Queensland Clinical Guidelines

Translating evidence into best clinical practice

Maternity and Neonatal **Clinical Guideline**

Perinatal substance use: maternal

Queensland Government

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Cultural acknowledgement

We acknowledge the Traditional Custodians of the land on which we work and pay our respect to the Aboriginal and Torres Strait Islander Elders past, present and emerging.

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- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
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- Applying standard precautions, and additional precautions as necessary, when delivering care
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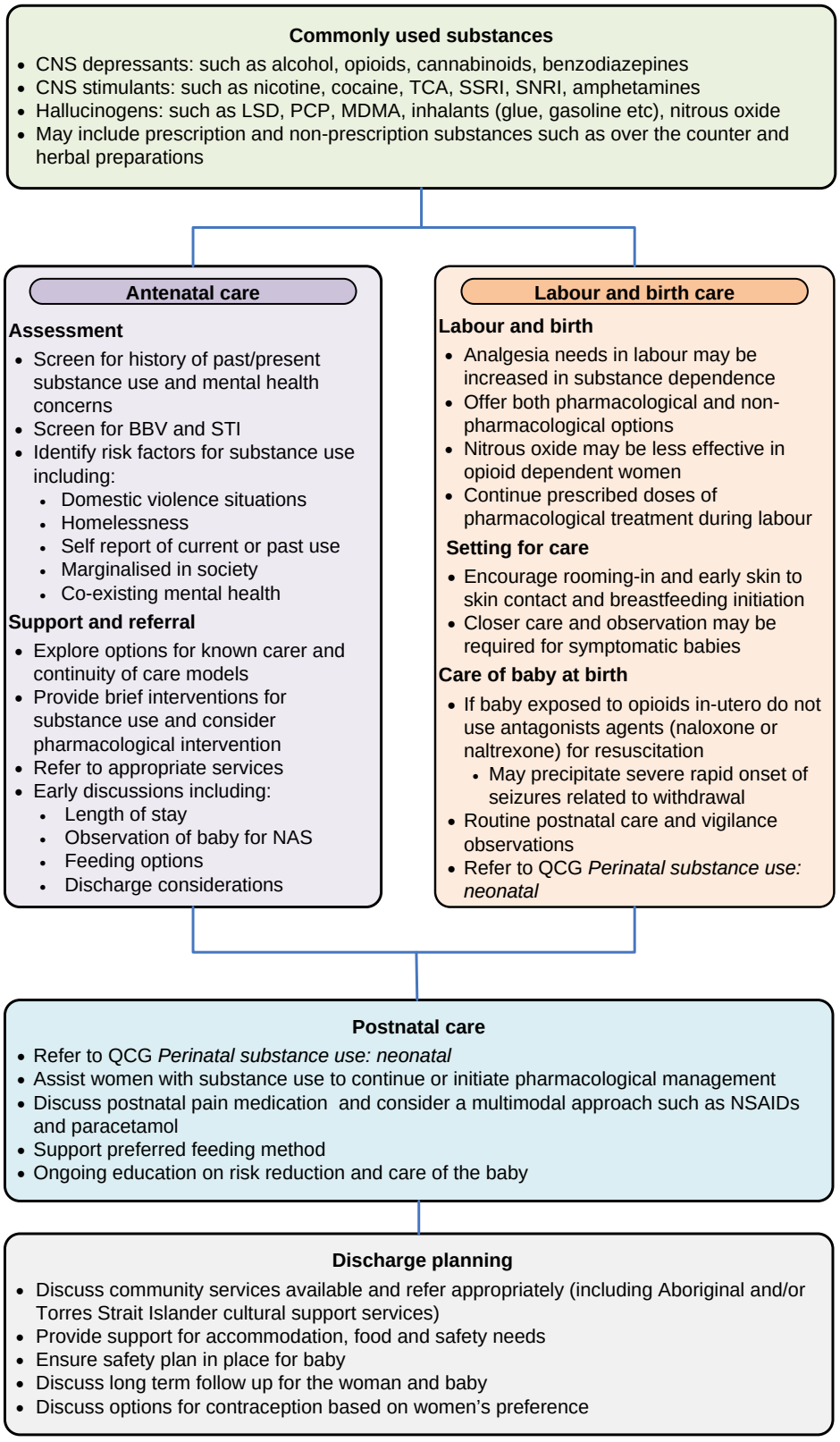
Flow Chart: Maternal substance use in pregnancy



BBV: blood borne virus, **CNS:** central nervous system, **IM:** intramuscular, **LSD:** lysergic acid diethylamide**, MDMA:** 3,4-methylene dioxyamphetamine, **NAS:** neonatal abstinence syndrome, **NSAID:** non-steroidal anti-inflammatory drug, **PCP:** phencyclidine, **QCG:** Queensland Clinical Guidelines, **SSRI:** selective serotonin reuptake inhibitors, **SNRI:** serotonin noradrenaline reuptake inhibitors, **STI:** sexually transmitted infection, **TCA:** Tricyclic antidepressants

Queensland Clinical Guideline: Perinatal substance use: maternal Flowchart: F21.37-1-V2-R26

