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Neonatal Abstinence Syndrome Cause, Impact & Clinical Management

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Overview

- Defining the problem
- Epidemiology
- Impact in Ontario
- Ontario NAS task force
- Clinical practice guidelines: maternal, neonatal and system wide recommendations
- Summary and take home messages

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The Problem

Ontario has the highest rate of narcotic use in Canada and one of the highest rates of prescription narcotic use in the world

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Neonatal Abstinence Syndrome (NAS)

NAS is a complicated multifaceted issue that is escalating along with rapidly rising opioid use across Ontario and Canada.

Neonatal Abstinence Syndrome (NAS) (Code P961) is a classification for neonatal withdrawal symptoms from maternal use of drugs of addiction.

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Reasons for Opioid Use

Women using opioids as an *addiction*

Women using opioids for chronic *pain management*

Women prescribed *methadone* through licensed Methadone Maintenance Treatment (MMT) Clinics

The Combo: Polydrug use

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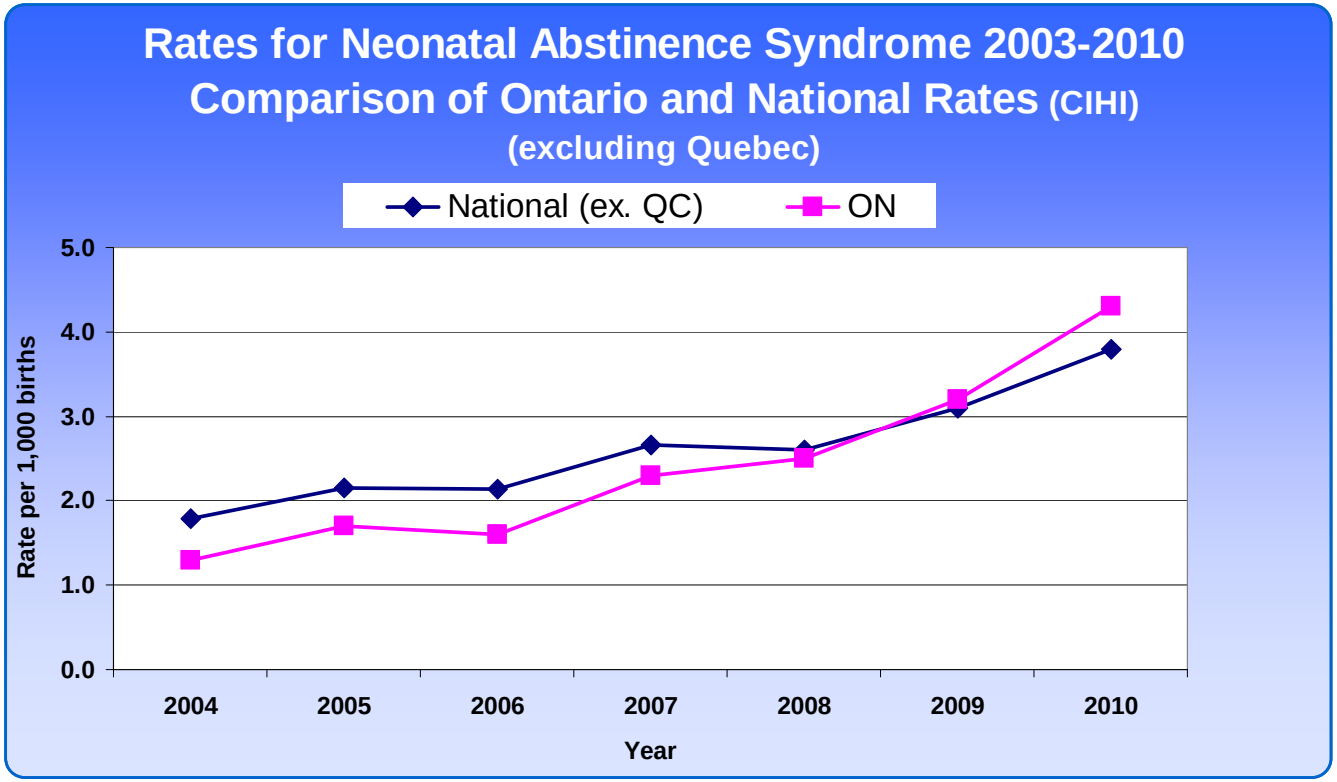
NAS Rates Increasing in Ontario



