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Understanding Addiction in the Context of Perinatal Substance Use: A Reflection for Clinicians

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Abstract

Society determines what substances are legal and not, and some people can use a variety of substances without negative consequences. Substance use occurs on a continuum from use to harmful use, to addiction [1,2]. It is important that support and treatment take into consideration the complex pathways, consequences and outcomes of substance use, harmful use, and addiction [4]. Perinatal harm reduction focuses on building relationships to empower women with knowledge about the harms associated with substance use when pregnant, and choice about the type and extent of change she wishes to make [3,5]. The medical model explains 'addiction' as a treatable disease which is helpful in removing stigma and explaining how physiology can affect behaviour [6]. It helps women and families associate problematic substance use with substance use disorder and not as a weakness of the person. Substance use disorder is commonly rooted in childhood trauma, stressors, feelings of shame or 'less than'[1,3,6]. Building on recovery capital when women are inspired during pregnancy and postpartum can be an opportunity for change, growth, healing, and empowerment. Humans are complex biopsychosocial and spiritual beings, so the treatment, recovery, and healing require a holistic approach. This does not mean you need a big team… just time, trust, and patience… and a commitment to support change![8]

Introduction

Most medical associations recognize addiction as a chronic, treatable disease. In psychiatric terms, the DSM-5 definition of addiction is a complex brain disease that is manifested by compulsive substance use despite harmful consequences [7]. People with addictions (severe substance use disorder) have an intense focus on using certain substance(s) such as alcohol or drugs, to the point that it takes over their life (or has negative consequences) [9,10]. Genetics, sex, and social and structural determinants of health interact with the use of substances to affect the course and outcomes of the disease/illness as well as the treatments that will be helpful. Trauma history is almost ubiquitous in those with substance use disorder, often the substance use is treating an emotional or psychological pain or suffering [6,7]. Prevention efforts and treatment approaches for addiction are generally as successful as those for other chronic diseases. Ask yourself, why does stigma and judgement impact people with substance use disorder more than diabetes? Is

"addiction is a moral failure" part of my belief system? The recognition of addiction as a chronic disease requiring medical intervention helps negate the stigma associated with substance use. However, medical intervention is but one type of intervention that supports recovery [12]. Substance use disorder is severe and chronic in approximately 25–50% of individuals with SUD [13]. These patients require intensive treatments and continuous aftercare, monitoring, and social and related supports. Although addiction is a progressive and relapsing condition that cannot be completely reversed, appropriate long-term treatment and support can help people manage their symptoms and promote recovery.[3] substance use disorder is a complex condition and requires a holistic approach to care [10].

THE BIOPSYCHOSOCIAL-SPIRITUAL MODEL OF ADDICTION.

The biopsychosocial-spiritual model of addiction recognizes that problematic substance use affects all aspects of wellness, and that recovery involves all components of a person's overall well-being [10,11]. Often the sex/gender specific factors affecting substance use and addiction have been ignored and thus opportunities to tailor our treatment and support responses for pregnant women and individuals have been missed [8,12]. Culture and race are also important factors to highlight as colonialism, and inter-generational and historical trauma can have significant implications for Indigenous peoples. In addition, it is important to consider that there are different worldviews (ways of thinking about, seeing, and understanding addiction, substance use, and recovery) [11].

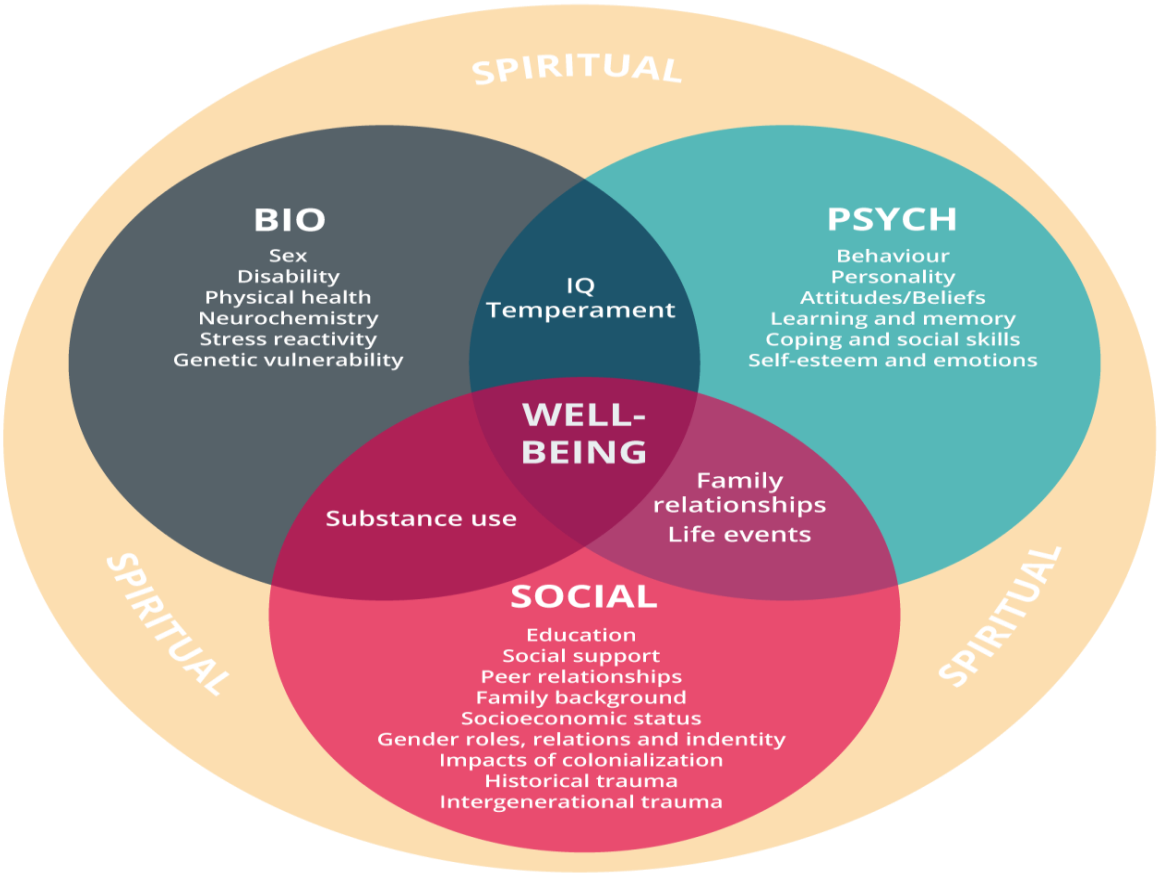


Figure 1: Adapted from Diagnostic and Statistical Manual of Mental Disorders: DSM-5. American Psychiatric Association, 2017

SUBSTANCE USE DURING PREGNANCY

National population surveys continue to demonstrate a significant proportion of women report using alcohol, tobacco, and other drugs (AOTD) during pregnancy [14]. We do not have quality data on substance use during pregnancy as often women are not asked about their substance use in effective and compassionate ways, often women do not feel safe to report their use and often the documentation is not completed [13,14]. Substance use during pregnancy can have negative short- and long-term medical and social consequences for both the mother and infant. Substance use disorders seldom begin during pregnancy [14]. Women typically have long histories of problematic substance use and interim periods of abstinence which predate their pregnancy [15]. Although the perinatal period presents unique risks for those who are substance-dependent and their babies, it is also a time when motivation to change harmful behaviours is increased and presents unique opportunities for improving the wellbeing of both mother and child. Oxytocin has been called the "love hormone" [16]. It is highly involved in birth, breastfeeding, and bonding. The following describes some of the sex and gender factors that influence women's substance use overall. For instance, for each substance, it has been found that women experience more or differing negative effects than men in key health areas [14,16]. For example:

- For cannabis, sex differences have been found in pain responses and brain function with females being more sensitive to the rewarding and pain-relieving effects.
- Women metabolize alcohol differently and are more vulnerable to the neurotoxic effects.
- Females who smoke cigarettes are more vulnerable to respiratory illnesses including COPD.
- Oestrogen can increase pain sensitivity in women which may make them more vulnerable to opioid misuse.
- Women may be more likely to report anxiety, or depression related to the use of certain substances.
- Women become dependent after using small amounts for less time (telescoped development) before becoming dependent.
- Withdrawal effects for women may be more intense.

