

## Benchmark: Neonatal Abstinence Syndrome

Score	relates to practice in (unit):					
Score	ate scored:					
Statement: Neonatal Abstinence Syndrome (NAS) is an array of signs and Neuro-behaviours experienced by the newborn that occur after an abrupt discontinuation of pregnancy exposure to substances taken by the mother <sup>(12, 18, 19, 21, 26, 29, 30, 33, 35 and 44)</sup> .						
The term NAS has been principally used to describe neonatal symptoms and signs after pro-longed exposure to opioids and use or misuse of prescription opioid containing medication.						
Standards: To standardise and outline good practice, using best evidence, in the postnatal management of babies on the Neonatal Unit, whose mothers were known or suspected to have misused drugs during pregnancy or were on medications during pregnancy that may lead to withdrawal features in their baby.						
Patient Group: Any infant admitted to the Neonatal Unit displaying symptoms of NAS						
<b>Drivers for the development of the benchmark</b> : Professional concerns within the EOE Benchmarking group regarding the consistency of assessment and care of infants with symptoms of NAS and their families						
<b>Criteria for scoring:</b> Review the notes of up to six babies admitted to the neonatal unit within the last year for symptoms of NAS, and/or discuss with staff and parents/carers on the unit where required. If no babies on the unit with NAS within last year, question six members of staff individually on each criteria and score using their responses.						
Kev F	actors	Individual scores	Possible total			
F1	There is a current evidence based guideline to support and guide clinical practice		3			
F2	Care		8			
F3	Staff Education		3			
F4	Parental/Carer Education and Involvement		5			
	Overall Score		19			

Factor 1: There is an evidence based practice guideline which ensures that the care delivered to the infant is of the highest standard. Clinical Guidelines are systematically developed statements which assist practitioners with decision making, regarding patient care <sup>(39)</sup>.

**Factor 2: Care.** A recognised tool is in place which assesses CNS disturbances, metabolic/vasomotor/respiratory disturbances and GI disturbances and provides a score. The use of a standardised NAS scoring system is associated with a shorter length of stay and length of treatment. Individualised care is provided for each aspect of the tool to minimise the effects of NAS on the infant.

Factor 3: Staff Education. Staff can recognise, assess and provide support for the infant with NAS, and their carer.

**Factor 4: Parental/Carer Education & Involvement.** Parents/carers are involved with, educated on and supported with caring for their infant with NAS within the hospital setting and in preparation for discharge home.

Key factors & criteria	Notes 1	Notes 2	Notes 3	Notes 4	Notes 5	Notes 6
There is an Evidence-based guideline to support clinical						
practice						
a) There is a Neonatal Abstinence Guideline that is						
evidence based and referenced						
b) The guideline is reviewed and updated regularly by						
the East Of England ODN						
c) Compliance with the guideline is regularly audited by						
the East of England Benchmarking Group						
Care						
a) There is a recognised and evidence-based scoring						
tool in use, which includes assessment of CNS						
disturbances, metabolic/vasomotor/respiratory						
disturbances and GI disturbances						
b) The NAS score is documented within the scoring						
chart at the required frequency						
c) There is documentation of developmental care						
measures utilized, if needed. If not required, staff are						
aware that this is an aspect of the care of a baby with						
NAS						
d) There is documented evidence of Pharmacological						
management of symptoms, if needed. If not						
required, staff are aware that this is an aspect of the						
care of a baby with NAS						
e) There is an individual feeding plan, if needed. If not						
required, staff are aware that this is an aspect of the						
care of a baby with NAS						
f) There is individual adaptation of thermal support						
measures, if needed. If not, staff are aware that this						
is an aspect of the care of a baby with NAS						
g) The local skin integrity tool has been used, and						
actions taken appropriately						

EOENBG –Benchmark- Neonatal Abstinence Syndrome. Adapted from EOENBG – Neonatal Abstinence Syndrome 4<sup>th</sup> Version – November 2015. Revised and updated N Franklin (August 2020 NWAFT, NICU, PDN), then A Thorpe (Jan 2021).

h)	There is a named Neonatal team member coordinating contact between the neonatal unit and Midwifery Safeguarding Team, Social Services/ Social Worker, any identified keyworker, Drug liaison midwife, the Health Visitor and the GP				
Staff E	Staff Education				
a)	All staff can describe signs & symptoms of opioid				
	and other drug withdrawal				
b)	All staff are educated to use the NAS scoring tool				
	and have received and update within the locally				
	agreed time scale				
c)	All staff can discuss the rationale of the individual				
	aspects of care for an infant with NAS, e.g.				
	pharmacological symptom management, nutritional,				
	thermal, developmental care, skin integrity				
Parent	Parental/Carer Education & Involvement				
a)	Parents/carers are encouraged to be involved with				
	the multi-disciplinary safeguarding team, where				
	applicable. If not applicable (e.g. absent parents), the				
	reason why is documented				
b)	Parents/carers are aware of, and understand the				
	need for continual assessment of the infant. This				
	should be documented. If not applicable (e.g. absent				
	parents), the reason why is documented				
c)	There has been a discussion with parents/carers				
	regarding withdrawal cues that their infant may				
	exhibit. This should be documented. If not applicable				
-1)	(e.g. absent parents), the reason why is documented				
d)	Parents/carers have been given guidance on coping				
	with their infant's withdrawal cues. If not applicable				
	(e.g. absent parents), the reason why is documented				
e)	, 6 6				
	nutritional needs of their infant. If not applicable (e.g. absent parents), the reason why is documented				
	absent parents), the reason why is documented				