Data source - CIHI

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Impact

Maternal opioid use during pregnancy prescribed or illicit is associated with negative pregnancy and neonatal outcomes, including:

- Prematurity
- Low Birth Weight
- Physical Withdrawal
- Social Risk
- Adverse Long-term Effects

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Impact

While methadone maintenance programs reduce risk, the incidence of NAS, as a result of withdrawal from this long-acting narcotic, is high and lengths of stay can be prolonged.

- Average length of stay (LOS) 13 days vs 1.4 days
- Increasing incidence of NAS accompanied by increased LOS results in increased bed utilization
- ~3% neonatal beds occupied by NAS cases

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Ontario: Bed utilization by infants with NAS has increased annually since 2003

Year	Ontario: Number of infants with NAS as a diagnosis (CIHI) (not just most responsible)	Average length of stay*	Beds per day utilized across the province
2003-2004	171	11.9	5.6
2004-2005	199	13.9	7.6
2005-2006	265	13	9.5
2006-2007	249	15.4	10.5
2007-2008	358	14.5	14.2
2008-2009	380	14.6	15.2
2009-2010	482	15	20
2010-2011	654	13.1	23.4

Comparison: Average LOS for a healthy term newborn in 2004 was 1.4 days

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Impact

The North

- Remote communities
- High social risk
- High rates of opioid use
- Limited medical services
- Limited to no addiction services for women
- MMT not available in isolated communities

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Ontario's approach to the issue

- Provincial task force comprised of experts in the clinical care and social support of pregnant women and high risk infants
- Developed recommendations for harm reduction strategies and optimal management of NAS
- Focused primarily on NAS resulting from narcotic dependence and does not address the management of NAS resulting from other substances
- Environmental scan and literature review were conducted

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Levels of Evidence

Table 1. Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care[vii]*

Quality of Evidence Assessment**		Classification of Recommendations***	
I	Evidence obtained from at least one properly randomized controlled trial	A.	There is good evidence to recommend the clinical preventive action
II-1	Evidence from well-designed controlled trials without randomization	B.	There is fair evidence to recommend the clinical preventive action
II-2	Evidence from well-designed cohort (prospective or retrospective) or cased-control studies, preferably from more than one centre or research group	C.	The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making
II-3	Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	D.	There is fair evidence to recommend against the clinical preventive action
		E.	There is good evidence to recommend against the clinical preventive action
III	Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	L.	There is sufficient evidence (in quality or quantity) to make a recommendation; however, other factors may influence decision making

*Woolf SH, Battista RN, Angerson GM, Logan AG, Eel W. Canadian Task Force on Preventive Health Care. New grades for recommendations from the Canadian Task Force on Preventive Health Care. Can Med Assoc J 2003;169(3):207-8