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Abbreviations

AODS	Alcohol and other drug services
CNS	Central nervous system
FaCC	Family and child connect
FGR	Fetal growth restriction
HIV	Human immunodeficiency virus
IFS	Intensive family support
MTCT	Mother to child transmission
NAS	Neonatal abstinence syndrome
NRT	Nicotine replacement therapy
NSAID	Nonsteroidal anti-inflammatory drug
SIDS	Sudden infant death syndrome
SNRI	Serotonin noradrenaline reuptake inhibitors
SSRI	Selective serotonin reuptake inhibitors
SUDI	Sudden unexplained death in infancy
PHR	Pregnancy health record
CS	Caesarean section
IOL	Induction of labour
LBW	Low birth weight

Definitions

Abstinence	In this guideline 'abstinence' is used to refer to intentional avoidance of, or refraining from substance use.
Antagonist	A substance that counteracts the effects of another agent.
Agonists	A substance that binds to the receptor, producing a similar response to the intended drug.
Multidisciplinary team	Membership is influenced by the needs of the parent/carer and her baby, availability of staff, and other local resourcing issues. May include a range of multidisciplinary professionals including, but not limited to, nurse/midwife, lactation consultant, Aboriginal and/or Torres Strait Islander liaison healthcare workers, obstetrician, neonatologist/paediatrician, nurse practitioner other specialist practitioners (e.g. maternal fetal medicine specialist), general practitioner, midwife navigator, pharmacist, social worker/counsellor and allied healthcare professionals from hospital and community services including government and non-government organisations.
NAS	In this guideline, NAS is used to describe the syndrome of withdrawal in babies exposed to opioids and other substances in-utero. Other terms/diagnosis which are included in the umbrella term 'NAS' • Neonatal opioid withdrawal syndrome (NOWS): clinical features specific to withdrawal from opioids • Poor neonatal adaption syndrome: clinical features specific to in-utero exposure to SSRI and SNRI and/or other antidepressants.
Pharmacokinetics	The study of the time course of drug absorption, distribution, metabolism, and excretion.
Perinatal substance use	In this guideline, 'substance use' includes any drug, medicine or chemical matter or mixture whose use in pregnancy may give rise to immediate or future concern for the health and well-being of the woman and/or her baby.

1 Introduction

Use of alcohol, tobacco, illicit substances and other prescribed psychoactive substances during pregnancy is common and can lead to multiple health and social problems for both mother and child.[1-3]

Population and demographic variations are reflected in different substance usage patterns between rural, remote and urban groups.[4] Patterns of substance use pre-pregnancy may carry into the antenatal period, including the simultaneous use of several substances.[2] Tobacco and alcohol are commonly used[2] and although their use in Australia is declining, the prevalence of their use by pregnant women continues to be of concern.[4]

Pregnancy may be an opportunity for women, their partners and other people living in the household to change their patterns of substance use. Women who use substances in pregnancy may also have complex social, psychological and physical problems.[3] Healthcare providers require an understanding of these complexities in order to tailor support and advice for the individual woman throughout pregnancy and the postpartum period.[1]

1.1 Incidence

Information about substance use during pregnancy is difficult to accurately capture in Australia. Surveys estimate that 50–80% of pregnant women continue to drink alcohol, the majority at low levels. There is clear evidence that heavy and frequent use of alcohol, or other substances and associated lifestyle factors contribute to significant harm during pregnancy, including conditions such as fetal alcohol spectrum disorders.[5]

1.1.1 Incidence in Queensland

Table 1 Incidence in Queensland

Number of mothers in Queensland with mental/behavioural disorders due to substance use					
Year	Tobacco (%)	Alcohol (%)	Drugs (%)	Total (%)	Total mothers
2015	28 (0.05)	95 (0.16)	477 (0.78)	546 (0.90)	60,942
2016	29 (0.05)	103 (0.17)	550 (0.89)	620 (1.00)	61,876
2017	33 (0.06)	124 (0.21)	634 (1.07)	733 (1.23)	59,399
2018	24 (0.04)	131 (0.22)	684 (1.15)	774 (1.30)	59,644
2019	11 (0.02)	146 (0.25)	759 (1.27)	854 (1.43)	59,559
Births in Queensland to mothers with mental/behavioural disorders due to substance use					
Year	Tobacco (%)	Alcohol (%)	Drugs (%)	Total (%)	Total births
2015	30 (0.05)	98 (0.16)	483 (0.78)	556 (0.90)	61,903
2016	29 (0.05)	104 (0.17)	566 (0.90)	636 (1.01)	62,779
2017	33 (0.05)	127 (0.21)	641 (1.06)	743 (1.23)	60,326
2018	26 (0.04)	133 (0.22)	696 (1.15)	790 (1.31)	60,503
2019	11 (0.02)	148 (0.24)	767 (1.27)	864 (1.43)	60,443

*Source: Perinatal Data Collection, Department of Health (Extracted January 2021) Department of Health (Queensland)-Statistical Services Branch, 2021
Note: 'total' mental/behavioural disorders due to substance use will not equal the sum of each subgroup (tobacco, alcohol and drugs) as multiple codes can be reported

1.1.2 Knowledge of pregnancy and substance use in Australia

The woman's knowledge of their pregnancy can influence substance use.[4]

Table 2 Incidence in Australia

Substance use before and after knowledge of pregnancy[4]		
Substance	Use before knowing (%)	Use after knowing (%)
Alcohol	55	14.5
Tobacco	22	10.8
Illicit substances	2.4	1.6

2 Substance use in pregnancy

Substance use during pregnancy can cause significant health problems for women regardless of age, ethnicity, or socioeconomic status. Commonly used substances include those classified as stimulants, depressants and hallucinogens. They may include cannabis, opioids, amphetamines and synthetic psychoactive substances. There is also an increasing use of medications to manage existing mental health issues. Refer to section 3.4 Mental health care and referral.

