery Stools	2 3													
SUMMARY	TOTAL SCORE														
	SCORER'S INITIALS														
	STATUS OF THERAPY														

Adapted from Finnegan L. Neonatal abstinence syndrome: assessment and pharmacotherapy. Neonatal Therapy: An update, F. F. Rubaltelli and B. Granti, editors. Elsevier Science Publishers B. V. (Biomedical Division). 1986: 122-146

BACKGROUND: Neonatal Abstinence Syndrome or NAS refers to a constellation of signs and symptoms demonstrated by infants who have drug dependency. There are two types of drug dependency that can give rise to this syndrome, prenatal and postnatal. The prenatal type is the result of maternal substance abuse during the pregnancy leading to the neonatal abstinence syndrome after birth. The postnatal type is the result of long term opiate therapy, and is more likely to occur in infants who received fentanyl therapy than in those who receive morphine. As originally described neonatal abstinence syndrome describes the physical findings of acute drug withdrawal from opiate drugs. The clinical signs are manifested primarily as CNS and GI symptoms.

Although classic neonatal abstinence syndrome refers to the pattern of findings in infants withdrawing from opiate drugs, primarily heroin and methadone, several other drug categories have been identified that may produce varying degrees of withdrawal symptoms in exposed infants. These include ethanol, barbiturates, SSRI, cocaine, and marijuana. The withdrawal symptoms are most pronounced and severe in infants with opiate withdrawal. Individual drugs and the timing of withdrawal and associated symptoms are listed below.

Heroin: Given its short half life, withdrawal usually has its onset within 48-72 hours of birth, with occasional delayed onset for up to six days. Classic withdrawal symptoms including; wakefulness, irritability, sleep disturbances, tremors, myoclonic jerks, seizures, hyperactive reflexes, high pitched cry, hypotonia, diarrhea, disorganized suck, respiratory distress, tachypnea, rhinorrhea, apnea, weight loss, vomiting, poor feeding, persistent sneezing with at least five sneezes at a time, yawning, fever, mottling, sweating, lacrimation.

Methadone: Due to its longer half life, withdrawal usually has its onset within the first 48 hours, but may be delayed for up to 7-14 days. Classic withdrawal symptoms including; wakefulness, irritability, sleep disturbances, tremors, myoclonic jerks, seizures, hyperactive reflexes, high pitched cry, hypotonia, diarrhea, disorganized suck, respiratory distress, tachypnea, rhinorrhea, apnea, weight loss, vomiting, poor feeding, sneezing, yawning, fever, mottling, sweating, lacrimation.

SSRI: These drugs (fluoxetine, paroxetine, sertraline, citalopram) may be prescribed for mothers to treat depression. Following third trimester exposure, infants may exhibit the neonatal adaptation symptoms that include; irritability, agitation, tremors, nasal congestion, tachypnea, emesis, diarrhea. These symptoms are usually mild and self limited resolving by two weeks of age.

Ethanol: In addition to the teratogenic effects of ethanol exposure that are manifest as the fetal alcohol syndrome, an acute withdrawal syndrome has been described. The onset is usually at birth and may persist with symptoms as late as 18 months of life. Characteristic symptoms include hyperactivity, crying, irritability, poor sucking, tremors, seizures, poor sleeping patterns, hyperphagia,

and diaphoresis.

Barbiturates: Withdrawal usually has its onset within the first 48 hours of life, and may persist through the first week of life. Typical symptoms include; irritability, severe tremors, hyperacusis, excessive crying, vasomotor instability, diarrhea, restlessness, increased tone, hyperphagia, vomiting, and disturbed sleep.

Cocaine: Early studies suggested that cocaine exposed infants were more prone to demonstrating excessive Moro reflex, increased jitteriness, and excess sucking. However, more recent studies suggest that there is no definable neonatal withdrawal following in utero cocaine exposure.

Marijuana: There is no evidence for any neonatal withdrawal after fetal exposure. Infants have been reported to have a higher incidence of jitteriness, irritability and feeding problems.

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