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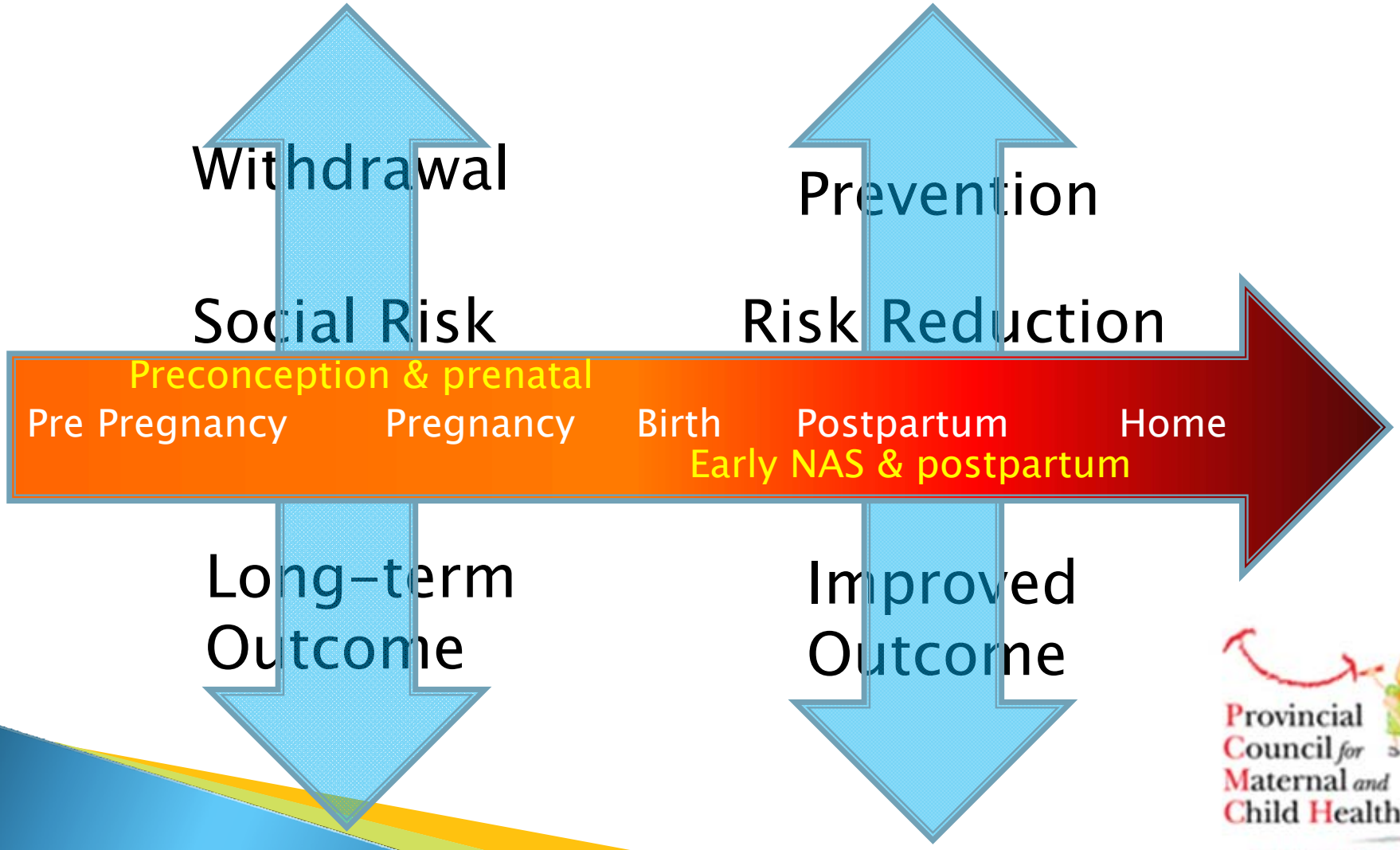
Recommendations are *Multi-dimensional*



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Clinical Practice Guidelines: Maternal Recommendations

1. Routinely screen all women of childbearing age for use of medicinal and non-medicinal substances.
2. Contraception counseling to prevent unplanned pregnancy when changing from short to long-acting opioids.
3. Create urgent referral mechanism for pregnant opioid dependent women.
4. Create a forum for stakeholders to collaborate and strategize for holistic prenatal care.

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Clinical Practice Guidelines: Maternal Recommendations

5. Develop a written care plan to supplement the standard antenatal record. This will include:
   - written educational materials for family
   - antenatal consultation with care team
   - options for maternal treatment of opioid dependency
     - Methadone currently the treatment of choice
     - Buprenorphine available only by special access

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Clinical Practice Guidelines: Maternal Recommendations

6. Position the family for success but carefully assess social risk
   - Assess risk early when mother is highly motivated for change
   - Implement parental partnership contracts
   - Child protection issues must be carefully explored