Similarly, Problematic substance use for women is associated with experiences of childhood trauma and intimate partner violence [17]. These experiences increase risk of substance use to cope with the mental and physical health consequences. Women are more likely than men to report relational concerns and social isolation as reasons for substance use. Relational losses such as loss of child custody can trigger women's substance use or relapse [18,19,21]. Additionally, women and men face differing roles when it comes to parenting, with women more likely to be the primary caregiver, and this affects how they integrate treatment into their lives. Stigma directed to mothers who use substance use substances and fear of loss of custody influence help seeking by women during or after pregnancy. Women often need help with child-care, home care, and other family responsibilities to attend treatment. Lastly, women report less social support for engaging in treatment as compared to men and greater barriers [15,22].

DECONSTRUCTING AND ADDRESSING STIGMA

Stigma is a set of negative attitudes and beliefs about a social group due to an attribute that deviates from social norms. It may result in discrimination, prejudice, labelling, isolation, and stereotyping [23,26]. Research suggests that people who use substances are among the most

stigmatized groups in society. The World Health Organization (WHO) reported that illicit drug addiction ranked as the most stigmatized condition in healthcare [24]. Women with perinatal substance use are likely the most stigmatized clinical population. Stigma has been identified as the most significant biggest barrier to accessing care for women who use substances [25]. The level of stigma and discrimination women experience is heightened when they become pregnant or have children. Here are some examples that women with lived experience have shared: *"If you're pregnant and use drugs, people say 'are you stupid?'"*; "*People look at you like you're the worst mother in the world."* Many patients report negative experiences with the healthcare system due to stigma [26,27]. If we are open and suspend judgement, space for hopes and dreams can be created. We can listen to the woman's story and be fill the role of healthcare professional in supporting our mother baby dyad in reaching her goals [29]. Pregnant women and new mothers with substance use concerns who have accessed community-based support have created a powerful counter argument for health and social care providers in "10 things pregnant and parenting women who use substances would like practitioners to know" a part of the Mothering and Opioids Toolkit. [29,30] It includes statements such as:

"Mothers want to succeed. Don't assume we are not trying, or that we chose the challenges we face."; *"Listen, be curious about what might work for us."; "Don't judge. Instead care."*

Health and social care providers have also been considering how they can be a part of reducing stigma. Two ideas from a recent issue paper from the CanFASD Research Network [14,15]:

"Women need to feel comfortable seeking support and treatment. Our health messaging must not be stigmatizing, and instead should be compassionate, strengths-based, trauma-informed, and harm reduction oriented to better encourage and support women in seeking the services that they may need."

"Health care and social service providers must increase their competence in providing appropriate support for women with substance use concerns and in using harm reduction oriented, FASD-informed, and trauma-informed approaches that recognize the many factors influencing women's substance use and the services available to support women's and children's growth and change."

PREGNANCY AND SUBSTANCE USE CONSIDERATIONS

You do not need special training in perinatal addictions to be helpful to patients who use substances before/during pregnancy [28]. According to the Society of Obstetricians and Gynaecologists of Canada (SOGC), over 60% of all pregnancies are unplanned.[1] It should not be assumed that pregnancy occurring in the context of substance use was unplanned, or that an unplanned pregnancy was a result of substance use. Health care providers are responsible for ensuring they are prepared with the knowledge and tools to have conversations with and care for these patients [30,31]. Universal perinatal substance use screening is recommended to allow all individuals who are or may become pregnant to be informed about relevant risks and available risk reduction strategies and screened regularly for alcohol, tobacco, and non-medical drug use problems. Maternal interview using open-ended, non-judgemental discussion, information sharing and questioning is more likely to elicit disclosure of perinatal substance use. Health care providers should develop their own level of comfort and style in sharing information and asking their patients about this sensitive topic [31,32,34]. Judgement from health professionals is a significant

barrier to accessing services for women. Service providers are sometimes unaware of how their own behaviours and attitudes can contribute to stigmatization [33].

EXAMINING OUR USE OF LANGUAGE ABOUT PREGNANT AND PARENTING WOMEN WHO USE SUBSTANCES

As service providers and policy makers, we have a responsibility to use accurate and non-judgemental language. The language we use can contribute to or reduce stigmatization and can influence public opinion. See where in your day you can reframe a patient or colleagues' language to strengths-based language. Consider the conversation between Ama and her doctor below [36]:

Ama: I really messed up Doc, used coke and felt so bad about it all the way back to the hospital, now I'm pumping, and my baby can't breastfeed.

Dr: Wow, Cheryl what a powerful day for you, sounds like you experienced a slip and made several responsible decisions to be open and honest, return to hospital, keep your baby safe, maintain your milk supply and seek support…let's talk more about your relapse prevention plan…

WHY STIGMA?

Stigma is the set of negative attitudes, beliefs, and judgements about a group of people [17,35]. It is a set of negative stereotypes perpetuated as truth and used to discriminate, or treat unjustly, a group of people. Stigma can benefit those in power in several ways. Foremost, by keeping people "in", that is, by enforcing preferred social norms and values. For instance, health care professionals lack of courage to share resources on intimate partner violence judgement free [12,36]. Secondly, by keeping people "down", which maintains one's group advantage in society. Example: only offering housing or a supervision order to remain with their children if they are with their own family of origin from whom they received trauma. Lastly, by keeping people "away", to avoid disease or a perceived threat. Example: a pregnant third trimester woman with a significant cellulitis that has withdrawal waiting in the emergency room for many hours and finally leaving and not being triaged as high risk for preterm labour, sepsis, or overdose. Medically she should be triaged as high risk for preterm labour, sepsis, or overdose and fast tracked for assessment and care [8,11,38].

STIGMA AND HEALTH OUTCOMES

Stigma can impact health in three keyways. Firstly, it reduces access to, and quality of, protective resources and health services. Additionally, it increases the risk of chronic stress and poor coping responses and behaviours. In furtherance, it puts stigmatized people at higher risk of assault and injury [37].

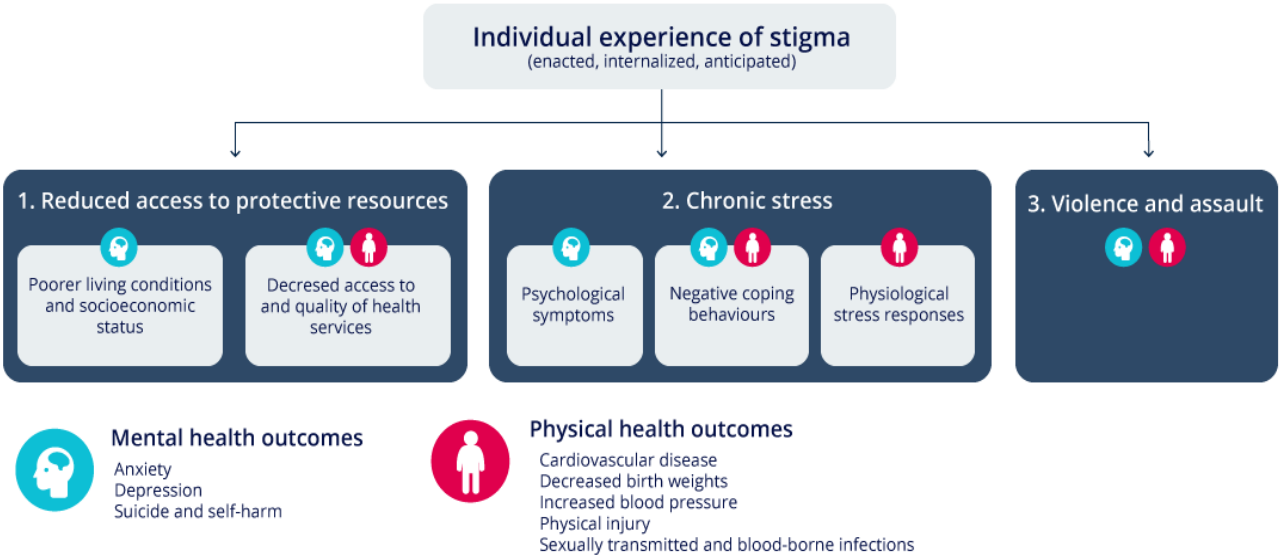


Figure2: adapted from Addressing Stigma: Towards a More Inclusive Health System: The Chief Public Health Officer's Report on the State of Public Health in Canada 2019. Public Health Agency of Canada; 2019:33. Accessed June 15, 2020.

