

SNOHOMISH COUNTY CHILD HEALTH NOTES

Promoting early identification and partnerships between families, primary health care providers, and the community.

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Neonatal Abstinence Syndrome

Neonatal Abstinence Syndrome (NAS) is a consequence of the abrupt discontinuation of chronic fetal exposure to drugs (illicit and prescribed) that were used during pregnancy.ⁱ While non-opioids can cause NAS, opioid abuse has become a top public health concern due to the increased incidence in the past 9 years. The number of delivering mothers using or dependent on opiates rose nearly 5-fold from 2000 to 2009 in the U.S. There was also a 5-fold increase in the proportion of babies born with NAS from 2000 to 2012 in the U.S.,ⁱⁱ and a 50% increase in the incidence of NAS in WA state during 1999-2013.ⁱⁱⁱ In 2012, newborns with NAS were hospitalized 16.9 days on average (compared to 2.1 days for other newborns), costing hospitals an estimated \$1.5 billion.

NAS often results in central nervous system, respiratory, gastrointestinal, vasomotor, and metabolic disruptions.

Clinical Presentation of NAS

➤ Irritability	➤ Excessive high pitched crying	➤ Poor weight gain
➤ Tremors	➤ Sleep disturbances	➤ Hyperphasia
➤ Jitteriness	➤ Diarrhea	➤ Sneezing
➤ Exaggerated Moro reflex	➤ Vomiting	➤ Yawning
➤ Hypertonia	➤ Feeding difficulties	➤ Sweating
➤ Seizures (rare, 2-11% of neonates)		➤ Hyperthermia

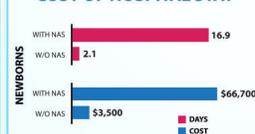
DRAMATIC INCREASES IN MATERNAL OPIOID USE AND NEONATAL ABSTINENCE SYNDROME

THE USE OF OPIOIDS DURING PREGNANCY CAN RESULT IN A DRUG WITHDRAWAL SYNDROME IN NEWBORNS CALLED **NEONATAL ABSTINENCE SYNDROME (NAS)**, WHICH CAUSES **LENGTHY AND COSTLY HOSPITAL STAYS**. ACCORDING TO A NEW STUDY, AN ESTIMATED 21,732 BABIES WERE BORN WITH THIS SYNDROME IN THE UNITED STATES IN 2012, A **5-FOLD INCREASE** SINCE 2000.

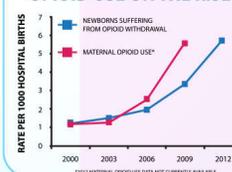


EVERY 25 MINUTES, A BABY IS BORN SUFFERING FROM OPIOID WITHDRAWAL.

AVERAGE LENGTH OR COST OF HOSPITAL STAY



NAS AND MATERNAL OPIOID USE ON THE RISE



NIH National Institute on Drug Abuse

Source: Patrick et al. JAMA 2012; Patrick et al. Journal of Perinatology 2013

Evidence-Based Management: Eating, Sleeping Consoling (ESC) Method for NAS

At Yale New Haven Children's Hospital, Dr. Matthew Grossman and a multidisciplinary team integrated nonpharmacologic interventions combined with evaluations of the functional well-being of infants with NAS. Additionally, there was a focus on the importance of parent participation being integral to the care. They developed and used their own assessment which focused on 3 simple parameters: the infant's ability to eat, to sleep, and to be consoled. If the infant was able to E) breastfeed effectively or to take ≥ 1 oz from a bottle per feed, S) to sleep undisturbed for ≥ 1 hour, and, C) be consoled within 10 minutes when crying, then morphine was neither started nor increased regardless of other signs of withdrawal. If the infant did not meet ESC criteria, staff first attempted to maximize nonpharmacologic interventions. If these attempts were unsuccessful, morphine was initiated or increased. As a result of their ESC method, they reduced their average length of stay from 22.4 days to 5.9 days, decreased morphine use from 98% to 14%, and cut cost of hospitalization from \$44,824 to \$10,289.^{iv}

What about breastfeeding?

The American Academy of Pediatrics removed the restrictions on breastfeeding for mothers on any dosage of methadone. Breastmilk contains only minimal quantities of methadone and buprenorphine. (Kocherlakota, 2014)

Benefits: <ul style="list-style-type: none">▪ Enhances mother-infant bonding▪ Encourages active maternal participation in her infant's care	Contraindications: <ul style="list-style-type: none">▪ Mother is taking illicit drugs and not in recovery▪ Mother has polydrug abuse▪ Mother is infected with HIV
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Long Term Management Considerations

There is limited information on long term outcomes in this population. It has been difficult to study this population due to psychosocial issues, mistrust of healthcare professionals, family instability, out-of-home placements, and poverty.^v Mothers of infants with NAS often have a complex history of having experienced trauma and/or abuse.^{vi} Reducing the stigma for these mothers increases the quality of the care for the child.