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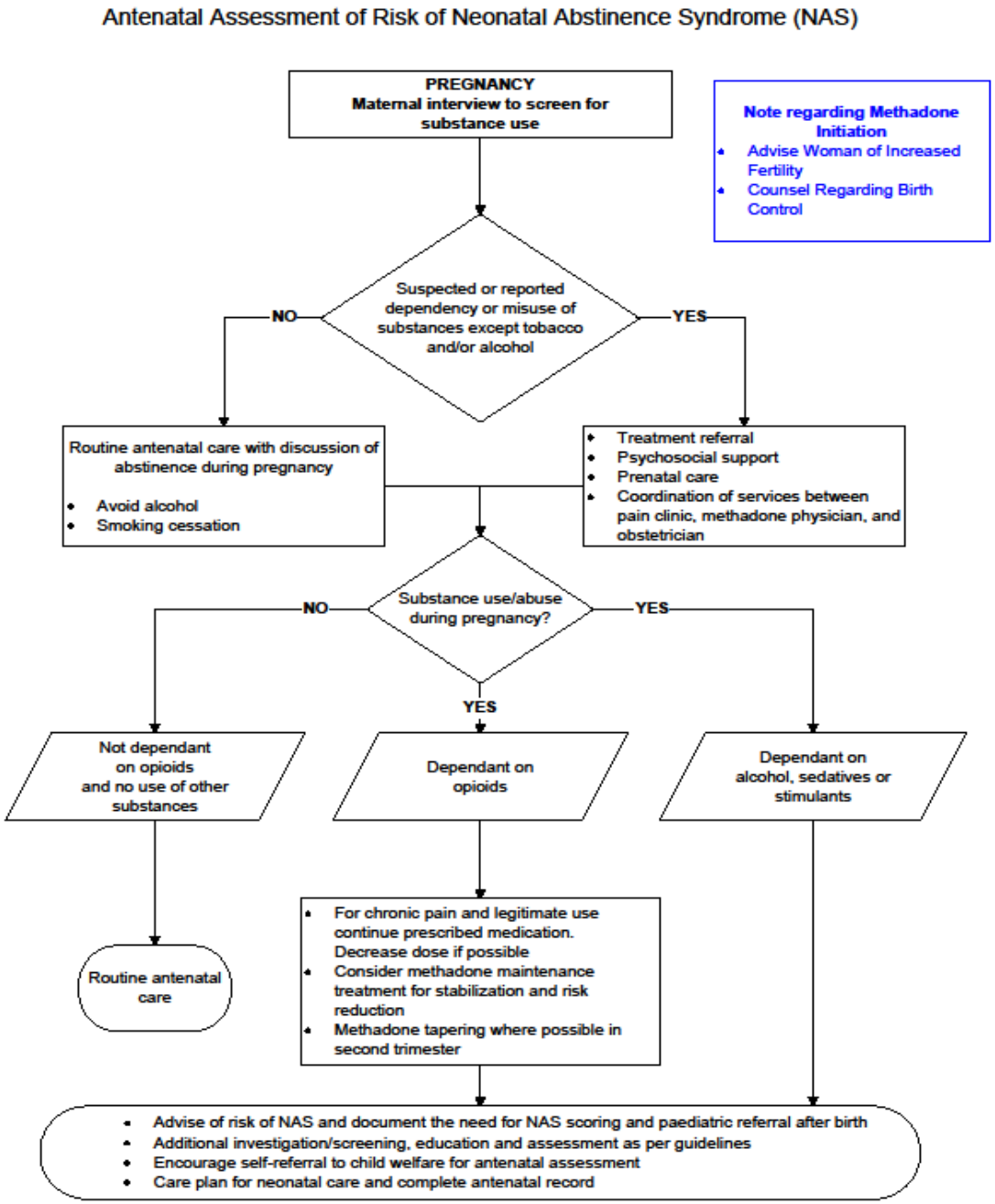
Antenatal assessment of risk of NAS



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Neonatal Recommendations

7. Toxicology testing may be done on all known and suspected cases of NAS.

8. Toxicology screening to include:
   - urine – detects recent exposure only (< 1 week)
   - meconium – test only if urine negative (detects from 12 weeks gestation)
   - hair – can be collected up to 3 months if first urine and meconium missed (detects third trimester exposure)