2.1 Commonly used substances

Table 3 Substances commonly used

Opioids (CNS depressants)[6]	**Agonists** • Codeine • Fentanyl • Heroin (diacetyl morphine/diamorphine) • Hydromorphone • Morphine • Methadone • Oxycodone • Pethidine • Tramadol • Tapentadol	**Antagonists** • Naltrexone	**Mixed agonist–antagonists** • Buprenorphine • Buprenorphine and naloxone (combination)
CNS stimulants	**Psycho stimulants**[7] • Caffeine • Cocaine • Nicotine • Dissociative anaesthetics • Phencyclidine (PCP) • Ketamine **Mild stimulants** • Ephedrine **Stronger stimulants** • Ecstasy (MDMA) • Khat • Betel nut • Pituri • Weight loss medications (phentermine)	**Serotonin–noradrenaline reuptake inhibitors (SNRIs)**[8] • Venlafaxine • Duloxetine • Desvenlafaxine **Selective serotonin reuptake inhibitors (SSRIs)**[9] • Citalopram • Escitalopram oxalate • Fluoxetine • Fluvoxamine maleate • Sertraline **Tricyclic antidepressants (TCA)** • Amitriptyline	**Amphetamines**[10] • Amphetamine • Dextroamphetamine • Methamphetamine (ice) • Lisamphetamine **Amphetamine related** • Benzphetamine • Diethylpropion • Pseudoephedrine • Fenfluramine • Mazindol • Methcathinone • Methylphenidate • Pemoline • Phendimetrazine • Phentermine • Phenylpropanolamine
CNS depressants	**Alcohol**[11] **Barbiturates** **GHB (gamma–hydroxybutrate)** **Some solvents/inhalants** **Kava** **Pituri**	**Benzodiazepines**[12] • Diazepam • Temazepam • Alprazolam • Clonazepam • Oxazepam • Nitrazepam • Lorazepam	**Cannabinoids**[13] • Cannabis/marijuana • Butane hash oil • Medicinal cannabis
Hallucinogens	**Psychedelics**[14] • Lysergic acid diethylamide (LSD) • Psilocin • Psilocybin • Phencyclidine (PCP) • Dimethyltryptamine (DMT) • Diethyltryptamine (DET) • N-methoxybenzyl (NBOMes) • Pituri **Phenylethylamines** • Mescaline • Peyote	**Stimulant with hallucinogenic properties**[15] • Entactogens • Methylenedioxyamphetamine (MDA) • 3-methoxy-4,5-methylenedioxyamphetamine (MMDA) • 3,4-methylene dioxyamphetamine (MDMA) (Ecstasy)[16] • 3,4-methyl-enedioxyamphetamine (MDEA)	**Inhalants**[17] • Solvents/aerosols (glues, gasoline, paint thinner, cleaning solutions, nail polish remover, butane) **CNS depressants with hallucinogenic properties** • Cannabis[13] **Others** • Nitrites • Nitrous oxide