GUIDING PRINCIPLES AND VALUES OF CARE

Health equity involves striving to address the social determinants of health and how the health care services can provide better care to people marginalized by poverty, racism and other forms of discrimination and stigma. Patient care must address the complex interplay of a variety of factors associated with addiction and perinatal substance use. Adherence to guiding principles facilitates a holistic and patient-centred approach to care [40,41].

Figure 3: Brave Heart, Maria Y.H. (1998). The return to the sacred path: Healing the historical trauma response among the Lakota. Smith College Studies in Social Work, 68(3), 287-305.

TRAUMA-INFORMED APPROACH

Trauma is an emotional response to experiencing or witnessing an event involving actual or perceived death or serious injury or threat to physical/mental integrity [42]. Trauma can result from either single event (e.g., sexual assault) or repeated exposure (e.g., childhood abuse). Early life experiences such as child abuse, neglect, witnessing violence and disrupted attachment [43]. Similarly, later traumatic experiences such as violence, accidents, natural disasters, war, sudden unexpected loss, and any life event that are out of one's control. Again, trauma can be historical or intergenerational and impact members of a family or community for years after [44]. Emotional responses may include intense fear, helplessness, shame, disconnection, or horror, and reactions can vary from minor disruptions in an individual's life to debilitating responses. Though trauma can be damaging, we also believe in resilience, and that it is possible for people to move beyond trauma and live healthy lives [45]. Trauma informed approaches do not require screening for or disclosure of trauma – instead trauma informed approaches are universal in focus, out of the recognition that trauma is common, and it important to not retraumatize and to support resilience and coping [41].

WHY TRAUMA-INFORMED CARE?

Substance use disorder is highly associated with lifetime history of trauma. Reports indicate that 63% of women entering treatment for substance use problems indicated they had experienced physical violence whiles 41% had experienced sexual violence [37]. Women are at increased risk of intimate partner violence during pregnancy, especially if the pregnancy was unplanned. Therefore, clinicians should be familiar with the principles of trauma-informed care if they are involved in the care of pregnant patients with substance use disorder. Again, 83% of family violence victims are female, although male children are also often targeted [39].

Intimate partner violence is the use of control and power over a current or former intimate partner. The relationship may or may not involve sexual intimacy. Methods often include Physical, sexual, or emotional abuse, controlling of finances, harassment and stalking, humiliation as well as the use of children as tools of manipulation [42]. Furthermore, intimate partner violence is a universal phenomenon. It occurs across a wide range of epidemiological dimensions, including but not limited to gender, sexual orientation, race, ethnicity, socioeconomic status, religion, educational background and/or marital status [46].

PRINCIPLES AND PRACTICES OF TRAUMA-INFORMED CARE

Trauma-informed care consists of policies and practices that recognize the connections between violence, trauma, negative health outcomes, and behaviours. The goal of a trauma-informed approach is to minimize harm, not treat trauma. Trauma-informed care does not require disclosure of trauma. It emphasizes creation of a safe environment that promotes physical and emotional safety as well as protects and encourages patient autonomy.

1. Trauma Awareness: Build awareness of trauma among staff and patients, including how common trauma may be, the wide range of traumatic experiences, and the relationship of trauma with substance use, physical health, and mental health. Trauma awareness is the foundation of trauma-informed care [46]. Example:

- Building education amongst team members

- Increasing the use of trauma informed approaches on professional teams
- Offering space for the patient to tell their story.
- Ongoing education (e.g., CPD/SME)

2. Safety and Trustworthiness: Create an environment that is conducive to the physical, emotional, and cultural safety of both patients and staff. It is critical to establish a strong therapeutic alliance between clinician and patient to provide effective and appropriate care. Safety and trust may be established through practices such as welcoming intake procedures, arranging the physical space to be less threatening, ensuring informed consent, creating crisis plans, demonstrating predictable expectations, etc. Ensure staff and practitioners also feel safe, with an emphasis on staff education, policies, and activities that support staff self-care. Whether providers have personal traumatic experiences or not, they may be triggered by patient responses or behaviours [47]. Examples:

- Incorporating peer support staff and Elders
- Asking for patient feedback
- Providing prenatal or discharge classes in small groups, supporting women in their own research and learning and care planning meetings with families impacted by perinatal substance use.
- Creating a safe workplace might include debriefing critical or challenging events, supporting teams through transitions, having time for education, sharing, and supporting one another.
- Offering space for the patient to tell their story.
- Sitting instead of standing to show that you have time to hear their story and decrease the power differential.
- Listening while making eye contact (instead of looking at a chart/computer) creates opportunity for trust building and connection.

3. Choice, Collaboration, and Connection: Foster a sense of self-determination, dignity, and personal control in those receiving care. This can be established through open communication, providing choices for treatment preferences, and collaborating with patients as equals without power imbalances (i.e., patient-centred rather than paternal style of care) [46].

4. Strengths-Based and Skill Building: Helping patients identify their strengths, foster resiliency, and further develop effective coping skills. There should be an emphasis on teaching skills around recognizing triggers and techniques for calming, centring, grounding, and staying present [46,47].

TRAUMA-INFORMED CARE STRATEGIES

How might a trauma-informed approach look different than a non-trauma-informed approach? Below are some examples of trauma-informed vs. non-trauma-informed language and strategies [48,49,50]:

Trauma-informed Approach	Non-trauma-informed approach
Would you like a belly check now or later during your visit?	I'm going to check your belly now.

Trauma-informed Approach	Non-trauma-informed approach
Would you like more explanation of what I am doing as I proceed, or less?	Not providing any explanation of what you are doing during an exam. or Assuming the patient wants to know and telling them about a procedure in detail.
Would you prefer me to measure your blood pressure on your right or left arm?	I'm going to take your blood pressure now. (Proceed to take the patient's arm to perform blood pressure check)
Some of the ways we can optimize pain management is through entonox or an epidural. May I tell you about that?	If you are in pain, I can give you entonox or an epidural.
Would you like someone with you for support?	Not giving an option for someone being there for support. Or Assuming the patient wants a certain person (e.g. family, partner) to be there and inviting the person to come in for support without asking the patient.

It can be very easy to unknowingly use non-trauma-informed language and strategies: For instance, "How many children do you have?" Why might this simple question be traumatic? Reproductive losses: stillbirth, abortion, apprehension, forced sterilization, children adopted out, children lost in war, children lost to gangs etc. How could this question be framed in a trauma-sensitive way? For example: "It's important for your healthcare that I have a good understanding of your maternity or obstetrical history [48]. Would it be okay if I asked you about previous pregnancies?"