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Neonatal Recommendations

9. Modified Finnegan Scoring Tool should be used to assess known or suspected cases of NAS.
   - Designed to provide a quantifiable, objective means of monitoring severity of NAS and response to treatment
   - Not designed to monitor withdrawal from substances other than opioids or for preterm infants
   - Need to be monitored frequently and consistently in a setting with staff experienced in manifestations of NAS

Timing of Signs of NAS

- Onset of signs dependent upon half life of substance and timing of last use
  - Heroin has short half life – withdrawal can occur within 24 hours of birth
  - Methadone has longer half life – signs of withdrawal may not occur for 48–72 hours and can be delayed up to 4 weeks
  - Finnegan scoring should be initiated within hours of birth and continued for minimum of 72 hours (120 hours for methadone)

Assessment using the Modified Finnegan Score

Initiate scoring at 2 hours of age and repeat q2-4h prior to feeding.

- Excessive cry
- Poor sleep
- Tremors
- Increased muscle tone
- Excoriation
- Sweating
- Hyperactive startle
- Yawning
- Sneezing
- Vomiting
- Loose stools
- Fever
- Nasal stuffiness
- Tachypnea
- Seizures
- Poor feeding
- Failure to thrive
- Irritability

Neonatal Recommendations

10. Encourage participation of family and care providers. Promote care by parent opportunities.
11. Notify child protection services if parents wish to discharge their infant against medical advice.

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Neonatal Recommendations

12. Non-pharmacological interventions should be utilized prior to pharmacological interventions.
    - Swaddling
    - Quiet dark environment
    - Small frequent feeds
    - Pacifiers
    - Breastfeeding

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Neonatal Recommendations

13. Medications should be considered for the treatment of NAS when supportive measures fail to adequately ameliorate the signs of withdrawal.
    - Initiate medication in SCN/NICU with cardio-respiratory monitoring
    - Encourage parental interaction

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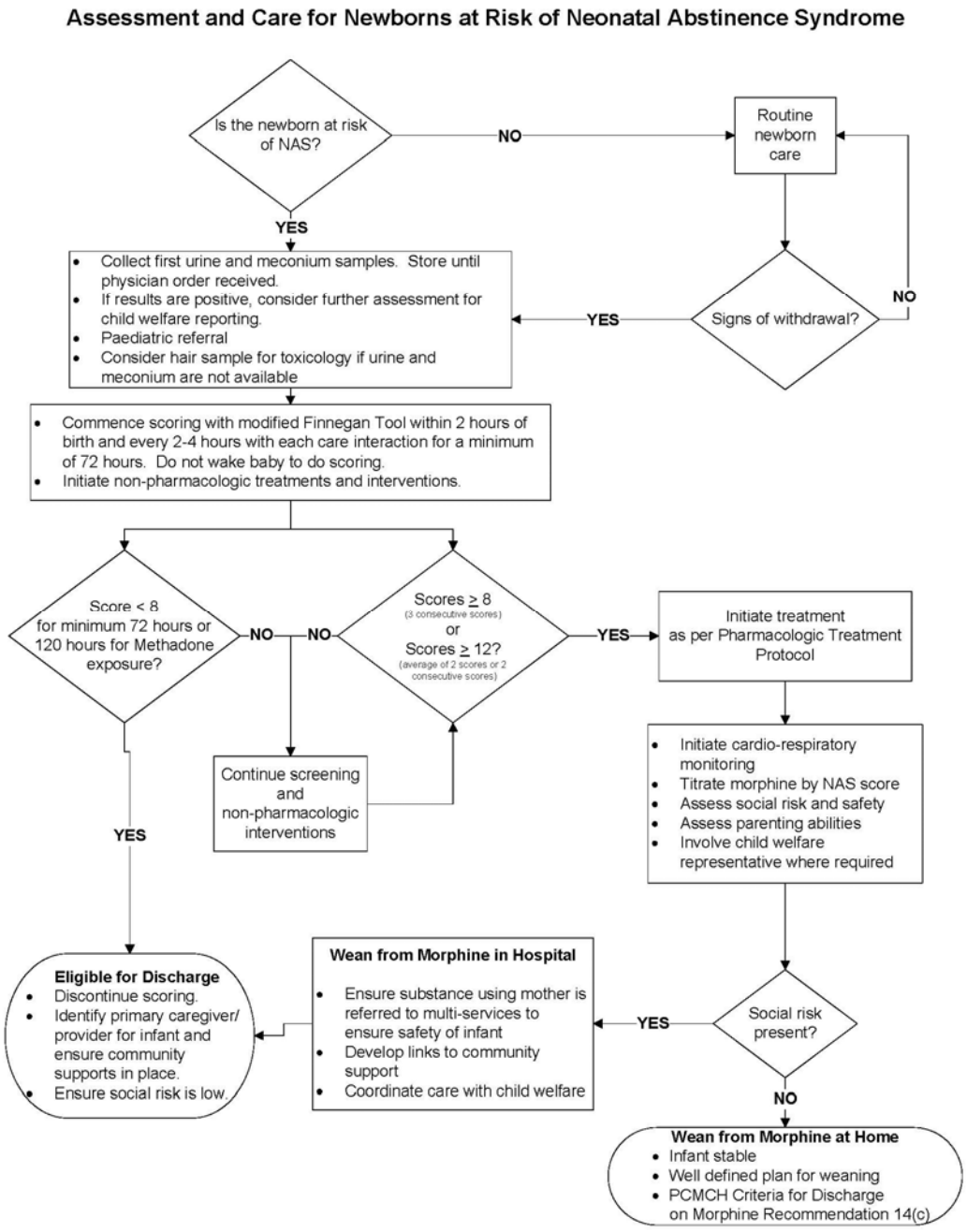
Neonatal Recommendations