2.2 Complications and signs of withdrawal by substance

Table 4 Antenatal and neonatal complications of substance use

Substance	Antenatal complications	Neonatal complications	Signs of maternal withdrawal
Nicotine/ tobacco	• Spontaneous miscarriage[2,18] • Preterm birth (PTB)[19] • Premature rupture of membranes (PROM) • Placental praevia and/or placental abruption • Fetal growth restriction (FGR)/low birth weight • Stillbirth	• Increased perinatal mortality[2] • Increased risk of sudden unexpected death in infancy (SUDI) and sudden infant death syndrome (SIDS) • Behavioural and cognitive impairment[19] • Increased risk of asthma, infantile colic, and childhood obesity[20]	• Irritability, restlessness, anxiety, insomnia, fatigue, poor concentration
Alcohol	• Low birth weight[2,18,19] (LBW) • PTB • FGR	• Alcohol consumption may result in fetal alcohol spectrum disorder (FASD) which can result in neurodevelopmental and intellectual impairment—may include facial dysmorphic changes[2,18-20]	• Autonomic hyperactivity[21]: o Sweating, tachycardia o Increased hand tremors, insomnia o Nausea and/or vomiting o Transient hallucinations/perceptual changes
SSRI/SNRI/TCA	• Epidemiological data suggests association between antidepressants and:[22] o PTB o Decreased body weight o FGR	• Third trimester use linked to NAS or toxicity syndromes including irritability and altered muscle tone[9] • Increased risk for neurobehavioural, emotional, cognitive and mental disorders[22] • Potential for poor adaptation to extra uterine life	• Irritability, altered muscle tone[9]
Marijuana/ Cannabis	• Increased rate of mental health disorders among women that use cannabis during pregnancy including psychosis, depression and suicide[2]	• Neurodevelopment delay[20] including cognitive deficits, visuospatial dysfunction, impulsivity, inattention and depression[2,19]	• Irritability, insomnia, anorexia, anxiety • Cannabinoid hyperemesis syndrome:[23] o Intense and persistent nausea and vomiting, dehydration
Opioids	• PROM[19] • LBW • Third trimester bleeding	• Increased risk of (NAS)[19] • Increased perinatal mortality rate • Strabismus • SIDS • Sleeping and levels of alertness • Gastrointestinal dysfunction–increased metabolism	• Influenza-like symptoms: myalgias, rhinorrhoea, diaphoresis, nausea, vomiting, diarrhoea • Psychological symptoms: o Insomnia, anxiety, strong cravings, dysphoria • Obstetrical symptoms: o Abdominal cramping, uterine irritability
Benzo-diazepines	• Possible risk of PTB • Low birth weight • Low Apgar score	• Poor muscle tone, hypothermia, lethargy, breathing and feeding difficulties at birth[18]	• Seizures (high dose), anxiety, panic attacks, insomnia, emotional lability
Cocaine Amphetamine	• PROM[18,19] • PTB • Low birth weight • Placental abruption[2]	• Increased risk of congenital anomalies[18] • Transient increase in central and autonomic nervous system symptoms and signs • Developmental and behavioural defects[19]	• Crash phase: o Fatigue, increased appetite • Withdrawal dysphoria phase: o Dysphoria, irritability, insomnia, cravings
Ecstasy	• PTB[24] • Decreased body weight, length and head circumference	• Disorganised neurobehaviour at birth[24] • Increased risk of NAS	• Fatigue, insomnia and/or hypersomnia[25] • Psychomotor agitation

2.3 Long term effects of antenatal substance use

There is inconsistent quality data on long term health and educational outcomes of babies affected by NAS.[26] Longitudinal studies are challenging because of confounding genetic, social and environmental factors, and the difficulty of disentangling individual effects when there is substance use.[27] Results require cautious interpretation.

2.3.1 Long term childhood effects of antenatal substance use

Maltreatment and rehospitalisation of babies, particularly within the first year of life, is significantly higher in those exposed to antenatal substance use. This may highlight the need to identify women with co-existing mental health conditions, difficult living situations and/or lack of support systems early, and extend support into the postnatal period for this vulnerable subset of families.[28]

Table 5 Long term childhood outcomes following in utero substance exposure and NAS

Outcome[28]	NAS % (n=3,837)	No NAS % (n=1,016,565)	aOR	95% CI
Mental and behavioural disorders[+]	2.5	1.0	2.05	1.66 to 2.54*
Behavioural and emotional disorders with onset in childhood/adolescence[^]	0.83	0.2	2.30	1.60 to 3.30*
Diseases of the eye and adnexa Strabismus Nystagmus	 2.0 0.3	 0.3 0.0	 4.73 7.99	 3.69 to 6.05* 4.15 to 15.40*
Injury, poisoning, and other consequences of external causes[#]	12.5	6.9	1.34	1.20 to 1.49*
Diseases of the respiratory system	23.3	17.1	0.85	0.79 to 0.93*
Infections and parasitic disease	16.2	11.2	1.54	1.41 to 1.68*
Cerebral palsy	0.5	0.2	1.90	1.21 to 2.99**

*****P<.001., ******P<.01, **aOR:** adjusted for gender, young mothers, maternal smoking, prematurity, low socioeconomic indexes for area, rural, Indigenous Australia, [+]Adjustment disorders, anxiety, mental retardation, disorder of speech/language, autism, [^]disturbance to attention and activity, conduct disorder, oppositional defiant disorder, mixed conduct and emotional disorders, [#]burns, poisoning by drugs, medications and toxic substances, maltreatment, physical abuse, neglect and abandonment

2.3.2 Long term adolescent to adulthood outcomes of antenatal substance use

Insufficient long term evidence exists to provide definitive data on the outcomes of perinatal substance use for the adult. Studies may be confounded by socio-economic, emotional and/or psychological adversities experienced by the child/adolescent.[29,30]

Table 6 Adolescent to adulthood outcomes of antenatal substance use

Aspect	Consideration
Context	• Adults who were exposed to substance use in-utero may have a predisposition for addiction compared to non-exposed adults[29] • Children who were exposed in-utero to substance use are more than twice as likely to develop an alcohol and/or drug disorder in adulthood[29]
Nicotine	• Impulsivity, attention problems and hyperactivity in adolescence[31] • Negative and externalising behaviours that continue into adulthood that form higher rates of delinquency, criminal behaviour and substance use[31]
Alcohol	• Significant attention problems[31] • Adaptive behaviour issues spanning early childhood to adulthood[31] • Criminal behaviour[31]
Marijuana	• Inattention and impulsivity at 10 years of age[31] • One longitudinal study reported exposure in-utero had effects on neurophysiological processing during executive functioning in adulthood[32]
Opioids	• Hyperactivity and short attention span, memory and perceptual problems in older children[31]
Cocaine	• Perinatal exposure versus non-exposure reported to have 2.8 times the risk of learning disabilities[31]