HARM REDUCTION IN PREGNANCY

"Harm Reduction refers to policies, programs and practices that aim to reduce the negative health, social, and economic consequences that may ensue from the use of legal and illegal psychoactive drugs, without necessarily reducing drug use [47]." Pregnancy is often seen as a unique opportunity to support the improvement of health of women and their children by facilitating efforts to decrease or discontinue substance use or increase safer drug use practices [44]. Harm reduction offers a pragmatic approach to addressing substance use by reducing negative effects of alcohol and drug use, concurrently helping women meet their immediate health, social, and safety needs and recognizing that substance use is just one factor among many that shapes a healthy pregnancy [42].

EVIDENCE-BASED HARM REDUCTION STRATEGIES DURING PREGNANCY

1. Education, outreach and providing access to:
   - supervised consumption sites
   - overdose prevention sites
   - sterile consumption supplies
   - take-home naloxone kits
   - education on safer use
2. Low barrier access to services:
   - emphasis on physical and emotional safety
   - short or no waitlists
   - in an accessible geographical location
3. Buprenorphine and methadone maintenance treatment
4. Assistance with transportation and childcare to attend appointments.
5. Collaboration between health care and child welfare sectors
6. Access to integrated program models
   - on-site pregnancy-, parenting-, or child related services offered with addiction services.
   - coordinated referrals to other health and social services.

(Substance Abuse and Mental Health Services Administration. (2018). Clinical guidance for treating pregnant and parenting women with opioid use disorder and their infants. HHS Publication No. (SMA) 18-5054. Substance Abuse and Mental Health Services Administration) [51].

BENEFITS OF HARM REDUCTION STRATEGIES

Research shows that implementation of harm reduction strategies:

- Reduces substance-related harms.
  - Decreased HIV and hepatitis C infection and overdose death
- Improves neonatal outcomes.
  - Fewer preterm births, higher birth weights, increased likelihood of babies being discharged from hospitals with their mothers following birth.
- Increases engagement and retention in perinatal services and addiction treatment.
- Increases engagement in services post-partum.
- Reduces alcohol and drug use with improved nutrition.
- Is cost-effective.

(Substance Abuse and Mental Health Services Administration. (2018). Clinical guidance for treating pregnant and parenting women with opioid use disorder and their infants. HHS Publication No. (SMA) 18-5054. Substance Abuse and Mental Health Services Administration) [51]

RECOVERY-ORIENTED CARE

Recovery-oriented care involves health care providers working with individuals and their families to reach their chosen recovery goals and build on personal strengths and skills to enhance health outcomes and quality of life. Again, it allows pregnant women to participate in a broad range of activities that are person-centred and promote resilience. Recovery is on a continuum and is a personal journey that differs for everyone. Health providers must exercise an empathetic and non-

judgmental approach to patient management and provision of care [52]. Recovery is achieved through certain basic principles:

- emerges from hope.
- is person driven.
- occurs via many pathways.
- is holistic.
- is supported by peers and allies.
- is supported through relationship and social networks.
- is culturally based and influenced.
- is supported by addressing trauma.
- involves individual, family and community strengths.
- is based on respect.

"Components of Recovery Wheel" adapted from the American Psychological Association

MATERNAL CHOICE AND EMPOWERMENT

Choice and empowerment are critical considerations in care for those with perinatal substance use, as they may be in vulnerable positions which have left them feeling powerless and/or helpless [53]. Choice and empowerment are reliant on the provider's recognition of each women's dignity and autonomy. Providers must exercise humility and acknowledge that each woman understands her own social, mental, emotional, physical, spiritual, and cultural needs best [52,53]. Measures to preserve patient autonomy allow for collaborative decision-making and trusting relationships between patient and provider [51,53]. Informed consent is based on the premise that patients have the capacity to understand the information presented, have been presented with helpful information and understand the consequences of accepting or declining interventions. The process of obtaining informed consent should be clearly and explicitly documented prior to any provision of care. Informed consent provides the patient with the power and knowledge to exercise their autonomy and make important health-related decisions [50,53].

PROMOTING EMPOWERMENT

5 ways to promote maternal empowerment [53]:

1. Time
   - e.g., Providing time for patients to prepare for any invasive exams.
   - e.g., Going at a slower pace during a vaginal exam.
2. Choice
   - e.g., Giving a choice of who will provide the vaginal exam.
3. Power
   - e.g., Providing patients with the power to choose which position she will deliver in (within reason of safe medical practice).
4. Conversation
   - Listen actively.
   - Promote collaborative discussion between provider and patient. "Speak with and not about."
5. Education
   - Connect to legal aid and family supports.
   - Completion and use of safety plans.

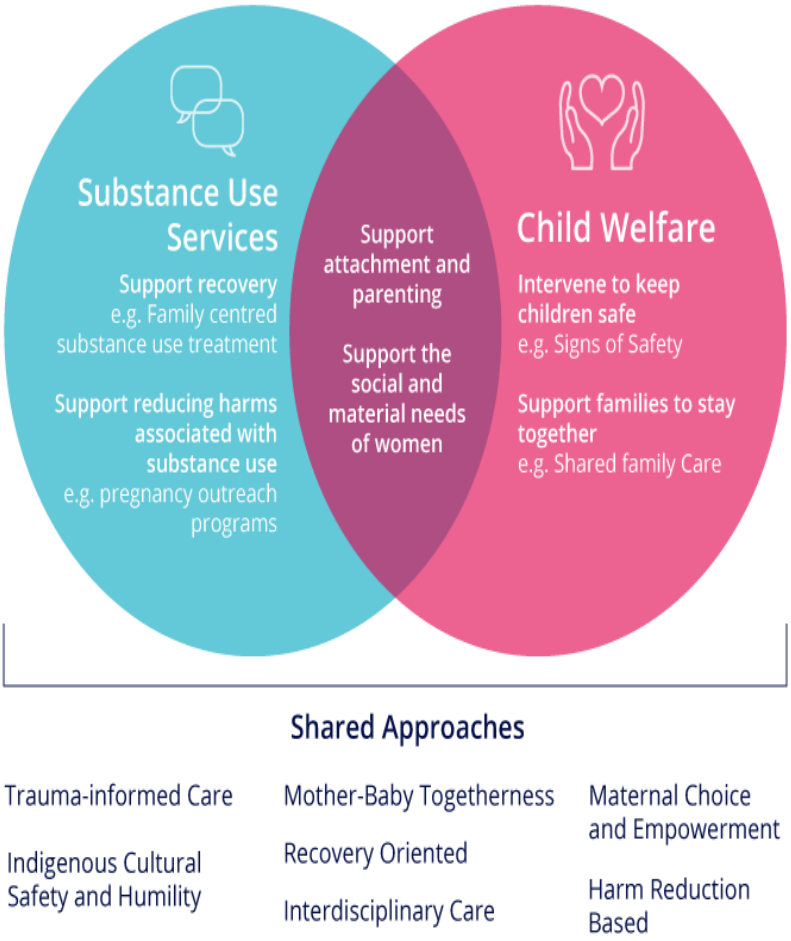
MOTHER AND BABY TOGETHERNESS

Mother-baby dyad care, including skin to skin contact of healthy infants and mothers, is an important component of maternal-newborn care. Separating a newborn from its mother soon after birth is unfortunately still a common practice [55]. The rooming-in model promotes mother-baby togetherness and is indicated as best practice for substance-using women and newborns. Mothers and infants are always kept together in the same room with family support encouraged and facilitated. Rooming-in improves health outcomes such as: attachment, communication, maternal self-confidence and stability, maternal emotional well-being, higher likelihood of breastfeeding, improved long term developmental outcomes, and reduced need for pharmacological treatment of NAS. The approach of rooming-in goes hand in hand with Eat-Sleep-Console (ESC), an evidence-informed approach to the non-pharmacological management of a newborn experiencing Neonatal Abstinence Syndrome (NAS) [55,56]. Separation of mothers and newborns (including child removals) is associated with a variety of negative social and health outcomes [57]. Child removals perpetuate experiences of inter-generational trauma and substance use and create distrust in the health care system. Family-centred care reflects a shift from a traditional focus on the biomedical features of disease to emphasizing the importance of family relationships in care provision [58]. Family can both support and create barriers to recovery. Identifying and evaluating facilitators and barriers are critical to providing effective care. It provides services to each member of the family and can include live-in treatment for mothers and children together. Additionally, it addresses the barriers of childcare and fear of child apprehension. Health outcomes improve when the mother-baby dyad remains intact [59].