14. Morphine is the first line pharmacologic treatment for NAS when supportive measures fail
    - Indicated for 3 consecutive scores >= 8 or when the average of 2 scores or the score for two consecutive intervals is >= 12
    - Phenobarbital or clonidine may be considered as an adjunct therapy to morphine in patients who are not well controlled with morphine alone
    - Discharging the infant home on morphine may be considered when the social risk is low, the infant is stable and there is a well defined plan for weaning

Assessment and care for newborns at risk of NAS



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Clinical Practice Guidelines: Maternal Recommendations

15. Discharge planning
    - Identify primary care provider
    - Professional home visitor, i.e. Public Health
    - Clinician to assess developmental milestones
    - Develop links between CAS/CCAS and primary health provider
    - Link mother with necessary services
    - Prevent unplanned pregnancy
    - Teach foster parents to assess infants for withdrawal

System wide recommendations

1. Comprehensive social marketing campaign to educate practitioners and the public about impact of substance use in pregnancy
2. Formalized funding for neonatal toxicology screening
3. Clear guidelines regarding consent for toxicology screening

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System wide recommendations

5. On-line training for clinicians
6. Buprenorphine should be available and supplied for opioid dependent women during pregnancy
7. Monitor incidence of NAS, hospital LOS and occupancy rates for NAS admissions
8. Increase accountability through robust tracking system for prescription narcotics

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Hot topics

- Resources for antenatal consult
- Timing of transfer of baby to Level 2 nursery and the commencement of Finnegan scoring
- Who can do Finnegan scoring
- Screening for breastfeeding
- Discharge home on morphine

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Take Home Messages

- Narcotic use and NAS is increasing
  - More prescriptions, more pain clinics, more MMT clinics and more substance drug use
- Need public awareness of the problems
- Tracking system
  - Recent legislation (Narcotic Safety Awareness Act, Nov. 1, 2011)
    - Increased accountability for providers

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Take Home Messages

- Pregnancy offers high motivation to change
  - Support system is critical for success
  - MMT assists with relapse prevention and stabilizing social risks
- Supporting family is the least expensive but most promising to facilitate success
- "Break the Cycle" – intergenerational social factors
- Planning and prevention of pregnancy is paramount to influence incidence of NAS

Take Home Messages

- The physical NAS is complex, but treatable
  - Needs consistent approach
  - Need formal training
- The psychosocial is much more complicated yet is the crux of the issue
  - Addressing the psychosocial risk factors is paramount to encompassing safety, positive life changes and overall family wellness
- Buprenorphine decreases severity of NAS
  - Implementing would need provincial approval and support

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Take Home Message

- Supportive resources limited
  - Resources for addiction treatment
- The challenges for the North
  - Remote nursing stations
  - Lack treatment facilities
  - Transportation
  - High rates of addiction
  - Separation from their community to treat NAS

Any provincial strategies would have to address the challenges of the North as well as the needs of the rest of the province

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Summary

The recommendations produced by the expert panel provided the framework to support the development of a coordinated strategy which has the potential to both reduce the incidence and impact of NAS through the implementation of prevention strategies, the assessment of risk, and the optimization and standardization of both maternal and neonatal treatment.