3 Antenatal care

3.1 Assessment of substance use

Table 7 Assessment of substance use

Aspect	Consideration
Context	• Women of any age, and from all social and economic backgrounds may use substances in pregnancy[33] • A commitment to addressing a broad range of issues which affect the health, wellbeing and safety of women who use substances in pregnancy is required[5]
Risk factors/ indicators	• Substance use during pregnancy is more common among women who: o Have co-existing mental health problems[34,35] o Experience domestic violence o Are homeless o Are otherwise marginalised and/or disadvantaged in society[36] o Self-report current or past substance use/dependence o Present late for antenatal care or have received no antenatal care[5] o Have had a previous unexplained fetal demise o Have a history of trauma or incarceration
Barriers to care[2,3,20,35,37,38]	• Personal factors—shame, stigma, guilt, lack of family support, substance-using partner, fear of losing children, concomitant psychosocial issues (e.g. transportation, childcare), lack of motivation to change • Systemic factors—lack of access to appropriate treatment services for pregnant women, negative attitudes of health care providers, fragmented healthcare services
Communication	• Effective and non-judgemental communication within a multidisciplinary team may: o Assist in building relationships o Encourage open dialogue o Allow the woman to disclose substance use, and allow for early intervention and referral • Recognise and reflect that stereotypical assumptions associated with substance use can impact communication and care provision • Commence information sharing about substance use early in pregnancy • Refer to Queensland Clinical Guidelines *Standard care*[39]
Timing of assessment	• Routinely screen women for signs of substance use at the initial antenatal appointment and at each subsequent visit o Consider a multidisciplinary approach, particularly continuity of care, to provide comprehensive support and care at each clinical encounter o Engage early with neonatal teams, as required, to discuss types of substances used and potential interventions required at birth • In addition to universal screening, consider a risk based approach (e.g. late presentation for antenatal care) to assist in identifying potentially missed cases[33]
Tools	• Use recognised tools (e.g. Pregnancy Health Record) to screen for substance use (past and present)[20,40] • Include questions on the use of substances including: o Prescription medications o Opioid replacement therapies o Over the counter medications (e.g. paracetamol, herbal and other complimentary therapies) o Other non-prescribed substances/medications (e.g. benzodiazepines, methamphetamines), inhalants, alcohol, and/or chewable products) • Consider questions on substance use including[41]: o Past/present intravenous (IV) substance use o Frequency of alcohol consumption in the month before pregnancy o Home environment and social supports o Individual attempts to cease substance use o Individual perception of severity of substance use

3.2 Risk mitigation

Table 8 Substance screening

Substance	Consideration
Assess use	• The first step in providing appropriate treatment is determining[34]: o Type of substances used o Frequency of substances used o Whether the woman is dependent on the substance o Readiness/motivation to change • Consider the 5 A's of intervention[34]: o Ask o Advise o Assess o Assist o Arrange • Offer drug screening, if clinically indicated (not routinely recommended)
Alcohol use	• Complete a recognised tool for screening alcohol use such as the: o Alcohol screening and brief intervention tool as per Pregnancy Health Record[40] (PHR) o Alcohol use disorders identification test (AUDIT-C)[42] o T-ace questionnaire • For women who report heavy alcohol use[34]: o Consider a supervised detoxification (preferably as an inpatient) as rapid withdrawal may lead to fetal distress o Focus on psychological and social approaches incorporating outreach support throughout pregnancy and postpartum ▪ Refer to section 3.4 Mental health care and referral o Consider nutritional advice and/or supplementation[5] (e.g. folic acid, thiamine and/or vitamin B12) • Refer to section 4 Pharmacological treatment for substance use
Tobacco use (including e-cigarettes)	• Complete a recognised tool for screening tobacco use such as the: o Tobacco screening and brief intervention as per PHR[40] o Five A's of tobacco and nicotine cessation[43] • Recommend cessation preferably before 15 weeks gestation in preference to 'cutting down' (harm reduction) [43] o Discuss resources to support quitting (e.g. GP, Safer Baby Bundle[44]) o Offer *Quitline* number • Refer to section 4.1 Pharmacological treatment for substance use
Opioid dependence	• Limited information regarding the safety of naltrexone in pregnancy however, if indicated, may be used during breastfeeding • Recommend women currently treated with suboxone (buprenorphine and naloxone) switch to subutex (contains buprenorphine only) o Use a multidisciplinary approach and liaise with the woman's known substance dependence providers, such as Alcohol and Drug Services (AODs) for ongoing management and dose adjustments (when required)
Referral and follow-up	• Refer to appropriate antenatal care services (e.g. specific substance/alcohol pregnancy care services, social worker, midwife navigator/continuity of care provider, maternal Aboriginal health worker) • Support engagement with treatment and prevention programs (e.g. opioid treatment/replacement program, *Quit* smoking program) • Discuss maternal and fetal risks of substance use during pregnancy o Engage early with neonatal teams, as required, to discuss types of substances used and potential interventions required at birth • Offer information about opioid replacements in pregnancy and lactation • Offer: o Written and online resources for woman and partner o Referral to local substance use support services o Referral to culturally appropriate support services • Refer to Queensland Clinical Guideline *Perinatal substance use neonatal*[45] • If multiple risk factors identified, consider need for child safety notification