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Statements to justify scores/local action plans:

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## **References**

- Abdel-Latif ME, Pinner J, Clews S, Cooke F, Lui K, Oei J. Effects of breast milk on the severity and outcome of neonatal abstinence syndrome among infants of drug dependent mothers. Pediatrics. 2006;117(6). Available at: <u>www.pediatrics.org/cgi/content/full/117/6/e1163</u>.
- 2. Agthe A, Kim G, Mathias K, et al. Clonidine as an adjunct therapy to opioids for neonatal abstinence syndrome: a randomized, controlled trial. Pediatrics 2009; 123:e849–e856.
- 3. Bada H, Das A, Bauer C, et al. Low birth weight and preterm births: etiologic fraction attributable to prenatal drug exposure. J Perinatol. 2005;25(10):631–637
- 4. Bauer CR, Langer JC, Shankaran S, Bada HS, Lester B, Wright LL et al. Acute neonatal effects of cocaine exposure during pregnancy. Arch Pediatr Adolesc Med 2005; 159(9): 824–834.
- 5. Bio L, Siu A and Poon C. Update on the pharmacologic management of neonatal abstinence syndrome. Journal of Perinatology (2011) 31, 692–701
- 6. Bleyer W, Marshall R. Barbiturate withdrawal syndrome in a passively addicted infant. JAMA. 1972;221(2):185–186
- 7. Chan D, Klein J, Koren G. New methods for neonatal drug screening. NeoReviews. 2003;4(9):e236–e244 93.
- 8. Coyle MG, Ferguson A, LaGasse L, et al. Diluted tincture of opium (DTO) and Phenobarbitone versus DTO alone for neonatal opiate withdrawal in term infants. JPediatr 2002; 140:561–564.
- 9. Desmond M, Schwanecke R, Wilson G, et al,. Maternal barbiturate utilization and neonatal withdrawal symptomatology. J Pediatr. 1972;80(2): 190–197
- Dysart K, Hsieh H, Kaltenbach K, Greenspan J. Sequela of preterm versus term infants born to mothers on a methadone maintenance program: differential course of neonatal abstinence syndrome. J Perinat Med. 2007;35(4):344–346
- 11. Esmaeili A, Keinhorst A, Schuster T, Beske F, et al, Treatment of neonatal abstinence syndrome with clonidine and chloral hydrate. Acta Paediatr.2010;99(2):209–214
- 12. Finnegan LP, Connaughton JF Jr, Kron RE, Emich JP. Neonatal abstinence syndrome: assessment and management. Addict Dis 1975; 2:141–158. 45
- Gibbs J, Newson T, Williams J, Davidson DC. Naloxone hazard in infant of opioid abuser. Lancet. 1989;2(8655):159– 160
- Gowing L, Farrell M, Robert Ali R, White JM. Alpha 2 adrenergic agonists for the management of opioid withdrawal. Cochrane Database Syst Rev. 2016 May 3;(5):CD002024.
- 15. Hoder E, Leckman J, Ehrenkranz R, et al. Clonidine in neonatal narcotic-abstinence syndrome. N Engl J Med. 1981;305:1284.
- 16. Hoder E, Leckman J, Poulsen J, et al. Clonidine treatment of neonatal narcotic abstinence syndrome. Psychiatry Res. 1984;13(3):243–251
- 17. Hudak M, Tan R. Committee on Drugs; Committee on Fetus and Newborn; American Academy of Pediatrics. Neonatal drug withdrawal. Pediatrics. 2012;129(2): e540-e560. Available at: www.pediatrics.org/cgi/content/full/129/2/e540.
- 18. Hunt RW, Tzioumi D, Collins E, Jeffery H. Adverse neurodevelopmental outcome of infants exposed to opiate inutero. Early Hum Dev 2008; 84: 29–35.
- 19. Iqbal M, Sobhan T, Ryals T. Effects of commonly used benzodiazepines on the fetus, the neonate and the nursing infant. Psychiatr Serv 2002; 53:39–49
- 20. Jackson L, Ting A, Mckay S, Galea P, Skeoch C. A randomized controlled trial of Morphine versus Phenobarbitoneitone for neonatal abstinence syndrome. Arch Dis Child Fetal Neonatal Ed 2004; 89: F300–F304.
- 21. Kaltenbach K, Finnegan LP. Neonatal abstinence syndrome, pharmacotherapy and developmental outcome. Neurobehav Toxicol Teratol 1986;8:353–5.