Infants and children with a history of NAS are at increased risk for motor deficits, cognitive delays, hyperactivity, impulsivity, attention deficit, behavior problems, vision issues, and suboptimal growth. Primary care providers should closely monitor the development of patients with a history of NAS and have a low threshold for referring to a neurodevelopmental specialist. A referral for ophthalmologic assessment should also be considered to identify strabismus, nystagmus, refractive errors or other visual deficits. Growth and nutrition should be followed to identify failure to thrive or short stature.

References:

- ⁱ Kocherlakota, P. (2014). [Neonatal abstinence syndrome. Pediatrics, 134\(2\), E547-61.](#)
- ⁱⁱ National Institute on Drug Abuse. [Dramatic Increases in Maternal Opioid Use and Neonatal Abstinence Syndrome.](#)
- ⁱⁱⁱ Ko, J., Patrick, S., Tong, V., Patel, R., Lind, J., & Barfield, W. (2016). [Incidence of Neonatal Abstinence Syndrome - 28 States, 1999-2013. MMWR. Morbidity and Mortality Weekly Report, 65\(31\), 799-802.](#)
- ^{iv} Grossman, M., Berkowitz, A., Osborn, R., Xu, Y., Esserman, D., Shapiro, E., & Bizzarro, M. (2017). [An Initiative to Improve the Quality of Care of Infants With Neonatal Abstinence Syndrome. Pediatrics, 139\(6\)](#)
- ^v Maguire, D. J., Taylor, S. M., Armstrong, K. S., Shaffer-Hudkins, E., Germain, A., Brooks, S., . . . Clark, L. (2016). Long-term outcomes of infants with neonatal abstinence syndrome. *Neonatal Network*, 35(5), 277-286.
- ^{vi} Buck, T. [Maternal Impact from the Opioid Epidemic Presentation, WA State DOH \[pdf document\].](#)

Snohomish County Special Needs Resources

For children birth to age 18	Children and Youth with Special Health Care Needs Program	425.339.8652
For children under age 3	Snohomish County Early Intervention Program	425.388.7402
For children age 3 and older	Local School District	

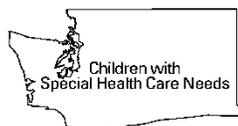
District	Contact	Phone	District	Contact	Phone
Arlington	Susan Queirolo	360.618.6266	Darrington	Val Cook	360.436.2150
Edmonds	Debbie Rothfus	425.431.7555	Everett	Laurie Cwikla	425.385.5264
Granite Falls	Nancie Wilder	360.283.4311	Index	Linda Tate	360.793.1330
Lake Stevens	Janet Rich	425.335.1520	Lakewood	Jim Roan	360.652.4501 x3029
Marysville	Cathy Fridrich	360.653.0825	Monroe	Heidi Dalton	360.804.2600
Mukilteo	Belinda Kelly	425.356.1204	Northshore	Shelly Fields	425.408.5594
Snohomish	Marian Sherwood	360.563.7310	Stanwood	Lynn Currey	360.629.1250
Sultan	Cyd Leahy	360.793.9801 x 125			

Washington State Special Needs Resources

Parent-Child Assistance Program (PCAP)	http://depts.washington.edu/pcapuwl/
WA State Health Care Authority First Steps Program	https://www.hca.wa.gov/health-care-services-supports/apple-health-medicaid-coverage/first-steps-maternity-and-infant-care
WithinReach Family Health Hotline and Website	Phone number: 1.800.322.2588, 1.800.833.6388 TTD Website: www.ParentHelp123.org
Early Support for Infants and Toddlers (ESIT) Program	https://www.dcyf.wa.gov/services/child-development-supports/esit Phone number: 360.725.3500
Providence Drug Exposed Newborns: Neonatal Abstinence Syndrome Course	https://washington.providence.org/events/ewa/professional-education/neonatal-abstinence-syndrome
Substance Abuse & Mental Health Services Administration (SAMHSA) Buprenorphine Treatment Practitioner Locator	https://www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator?field_bup_physician_us_state_value=WA

National Resources

SAMHSA Clinical Guidance for Treating Pregnant and Parenting Women With Opioid Use Disorder and Their Infants	https://store.samhsa.gov/product/Clinical-Guidance-for-Treating-Pregnant-and-Parenting-Women-With-Opioid-Use-Disorder-and-Their-Infants/SMA18-5054
Partnership for Drug-Free Kids and The Medicine Abuse Project – Pregnancy & Opioids: What families need to know about opioid misuse and treatment during pregnancy	https://drugfree.org/download/pregnancy-opioids/
Infants with Prenatal Substance Exposure: Yale New Haven Children's Hospital's Approach	https://www.youtube.com/watch?v=7epcyi2mafY
Eating, Sleeping, Consoling (ESC) NAS Care Tool Instructional Manual	http://files.constantcontact.com/dfa00fff501/ce6dfaf8-dc7c-4999-bfb2-fca3ac875c86.pdf
Sachs, Hari Cheryl. (2013). The transfer of drugs and therapeutics into human breast milk: An update on selected topics. Pediatrics, 132(3), E796-809.	http://pediatrics.aappublications.org/content/132/3/e796.full



**Snohomish County
Early Intervention
Program**



**SNOHOMISH
HEALTH DISTRICT**
WWW.SNOHD.ORG