3.3 Ongoing antenatal care

Table 9 Ongoing antenatal care

Aspect	Consideration
Routine care	• All routine antenatal care is indicated • Monitor for complications (e.g. increased risk of placental abruption) • If substance use identified, consider re-screening for hepatitis B and C, syphilis and human immunodeficiency virus (HIV) later in pregnancy[2] • If positive for blood borne viruses, use a multidisciplinary approach to care and refer to an infectious diseases specialist or hepatologist for ongoing management[46] • Wherever possible engage in continuity of care models
Hepatitis B[46]	• If serology demonstrates no immunity, consider need for immunisation • Vaginal birth does not increase the risk of vertical transmission/mother to child transmission (MTCT) • Without intervention, 90% of babies born to hepatitis B positive women acquire the infection o Discuss need for administering vaccination and immunoglobulin to baby within twelve hours of birth
Hepatitis C[46]	• Consider hepatitis C screening in higher risk women (e.g. current or previous IV substance use) • Treatment not recommended during pregnancy o Plan and discuss options for treatment in the postnatal period o MTCT may occur during childbirth, however no strategies demonstrated to reduce risk o Risk of MTCT is approximately 5%
HIV[46]	• MTCT may occur during pregnancy, birth or via breastfeeding o Risk of MTCT without intervention 13–40% • Elective caesarean section (CS) reduces risk of transmission • Support maintenance of antiretroviral therapy (ART) throughout pregnancy
Syphilis	• Refer to Queensland Clinical Guidelines *Syphilis in pregnancy*[47]
Fetal growth	• Risk of fetal growth restriction is increased with maternal substance use[48] o Assess fetal growth by routine measurement of symphysis-fundal height and measure, plot and compare at each consecutive visit o Consider additional fetal growth scans in the third trimester, particularly if there is ongoing substance use during pregnancy[49] o Refer to the Safer Baby Bundle[44]
Anaesthetic assessment	• Consider early anaesthetic review to discuss[48] o Optimisation of analgesia during labour, birth and postpartum o Venous access (if required due to history of IV substance use) • Refer to section 5.1 Care and pain management in labour
Birth planning	• Offer discussions about o Pain relief and analgesia options during birth o Expectations around the care of the baby and parent involvement o NAS [refer to Queensland Clinical Guideline *Perinatal substance use: neonatal]*[45] o Circumstances requiring baby to be admitted to neonatal unit
Newborn feeding	• Engage early in conversations around feeding choice/options • Refer to Section 6.1 Feeding and postnatal considerations
Child safety	• Healthcare professionals are mandated reporters • Refer to Child Safety Services if there is concern that[50]: o The child has been significantly harmed or is at risk of significant harm o An unborn child will be at risk of significant harm after birth
Discharge preparation	• Commence early discussions about discharge and preparation for being a parent (including willingness and/or ability to care for the child) • Use a multidisciplinary approach to facilitate post-discharge care o Include known service providers, such as AODs, social work, Family and Child Connect (FaCC), Intensive Family Support (IFS) in planning • Refer to Queensland Clinical Guideline *Perinatal substance use: neonatal*[45]

3.4 Mental health care and referral

Table 10 Mental health care and referral

Aspect	Consideration
Context	• Pharmacological treatment for management of mental health conditions during pregnancy is common and can affect the fetus • If medications are ceased, undesirable mental health effects on may be experienced[51,52] o A multidisciplinary approach to mental health care and pharmacological treatment is vital
Screening	• Screen for risk of antenatal and postnatal depression, psychological distress, other possible mental health issues and exposure to domestic violence o Refer to 3.1 Assessment of substance use • Use validated and recognised tools[40] (e.g. Edinburgh Postnatal Depression Scale (EPDS)) • Regularly offer opportunity to discuss emotional wellbeing[52]
Mental health care	• Anxiety and depression, bipolar disorder, schizophrenia or personality disorders may contribute to substance use in pregnancy, or may be the effect of substance use[2] • Many women with substance use are also diagnosed with other mental health considitions[53] o The interaction between substances and mental health may worsen symptoms of both • Early identification and referral to appropriate services may provide support during pregnancy[54] • If mental health care concerns suspected, refer to a mental health service, liaison psychiatrist, or community mental health service[2]
Management and care planning	• Care planning with a woman who has a mental health condition in the perinatal period assists with[52]: o Provision of timely care, referral and treatment o Co-ordinating the integrated care plan with the multidisciplinary team o Scheduling antenatal monitoring o Transparency on the planned interventions and agreement on the desired outcomes o Effective sharing of information between services and with the woman including: ▪ Child protection concerns (if applicable) ▪ Breastfeeding considerations ▪ Pharmacotherapy (if applicable) ▪ Possible harms associated with treatment versus the possible consequences of no treatment ▪ What may happen if treatment is stopped or changed, particularly if pharmacological treatments for mental health are stopped abruptly
Postnatal considerations	• Early discussions around postnatal expectations can assist with maintaining strong rapport and relationships with healthcare providers including[52]: o Healthy diet and regular, suitable physical activity o Structured education (often in groups) on preparation for practical aspects of childcare and mental health • Support feeding choice considering women's substance use o Discuss treatment (medication and psychological) options that will support a woman to breastfeed if she chooses o Refer to section 6 Postnatal care o Refer to Queensland Clinical Guidelines *Perinatal substance use: Neonatal*[45] • Complementary therapies for mild depression o Sleep deprivation is a common trigger for mental health relapse so early discussions in the antenatal period around external supports (family, structured group therapy) may be beneficial