INTERDISCIPLINARY CARE

Interdisciplinary care is necessary given the complexity of perinatal substance use (and the intersections of mental, physical, socioeconomic, and spiritual factors). Here is an example of how collaboration between two disciplines may look like (substance use services and child welfare).

Perform regular case consultations and care planning with the women in care (including family when appropriate)



Strategies to Optimize Interdisciplinary Care [56]

- Conduct regular interdisciplinary team meetings.
- Ensure consistent and unified messaging from leadership, clinical coordinators, and team members.
- Hold daily huddles focused on the most urgent and challenging patient concerns.
- Promote understanding of each disciplines' respective roles, including areas of overlap and how to communicate division of tasks.
- Maintain consistent documentation that meets each disciplines' documentation standards.

CARE OF THE NEWBORN EXPOSED TO SUBSTANCES DURING PREGNANCY

Neonatal Abstinence Syndrome (NAS) is a clinical diagnosis of neurologic, gastrointestinal, and musculoskeletal disturbances associated with withdrawal when substances sources are interrupted [60]. This term describes the withdrawal from opioids and other psychoactive substances. Similarly, Neonatal Opioid Withdrawal Syndrome (NOWS) represents clinical features specific to withdrawal from opioids [60,61]. Additionally, Poor Neonatal Adaptation Syndrome (PNAS) refers to the prenatal exposure to Selective Serotonin Reuptake Inhibitors (SSRIs) and Serotonin norepinephrine Reuptake Inhibitors (SNRIs). These include features observed in NAS and NOWS. However, this is typically marked by respiratory distress

syndrome (RDS). This is also described as SSRI neonatal behavioural syndrome (SNBS) when restricted to SSRIs exposure [61].

Addiction vs. Physical Dependence: Addiction (substance use disorder) and physical dependence are distinct conditions that differ based on aetiology, clinical course, and implications for treatment. Substance use disorder refers to the compulsive use of habit-forming substances despite significant negative biological, psychological, and social consequences. Similarly, foetal biochemical adjustments due to antenatal substance exposure to habit-forming substances results in a physical dependence that may result in withdrawal symptoms. It is important to note that a newborn is not born with a substance use disorder and does not have compulsive drug-seeking behaviour [62].

Trauma Informed Age-Appropriate Care (TIAAC): The period following birth is a sensitive period and a critical phase in human development. Trauma suffered during the first few years of life can lead to toxic stress and adversely influence normal development [57,63]. Toxic stress is defined as strong, prolonged, and/or frequent adverse experiences that activate the stress response in the newborn in the absence of protective relationships [64]. Potential stressors include maternal separation, unresponsive and/or inconsistent care, and overwhelming sensory environment. Toxic stress can result in epigenetic modification in which changes occur in DNA transcription as a function of life experiences. These changes can influence the development of major organs, especially the heart, brain, and kidneys, with lifelong health consequences. Social buffering confers protective effects against toxic stress. Quality of parenting where the parent actively engages and responds to the needs of the newborn can have a profound influence on the effectiveness of social buffering during stressful situations [65].

CLINICAL PRESENTATION OF NEONATAL ABSTINENCE SYNDROME

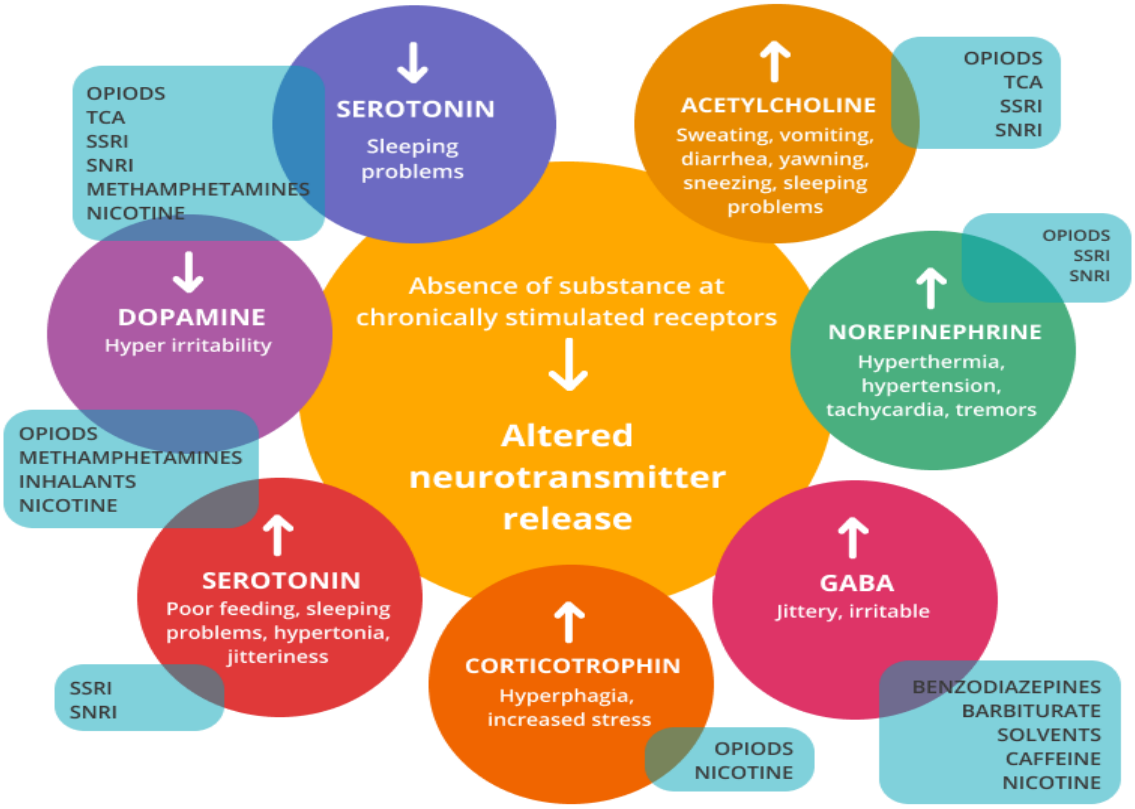
While the pathophysiology of NAS is unclear, exposure and abrupt discontinuation of substances during pregnancy alters neurotransmitter activity in the brain of the newborn. Withdrawal symptoms may present like drug toxicity syndrome (effect of too much of the substance). However, symptoms of drug toxicity decrease as the drug is eliminated where symptoms of withdrawal increase due to interruption of the drug supply. Prenatal exposure to substances such as cocaine and SSRIs can result in symptoms of withdrawal, drug toxicity, or a combination of both [64,65].

Pathophysiology of NAS [63,65]

1. Antenatal exposure to habit-forming substances
2. Substances cross the placenta by passive diffusion.
3. In the foetus, molecules attach to biochemical receptors in the central nervous system, blocking neurotransmitters.
4. As gestation increases, more substances cross the placental barrier due to larger surface area.
5. Cord clamping and cutting at birth interrupts drug supply.
6. Newborn continues to metabolize and excrete remaining metabolites of the substances until they are depleted.
7. Absence of substances cause altered release of neurotransmitters.
8. Onset of withdrawal symptoms commence.

CLINICAL PRESENTATION OF NEONATAL ABSTINENCE SYNDROME

Adapted from Blount T. et al (2014)



NAS consists of neurologic, gastrointestinal, and musculoskeletal disturbances associated with withdrawal once the source of the substance(s) is interrupted at birth. However, these disturbances are highly variable and there is currently no reliable way to predict presence or severity of withdrawal symptoms [66]:

Central Nervous Disturbances: High-pitched cry, Hyperirritability, Seizures, Tremors, Hypertonia, Sleep deprivation, Sleep fragmentation.