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PCMCH NAS Clinical Practice Guidelines

www.pcmch.on.ca

http://pcmch.on.ca/ClinicalPracticeGuidelines/NeonatalAbstinenceSyndrome.aspx

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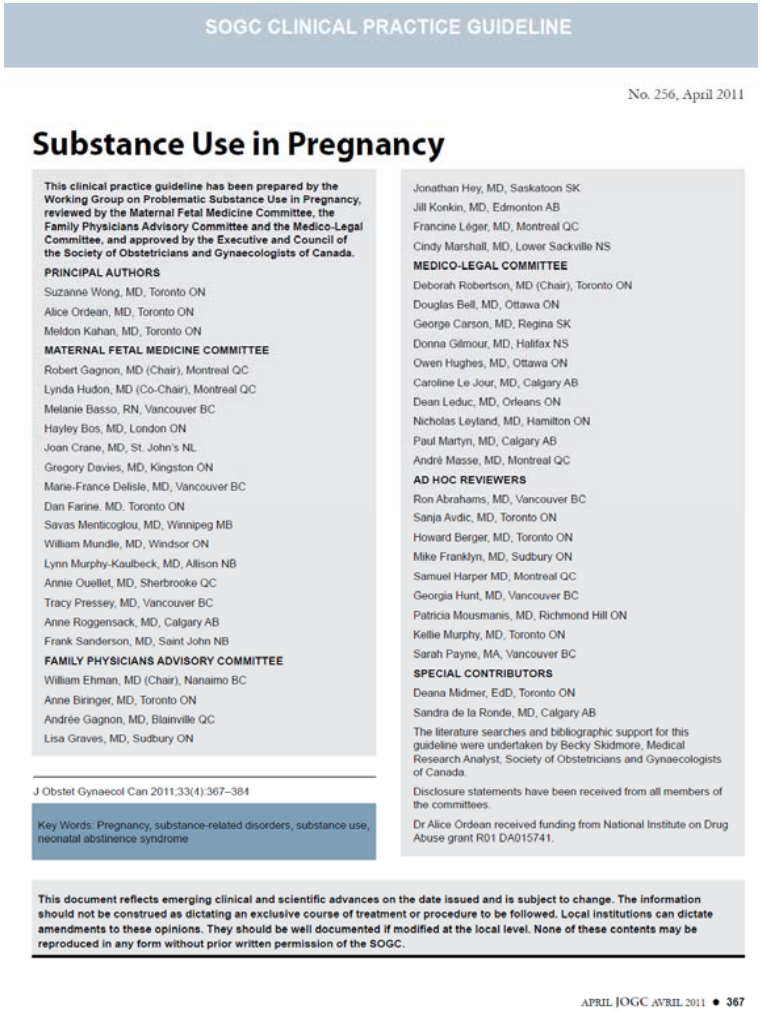
SOGC Clinical Practice Guideline: Substance Use in Pregnancy April 2011



SOGC CLINICAL PRACTICE GUIDELINE

No. 256, April 2011

Substance Use in Pregnancy

This clinical practice guideline has been prepared by the Working Group on Problematic Substance Use in Pregnancy, reviewed by the Maternal Fetal Medicine Committee, the Family Physicians Advisory Committee and the Medico-Legal Committee, and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