4 Pharmacological treatment for substance use

Pregnancy is an opportune time to support women with substance use dependence to move towards positive behaviour changes. Irrespective of the medication, psychosocial interventions and a multidisciplinary approach to care are integral components of treatment.[1,49]

4.1 Pharmacological treatment for substance use in pregnancy

Table 11 Pharmacological treatment for substance use in pregnancy

Nicotine dependence	
Context	• Offer a combination of psychosocial, behavioural and pharmacological treatment when supporting smoking cessation[38] or use of chewable nicotine products o The likelihood of smoking abstinence is improved when nicotine replacement therapy (NRT) is used in combination with behavioural support, compared to behavioural support alone (RR 1.37, 95% CI 1.08 to 1.74)[55]
Treatment	• NRT, varenicline and bupropion are effective pharmacotherapies for smoking cessation, but limited data about their safety in pregnancy[56] o Varenicline, bupropion and e-cigarettes are not routinely recommended[55]
Considerations	• Discuss all forms of smoking as women may not intuitively equate alternative forms of nicotine use with tobacco[43] (e.g. chewing tobacco) o Lack of evidence regarding safety of e-cigarettes in pregnancy[57] • Intermittent short acting forms (e.g. gum, lozenges or spray) are preferred over continuous-delivery nicotine (patches) for pregnant or breastfeeding women[57] o If NRT patches used, advise to remove patch before going to bed to protect fetus from continuous nicotine exposure[58] • Short acting forms of NRT can be used in conjunction with continuous delivery forms for women with breakthrough nicotine requirements
Alcohol dependence[59]	
Treatment	• Inpatient management with benzodiazepine treatment, may be required for those with acute alcohol dependence—liaise with AODs • Thiamine may be used to treat deficiencies in alcohol dependence—discuss with pharmacy the need for folic acid in conjunction with thiamine
Initial dose	• Thiamine 100 mg daily (preferably by intramuscular or intravenous injection)[2] for at least 5 days
Maintenance dose	• Thiamine 100 mg daily orally with multivitamins daily[59]
Considerations	• Commence a recognised tool, such as an alcohol withdrawal scale
Benzodiazepine dependence[60,61]	
Treatment	• Benzodiazepine
Initial dose	• Commence with a dose that is equivalent to the estimated total daily benzodiazepine intake in 3 or 4 doses each day at fixed times
Maintenance dose	• Gradually taper each week over several weeks
Considerations	• Benzodiazepines are occasionally used for short term use[16] to manage anxiety, or alcohol withdrawal symptoms, until other treatments take effect but are not safe for long term use[2] • Aim to decrease/cease by the third trimester due to high risk of NAS • Diazepam is the most commonly used for treatment of dependence o Liaise with AODs and the multidisciplinary team
Opioid dependence	
Treatment	• Either methadone or buprenorphine • Preferrable to medically supervised withdrawal[59] • Associated with higher relapse rates and an increase in catecholamine release which may be indicative of fetal distress[60]
Considerations	• Aim is to alleviate symptoms and reduce cravings
Cannabis, cocaine, and amphetamine type substances	
• There is limited literature to support pharmacological treatment during pregnancy for cannabis, cocaine, and amphetamine type substances	

Refer to an Australian pharmacopeia, such as the Australian Medicines Handbook, for full details of all substances.

5 Intrapartum care

5.1 Care and pain management in labour

Table 12 Pain management

Aspect	Consideration
General principles	• Birth is a stressful time for many women, especially if history of trauma[62] o May diminish coping mechanisms and lead to feelings of helplessness or loss of control o May trigger re-traumatisation • Continuity of care by known carer reduces interventions and improves birthing outcomes • Analgesic requirements may be increased due to opioid tolerance[49] o Offer both pharmacological and non–pharmacological options
Non-pharmacological options	• Transcutaneous nerve stimulation (TENS) machine • Water immersion, if available and appropriate • Heat packs • Mobilisation • Massage
Opioid dependency	• Avoid inhaled nitrous oxide as may be less effective in opioid-dependent women and may increase the risk of sedation with concurrent use[48] • Consider use of neuraxial analgesia (epidural or combined spinal-epidural)[48] o No evidence to suggest that opioid-dependent women tolerate birth less than women who are non-opioid-dependent • Opioid antagonists may precipitate opioid withdrawal[48]
Methadone or buprenorphine	• Recommend continuation of prescribed daily doses throughout labour to treat the underlying pain condition or substance use, and to prevent acute withdrawal[48,49] o Consider dividing the dose of maintenance medication (buprenorphine or methadone) into 2–3 doses to improve pain control • Administer usual methadone dose in liquid form • Opioids: o Safe and effective o May require higher doses and more frequent administration for analgesia ▪ Analgesic effect of opioids may be reduced by buprenorphine ▪ Liaise with acute pain team/AODS o Titrate to response • Consider regional anaesthesia if non–pharmacological means are ineffective[49]
Intractable pain	• Pain due to unknown pathology that may be masked by substance use • Exclude pathological causes of pain (e.g. pyelonephritis and sacroiliac joint abscess, placental abruption)
Anaesthetic agents not recommended	• If psychostimulant use suspected or known, ketamine is contraindicated • Catecholamine effects may result (e.g. hypertension and tachycardia)
Timing and mode of birth	• Consider risk factors including HIV and vertical transmission of blood borne viruses • Advise early presentation in labour to minimise need for self-medication and to monitor substance use • Insufficient evidence to support induction of labour (IOL) for a fetus with normal growth patterns • If complex or dependent substance and/or alcohol use allow time prior to elective (CS) or IOL to: o Admit the woman to hospital o Assess substance use o Manage and stabilise medication, if required