Other Autonomic Nervous Disturbances: Mottling of skin, Sweating, Yawning, Poor feeding due to uncoordinated and/or weak suck, Excessive suck.

Metabolic Disturbances: Hyperthermia, Blood glucose imbalances.

Respiratory Disturbances: Tachypnoea, Nasal stuffiness, Sneezing, Nasal flaring, Retractions.

Cardiovascular Disturbances: Tachycardia, Hypertension.

Skin Excoriation/Damage Due To: Excessive restlessness causing skin abrasions (ankles, chin, heels), Excessive loose/watery stools (severe diaper dermatitis).

Gastrointestinal Disturbances: Loose or watery stools, Vomiting, Weight loss and/or poor weight gain, Abdominal tenderness.

VARIATION IN EXPRESSION AND SEVERITY OF WITHDRAWAL SYMPTOMS

The incidence, timing of onset, presentation and severity of NAS varies significantly among the population of newborns exposed to substances. Variation can be attributed to a variety of factors such as [67]:

- type of maternal opioid replacement therapy

- maternal polysubstance use and patterns of substance use
- period of substance exposure and total accumulation of substance/s
- timing of last substance exposure and half-life of substance
- maternal and infant metabolism and excretion
- gestational age of the newborn exposed to substances.
- breastfeeding
- assessment tool used to evaluate symptoms of withdrawal and treatment of these symptoms.
- mother-baby togetherness practices
- engagement of non-pharmacological strategies
- pharmacological treatment regime
- genetics: while the genetics of a newborn exposed to substances may impact the severity of their NAS symptoms and the need for pharmacological management, it is currently unclear if genetics will be of any use in the clinical management of infant exposed to substances.

WITHDRAWAL IN THE PRETERM INFANT

Infants born prematurely (before 37 weeks gestation) reportedly present with [66,67]:

- Less severe withdrawal symptoms
- Shorter periods of withdrawal
- Shorter duration of pharmacological management

This may be due to:

- CNS immaturity
- Receptor immaturity
- Lower fat deposits
- Shorter period of total drug exposure
- Decreased placental transmission due to smaller surface area and larger diffusion distance.
- Preterm newborn presents with different NAS symptomatology compared to the full-term infant.
- Neonatal withdrawal assessment tools were developed for full term infants and may not provide an accurate assessment of withdrawal in the preterm population.

ASSESSMENT OF THE NEWBORN EXPOSED TO SUBSTANCES

Several features of maternal life experiences and physical health conditions can contribute to the likelihood of an infant developing NAS [4,7]. These may include diagnosis of opioid use disorder (OUD) or substance use disorder (SUD), receiving treatment for mental health disorders, on opioid agonist therapy (OAT), and positive urine drug screen (UDS) during pregnancy [5]. Additionally, such features as history of sexually transmitted infections and inconsistent prenatal care must also be prioritized.

Differential Diagnosis

Consider alternative diagnoses if abnormal CNS symptoms are noted. Other serious neonatal conditions that may present with signs similar to NAS include [5,6]:

- infection
- central nervous system (CNS) insult

- electrolyte imbalances
- metabolic disorders
- polycythemia

NAS SIGNS & SYMPTOMS	DIFFERENTIAL DIAGNOSIS
Irritability	• Gastroesophageal reflux • Pain/discomfort • Sepsis • CNS insult
Fever	• Sepsis • Hyperthyroidism
Feeding problems	• Oromotor dysfunction • Congenital anomalies (e.g., cleft palate, micrognathia, Pierre Robin sequence, genetic syndromes such as Prader Willi) • Polycythemia • Immaturity, including late preterm birth • CNS insult • Sepsis
Jitteriness	• Hypoglycemia • Hypocalcemia • Immaturity • CNS insult
Myoclonic jerking	• Not uncommon in opioid-exposed infants and can be mistaken for seizure activity. • Myoclonic jerks can be unilateral or bilateral, occur during sleep, and do not stop when the extremity or affected body part is held. Electroencephalograms are not indicated in infants with myoclonic jerks.
Seizures (rare in infants with NAS)	• Hypocalcaemia • Hypoglycaemia • CNS insult

Tools for Assessment

Several neonatal withdrawal assessment tools have been developed over the years. The Finnegan Neonatal Abstinence Scoring Tool (FNAST) is the most used tool to assess the severity of withdrawal and inform clinical management. However, with the increased understanding of neonatal substance withdrawal the usefulness of the FNSAT is being questioned [8,9].

Limitations of the FNSAT

1. modified and unvalidated versions are often used due to its intimidating length and complexity.
2. to minimize subjectivity and maximize inter-rater reliability, extensive and continuous training is required.
3. assessment of some criteria (e.g., Moro reflex) requires the newborn to be disturbed, which may artificially inflate scores.
4. validated for use in full term newborns only.
5. likely to prompt earlier initiation and greater intensity of pharmacological management.

THE EAT, SLEEP AND CONSOLE (ESC) CARE TOOL

Principles of the ESC approach [11,56]

1. Aims to support the newborn exposed to substances to achieve developmentally normal eating, sleeping, consoling, and weight gain milestones.
2. Mother/caregiver is the primary provider of responsive, newborn-centred care and integral to managing NAS
3. Encourage the mother and health care professional to consider reasons other than withdrawal that may affect how the baby is eating, sleeping, consoling and/or gaining weight. In 2008, a quality improvement initiative was launched at Yale New Haven Children's Hospital, Connecticut, USA to improve inpatient outcomes for Neonatal Abstinence Syndrome.[1] The objective was to decrease the average length of hospital stay by 50% for newborns exposed to substances in utero.

One of the key interventions of the Yale New Haven quality improvement project was the development and implementation of a novel assessment tool; the Eat, Sleep and Console (ESC) Care Tool. This work was influenced by the innovative work done by Dr Ron Abrahams, Dr Paul Thiessen and Sarah Payne on Fir Square, BC Women's Hospital where mothers and babies were kept together, and functional assessments and weight gain were used to assess withdrawal in the newborn.

The ESC Care Tool, developed in 2017, is a function-based assessment tool that assesses how the newborn eats, sleeps, and consoles. Below are some advantages of the ESC Care Tool:

1. Is best practice evidence-based care.
2. Aligns with trauma informed, culturally safe care and newborn responsive care.
3. Promotes mother and baby togetherness.
4. Promotes the use of non-pharmacological strategies to support the newborn during the acute phase of substance withdrawal.
5. Allows for easy adoption and implementation across all care settings in BC.
6. Is an objective assessment tool with high inter-rater reliability.
7. Promotes standardized documentation and care.
8. Is low cost, simple and achievable.

Recommendations:

- ESC Care Tool is developed to track the newborns ESC behaviours and interventions over a 24-hour period.
- Initiate ESC assessments and non-pharmacological strategies within 4 – 6 hours of birth.
- Perform ESC assessment every 2 – 4 hours after feeding in collaboration with parent/caregiver.
- Continue for at minimum of 4 – 7 days for the newborn exposed to long-acting opioids such as methadone, and a minimum of 48 hours for shorter acting opioids (e.g., oxycodone, codeine).
- For newborns that required pharmacological management, ESC assessments should continue for at least 24 hours after administration of the last dose of morphine.
- Gestational age at birth and actual postnatal age needs to be considered when assessing ESC behaviours. Some of these behaviours may be normal age-appropriate behaviour such as cluster feeding and natural fluctuations in sleep-wake patterns.
- Assessments include all ESC behaviours that occurred since the newborn's last assessment as well as all non-pharmacological care interventions implemented. Incorporate input from all caregivers who interacted with the newborn during this period.
- Assess the newborn in their own room and do not remove them from their mother's (or other caregiver's) arms if being held. Document the ESC assessments and care recommendations on the ESC Care Tool or electronic medical record (EMR).
- Educate parents in the use of the Newborn Care Diary, including how to assess and document how well their baby is eating, sleeping, and consoling. Explain to parents:
  - the objectives of the ESC Care Tool, its assessment items, and definitions
  - the indications for Bedside RN and Parent/Caregiver Huddle and Full Care Team Huddles
  - while it is recommended that parents use the Newborn Care Diary to keep track of their newborns' behaviours and for staff to incorporate these observations into their ESC assessments, it is their choice to use it or not as there are many other ways they can contribute to the care of their babies
  - It is important to remember than not all mothers are able to complete the newborn care diary for various reasons which may be related to their current health issues, substance use or withdrawal, or mental capacity. In this case nursing may choose to complete this tool through observation of the infant and caregiver interactions, and by asking key questions to determine the ESC assessment.