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Key Words: Pregnancy, substance-related disorders, substance use, neonatal abstinence syndrome

www.sogc.org/guidelines/documents/gui256CPG1104E.pdf

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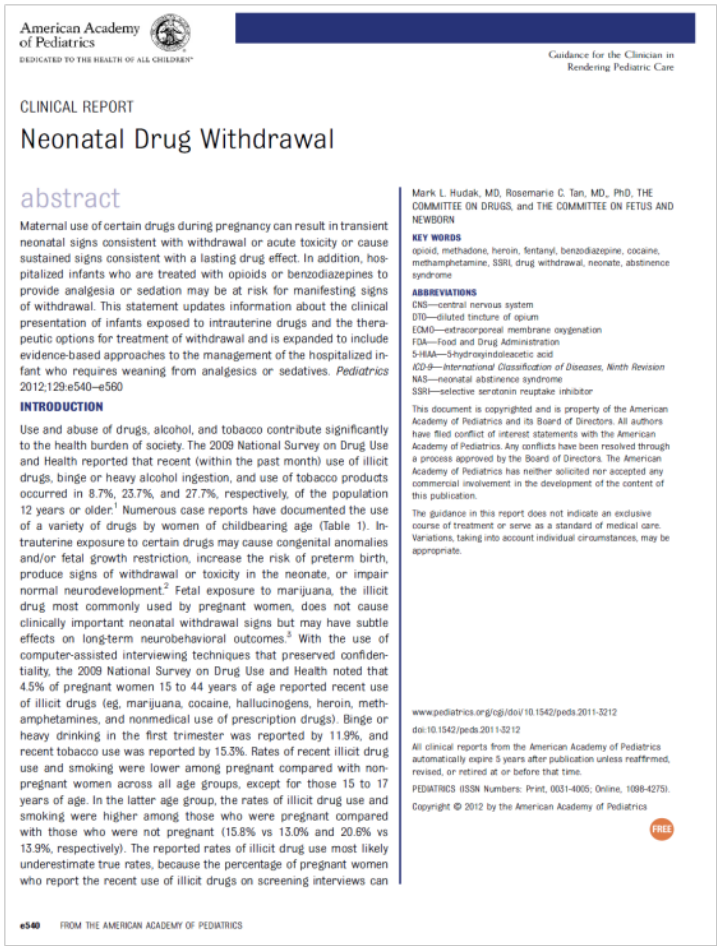
American Academy of Pediatrics

Clinical Report: Neonatal Drug Withdrawal



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Guidance for the Clinician in Rendering Pediatric Care

CLINICAL REPORT

Neonatal Drug Withdrawal

abstract

Maternal use of certain drugs during pregnancy can result in transient neonatal signs consistent with withdrawal or acute toxicity or cause sustained signs consistent with a lasting drug effect. In addition, hospitalized infants who are treated with opioids or benzodiazepines to provide analgesia or sedation may be at risk for manifesting signs of withdrawal. This statement updates information about the clinical presentation of infants exposed to intrauterine drugs and the therapeutic options for treatment of withdrawal and is expanded to include evidence-based approaches to the management of the hospitalized infant who requires weaning from analgesics or sedatives. *Pediatrics* 2012;129:e540–e560

Mark L. Hudak, MD, Rosemarie C. Tan, MD, PhD, THE COMMITTEE ON DRUGS, and THE COMMITTEE ON FETUS AND NEWBORN

KEY WORDS
opioid, methadone, heroin, fentanyl, benzodiazepine, cocaine, methamphetamine, SSRI, drug withdrawal, neonate, abstinence syndrome

ABBREVIATIONS
CNS—central nervous system
DTO—diluted tincture of opium
ECMO—extracorporeal membrane oxygenation
FDA—Food and Drug Administration
5-HIAA—5-hydroxyindoleacetic acid
ICD-9—International Classification of Diseases, Ninth Revision
NAS—neonatal abstinence syndrome
SSRI—selective serotonin reuptake inhibitor

www.pediatrics.org/cgi/doi/10.1542/peds.2011-3212
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http://aappolicy.aappublications.org/cgi/reprint/pediatrics;101/6/1079.pdf

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A hands on resource for parents and caregivers of substance exposed infants.

Vancouver Coastal Region SafeBabies Program

http://www.mcf.gov.bc.ca/foster/pdf/BabySteps_Sept2011.pdf

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