Kandall S, Doberczak T, Mauer K, et al. Opiate v CNS depressant therapy in neonatal drug abstinence syndrome. Am J Dis Child 1983;137:378–82.

23. Klinger G, Merlob P. Selective serotonin reuptake inhibitor induced neonatal abstinence syndrome. Isr J Psychiatry Relat Sci 2008; 45:107–113.21–23].

- 24. LaGasse L, Wouldes T, Newman E, Smith L, Shah RZ, Derauf C et al. Prenatal methamphetamine exposure and neonatal neurobehavioral outcome in the USA and New Zealand. Neurotoxicol Teratol 2011; 33(1): 166–175.]
- 25. Leikin J, Mackendrick W, Maloney G, et al. Use of clonidine in the prevention and management of neonatal abstinence syndrome. Clin Toxicol (Phila). 2009;47(6):551–555
- 26. Levinson-Castiel R, Merlob P, Linder N, et al. Neonatal abstinence syndrome after in utero exposure to selective serotonin reuptake inhibitors in term infants. Arch Ped Adolesc Med 2006; 160:173–176.
- 27. Liu A, Jones M, Murray H, Cook C, Nanan R. Perinatal risk factors for the neonatal abstinence syndrome in infants born to women on methadone maintenance therapy. Aust N Z J Obstet Gynaecol. 2010;50(3):253–258.
- 28. Mehta A, Forbes K, and Kuppala V, Neonatal Abstinence Syndrome Management From Prenatal Counseling to postdischarge Follow-up Care: Results of a National Survey. Hospital Pediatrics 2013 4(3): 317-323
- 29. Nichols MM. Acute alcohol withdrawal syndrome in a newborn. Am J DisChild.1967;113(6):714-715
- 30. O'Grady M, Hopewell J and White M. Management of neonatal abstinence syndrome:a national survey and review of practice. Arch Dis Child Fetal Neonatal Ed 2009 94:F249-F252
- 31. Oberlander T, Misri S, Fitzgerald C, et al. Pharmacologic factors associated with transient neonatal symptoms following prenatal psychotropic medication exposure. JClin Psych 2004; 65:230–237.
- 32. Osborn D, Jeffery H, Cole M. Sedatives for opiate withdrawal in newborn infants. Cochrane Database of Systematic Reviews 2010, Issue 10. Art. No.: CD002053.
- 33. Pierog S, Chandavasu O, Wexler I. Withdrawal symptoms in infants with the fetal alcohol syndrome. J Pediatr. 1977;90(4): 630–633.
- 34. Pryor J, Maalouf F, Krans E, et al. The opioid epidemic and neonatal abstinence syndrome in the USA: A review of the continuum of care. Arch Dis Child FetalNeonatal Ed 2017; 102: F183-F187
- 35. Rementería J, Bhatt K. Withdrawal symptoms in neonates from intrauterine exposure to diazepam. J Pediatr. 1977;90 (1):123–126
- 36. Sanz E, De-las-Cuevas C, Kiuru A, et al. Selective serotonin reuptake inhibitors in pregnant women and neonatal withdrawal syndrome: a database analysis. Lancet.2005;365(9458):482–487
- 37. Streetz V, Gildon B and Thompson D. The role of Clonidine in Neonatal Abstinence Syndrome: A systematic review. Ann Pharmacother. 2016;50(4):301-10
- 38. Surran B, Visintainer P, Chamberlain S. Efficacy of clonidine versus Phenobarbitone in reducing neonatal Morphine sulfate therapy days for NAS: a prospective RCT. JPerinatol. 2013;33:954-959.
- 39. The Clinical Guidelines Education Team (ed.) (2001) Implementing Clinical Guidelines: A resource for the Health Care Team. Balliere Tindall. Edinburgh.
- 40. Tolia V, Patrick S, Bennett M, et al. Increasing incidence of the neonatal abstinence syndrome in U.S. neonatal ICUs. N Engl J Med. 2015;372:2118-2126
- 41. Urs M, Egyepong J, Suththanantha J, Thomas J. PO-0659 Role of Urine Toxicology as an adjunct in management of babies born to suspected drug users at Luton Hospital. Arch Dis Child 2014 99: A469-A470
- 42. Velez M, Jansson L, Williams E, Schroeder J. Prenatal methadone exposure and neonatal neurobehavioral functioning. Pediatr Res 2009; 66:704–709.
- 43. Vucinovic M, Roje D, Vucinovic Z, et al. Maternal and neonatal effects of substance abuse during pregnancy: our tenyear experience. Yonsie Med J 2008; 49(5): 705–713.
- 44. Kocherlakota P. Neonatal Abstinence Syndrome: Review. Pediatrics 2014;134:e547-e561