NON-PHARMACOLOGICAL MANAGEMENT [43,57,66]

A. ROOMING-IN

1. offers privacy to the mother to provide skin-to-skin contact.
2. allows for easier control of sensory stimulation.
3. enhances cue-based newborn-centred care (timely response to early hunger cues, prompt calming when infant is fussy)
4. is associated with:
   - decreased prevalence and severity of withdrawal and need for pharmacological management.

- decreased duration of pharmacological management.
- decreased length of hospitalization.
- increased breastfeeding initiation.
- higher rate of infant discharged home in care of mother.

4. supports bonding and attachment.
5. empowers the mother.
6. is cost saving as it prevents overuse of health care system.

BARRIERS TO ROOMING-IN

- lack of appropriate space
- logistics related to maternal opioid replacement therapy.
- perceived increase in workload
- continuous cardiac respiratory monitoring of infant when on pharmacological management
- maternal stigma and guilt
- health care provider biases and judgement toward substance using mother.
- other parental responsibilities

RECOMMENDATIONS

- the mother-infant dyad should remain together whenever possible.
- remove real and perceived barriers to rooming-in.
- Trauma Informed Care education for all health care providers.

B. PARENTAL PRESENCE

f the mother/parent is not able to room-in due to barriers such as unavailable space or other obligations, health care providers should work to address the barriers to facilitate prolonged parental presence at the infant's bedside as it offers the same benefits as rooming-in.

BARRIERS TO PARENTAL PRESENCE

- Lack of transportation to hospital
- Other childcare and family responsibilities
- Off-site opioid replacement therapy dosing
- Maternal guilt, feeling stigmatized.
- Access to basic needs while staying in hospital (e.g. food, medications, laundry etc.)

RECOMMENDATIONS

- financial support to assist with transportation to and from the hospital.
- Investigate with mother/parents' ways to meet other responsibilities while maximizing time spent at their infant's bedside.
- If possible, arrange for opioid replacement therapy dispensing location closer to the hospital.
- Investigate ability to maintain mother's in-patient status as 'companion' for duration of newborn admission so they have access to services (e.g. meal trays, medications etc.)
- Unless there is a true child protection concern, parental presence should not be restricted.

- Staff education
- Engage volunteer cuddlers to assist when parents are unable to be with their baby.

Withdrawal from substances after birth results in physiological and physical dysregulation. This may impact sensory stimulation integration, state regulation, motor and tone control, and the autonomic nervous system. The objective of non-pharmacological care interventions is to provide the infant with an environment that supports their ability to self-regulate. Although these strategies are commonly used to comfort and support infants, high quality research to determine their effectiveness is lacking. Despite the current shortcomings in research methodology, data suggests that non-pharmacological interventions may decrease the severity of withdrawal, the need for medical intervention, and duration of hospitalization [53].

The following strategies may be helpful to support the infant and prevent sensory overload during the active period of withdrawal [15,60,62]:

- quiet environment
- room or care environment should be away from high-volume/noisy areas.
- parents/caregivers should silence phones and keep conversations at bedside low.
- limit visitors to 1 or 2 at a time, and only to those that will be quiet and supportive.
- low ambient light
- cue–based care
- approach the bedside using a gentle voice prior to touching the infant·
- slow, gentle handling.
- hold infant closely when transferring infant from one space to another to prevent startling.
- swaddling contains and prevents erratic movements and startling.
- tactile stimulation should be gentle and firm; avoid stroking.
- apply gentle pressure over the infant's head or body.
- bringing arms/hands midline and positioning infants in a foetal position.

SWADDLING

- Use only a thin blanket for swaddling.
- To swaddle, spread the blanket out flat, with one corner folded down.
- Lay the baby face-up on the blanket, with their head above the folded corner.
- Straighten their left arm and wrap the left corner of the blanket over your baby's body, tucking it between their right arm and the right side of their body.

In the newborn exposed to substances, swaddling has been shown to reduce crying, startles, and physiological stress as well as improve sleep, motor organization and self-regulation. Nonetheless, combination of swaddling with prone position increases the risk of sudden infant death syndrome. Discontinue use of swaddling as soon as withdrawal symptoms have resolved [34,41].

C. STATE REGULATION

Sleep-wake regulation is an indication of how effectively the infant can regulate his/her internal processes and the influence of external stimulations. Full-term infants will transition between quiet sleep, active sleep, drowsy, quiet, awake, and crying. The infant exposed to substances may:

- have trouble regulating sleep-wake states.

- spend more time in active sleep than in quiet sleep, resulting in sleep deprivation, disorganization, and/or fragmentation.
- display state liability (move quickly from state to state)
- transition from sleep to crying with minimal cueing.
- stay longer in one state (excessive crying, wakefulness).

Strategies that may be helpful to support the infant with state regulation:

- protect sleep-wake cycles, don't wake infant up for routine care, allow for uninterrupted periods of rest/sleep.
- cue-based responsive care; respond to infant's stress cues and needs in a timely manner.
- skin-to-skin contact.
- approach the bedside using a gentle voice prior to touching the infant.
- slow, gentle handling.
- determine and provide level of stimulation required to assist with transition from sleep to a quiet, alert state.
- non-nutritive sucking.
- gentle vertical rocking.
- soothing techniques.

D. SKIN-TO-SKIN

Encourage skin-to-skin contact as much as possible to help calm the baby, promote neurobehavioral organization, bonding and attachment, and breastmilk supply (if breastfeeding). Skin-to-skin care is associated with improved sleep patterns,[1] a reduction in excessive crying and motor agitation associated with NAS, and a decreased need for pharmacological management.[2]. Parent/caregiver should sit in a comfortable chair and be fully awake and focused on the infant. Distractions such as cell phones should be avoided. Infant should be naked except for diaper and placed directly on mother's/parent/caregiver's chest with a blanket placed over both for warmth. A wrap can also be used to secure infant. This ensures infant's [7,12]:

1. head is turned to one side.
2. head is in the sniffing position and neck straight to maintain airway.
3. face is visible.
4. nose and mouth are not covered by the blanket or wrap.
5. legs are flexed and is lying chest to chest with mother/parent.

E. VERTICAL ROCKING: Vertical rocking has been shown to decrease neurological hyperactivity and promote self-regulation.

The Hold:

- Infant can be swaddled. If not, fold infant's arms snugly across his/her chest.
- Pick up infant and hold in a vertical, flexed position.
- Gently but securely hold infant's bottom with the dominant hand.
- Maintain airway by supporting infant's chin with the other hand.
- Bring infant's head a bit forward to position infant at a 45-degree angle, as it will be easier to control the infant.
- Slowly and rhythmically rock infant up and down

F. MOTOR AND TONE CONTROL: The newborn exposed to substances may display:

- abnormal tone, mostly increased tone
- exaggerated primitive reflexes.
- tremors
- jitteriness
- uncoordinated movements
- feeding difficulties related to suck-swallow incoordination.
  - incorrect positioning of tongue during feeding
  - poor latch
  - tendency to take in more than normal amount of air during feeding leading to GI discomfort.

Strategies that may be helpful to support the infant with motor and tone control [16,19,22]:

- gentle handling
- vertical rocking
- body position: Simulate the foetal position (c-position) to improve tone regulation.
- swaddling
- non-nutritive sucking to modulate and decrease uncoordinated movements.
- skin care to prevent and/or manage excoriation and diaper dermatitis.
- optimal feeding strategies.

G. Optimal Feeding Strategies: The following general strategies may be helpful to support optimal feeding:

- optimal feeding at early hunger cues without any limits placed in duration or volume of feeding.
- small volume, frequent feeding.
- non-nutritive sucking to calm newborn and coordinate the suck/swallow rhythm.
- swaddle newborn to contain and reduce extension posturing.
- consider intermittent gavage feeding to support weight gain.
- If newborn is breastfeeding, ensure the newborn is latching deeply, with a comfortable latch for mother, and with sustained active suckling with only brief pauses noted. If necessary, assist the mother to achieve more optimal latch/position.
- To organize suck prior to latching, use expressed breastmilk and have the infant suck on an adult finger. Withhold pacifier use if possible.
- Consider fortifying breastmilk or supplementation with a high-calorie breast milk substitute for poor weight gain.

Additionally, if newborn is bottle feeding:

- Reduce GI discomfort by using mother's expressed breast milk, donor breast milk or breastmilk substitute with a low osmolality.
- Mimic breastfeeding by letting baby pause and rest periodically.
- Allow baby to have burst on bottle just like on breast, then take a pause for catch up breathing, simulating a let-down.
- Continue allowing burst cycles and rest cycles throughout bottle feed; can leave bottle in the mouth just like a breast would be, just pausing for rests.

- Modify the bottle position and nipple flow rate if indicated.
- Provide chin support to assist baby to effectively coordinate suck and swallow without gagging or excessive spitting up if indicated.
- Allow for improved stomach emptying and reduce reflux.
- Make it easier for newborn to organize and control fluid in oral cavity to prepare for swallowing.
- Feed newborn in Elevated Side-Lying Position (left side-lying or upright) to allow for improved physiological stability.

H. SKIN CARE

Newborns are at risk for skin injuries as adaptation to the extrauterine environment is still ongoing. The functionally immature epidermal barrier and acid-mantle increases the risk of chemical, microbial, or friction skin injuries. Due to irritability, uncontrolled movements, and diarrhoea related to withdrawal, the newborn exposed to substances is at risk for excoriations and diaper dermatitis. The following strategies may be helpful to prevent excoriations/abrasions [54,55.66]:

- skin-to-skin care
- offer nonnutritive sucking at breast or with pacifier, clean finger of parent/caregiver, health care provider gloved finger.
- swaddle infant in flexed position
- gentle rocking
- soft clothing and linens
- hand mitts

I. AUTONOMIC NERVOUS SYSTEM (ANS)

Newborns exposed to substances may display signs of autonomic nervous system dysregulation:

- mottling of the skin
- tachypnoea
- hiccups
- yawning
- sneezing
- spitting up
- frequent bowel movements, loose stools

Strategies that may be helpful to support the infant with autonomic nervous system dysregulation:

- observe signs of stress and modify interaction to prevent escalation of ANS dysregulation.
- protect sleep.
- gentle handling
- small, frequent feeds
- manage environmental stimulation.
- gradual presentation of environmental and sensory stimulation depending on the infant's tolerance level

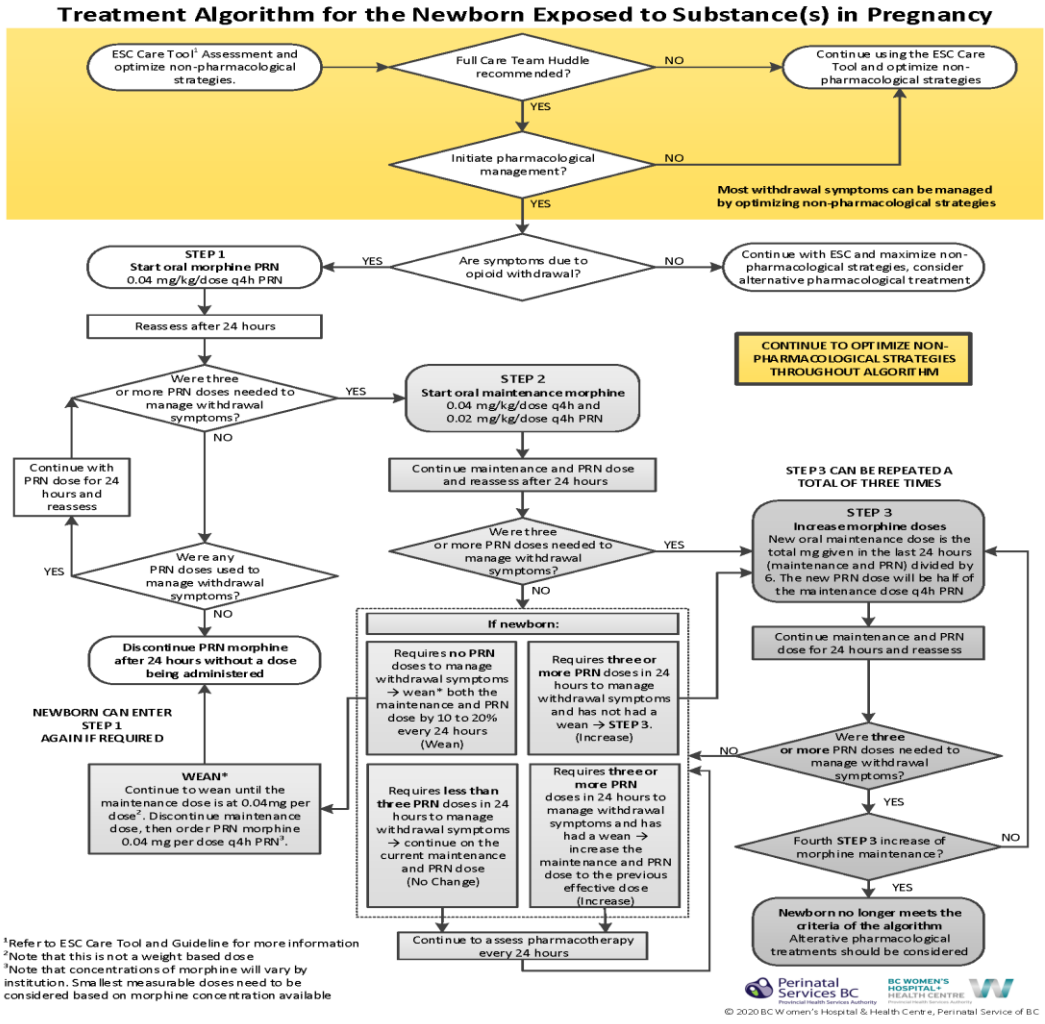
PHARMACOLOGICAL MANAGEMENT

Current Status

The current evidence as to when to initiate medication, treatment regimens, dosing, weaning protocols, and use of adjunctive management is limited. Evidence does show that a standardized pharmacological management protocol with clear weaning guidelines decreases the length of pharmacological intervention and hospital stay. [1,4,5,6] While suboxone and methadone can be used to manage substance withdrawal symptoms in the newborn, morphine is the most used drug to manage newborn opioid withdrawal. Morphine is a full mu-opioid receptor agonist with well-established pharmacokinetic features and a short half-life [9].

General Principles [6,9,10]

- Rooming-in and implementing non-pharmacological is paramount. Pharmacological intervention should be employed as an adjunct.
- Use ESC Care Tool to guide management.
- Minimize opiate replacement exposure in the newborn.
- The need for pharmacological management alone is not an indication for admission to the NICU. Transfer to the NICU only if there is a medical indication.



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