5.2 Care of baby at birth

Table 13 Care of baby at birth

Aspect	Consideration
Preparation for birth	• Use clinical judgement to assess and anticipate the need for resuscitation (e.g. recency and type of substance use, limited/no antenatal care) • Communicate with other members of the healthcare team about the impending birth as required (e.g. if resuscitation is anticipated)
Resuscitation	• All other usual resuscitation procedures as indicated o Refer to Queensland Clinical Guideline *Neonatal resuscitation*[63]
Opioid antagonist	• If maternal opioid or polysubstance exposure o Do not use opioid antagonist agents (naloxone or naltrexone) o May precipitate severe rapid onset of seizures related to withdrawal
Initial care	• Admit baby to postnatal ward with mother unless otherwise indicated o Support rooming-in unless there are clinical concerns about the baby's condition • Provide routine postnatal care and monitoring o Refer to Queensland Clinical Guideline *Perinatal substance use: Neonatal*[45]
Signs of withdrawal	• Suspect NAS and investigate to determine diagnosis in any baby who: o Is unsettled o Is irritable o Has a high pitched cry o Has tremors or jitteriness o Does not feed well and/or has diarrhoea • Refer to Queensland Clinical Guideline *Perinatal substance use: Neonatal*[45]

6 Postnatal care

6.1 Feeding and postnatal considerations

Support the woman's choice of feeding and provide guidance and education. Refer to the Queensland Clinical Guideline *Establishing breastfeeding*[64].

Table 14 Feeding and postnatal considerations

Aspect	Consideration
Context	• Substantial rebound rates of alcohol use, binge drinking, tobacco and cannabis use in the postpartum period • Postpartum depression increases risk of substance use or return to substance use • Support choice of feeding method (e.g. breastfeeding or formula feeding) with concurrent advice regarding risks associated with specific substances used • Support co-location of baby with mother unless there are clinical concerns
Post-birth safety	• Consider potential effects of maternal substance use on baby: o Maternal somnolence o Lack of adequate sleep-wake cycling o Risk of injury to baby including accidental smothering • Perform routine postnatal vigilance observations ('rounding') of baby and assess for signs of withdrawal • Refer to Queensland Clinical Guidelines *Perinatal substance use: Neonatal*[45]
Breastfeeding considerations	• Refer to Appendix A: Breastfeeding recommendations by substance

6.2 Postnatal care

All routine postnatal care is indicated. Refer to Queensland Clinical Guidelines *Standard care.*[39]

Table 15 Postnatal considerations

Aspect	Consideration
Context	• Additional support from a multidisciplinary healthcare team is required to manage complex medical and psychosocial needs[37] • Pregnancy is an opportune time to initiate the establishment of positive health behaviours—it is important to continue this in the postnatal period[48]
Pharmacological considerations	• Consider a multimodal approach to pain management such as nonsteroidal anti-inflammatory drugs (NSAIDs) and paracetamol[49] • Assist to continue[49] with or initiate pharmacological management including NRT in the postnatal period • Discuss postnatal pain medication management[48] o If opioids required for postnatal pain providing a script for a limited supply may ensure the medications are not used inappropriately and may encourage them to return for follow up appointments • If treated with methadone or buprenorphine during pregnancy, communicate early with outpatient treatment programs (e.g. AODS) about postnatal management on discharge[48] o Liaise with the multidisciplinary team whether inpatient detoxification is appropriate[48]
Length of stay	• Early discharge is not usually recommended—consider individual circumstances when planning discharge including, but not limited to: o Appropriate monitoring of NAS o Appropriate monitoring of mother crafting o Monitoring and management of symptoms of maternal substance withdrawal and/or concurrent mental health concerns • Support woman to remain in hospital with baby experiencing NAS, where possible, as patient or border • Consider child protection issues (as required)
Mental health considerations	• Continue postnatal surveillance and referral for treatment of postpartum mood and anxiety disorders • Refer to 3.4 Mental health care and referral
Parent/carer education	• Breastfeeding safety [refer to section 6.1 Feeding and postnatal considerations] o Refer to Queensland Clinical Guidelines *Perinatal substance use: Neonatal*[45] • Safe sleeping including smoke free environment, safe sleeping environment and positioning and if continuing substance use risk minimisation • Discuss SUDI/SIDS and tobacco risk • Parentcraft and appropriate care of the baby (including responding early newborn cues) • Encourage positive parent/infant interaction and engagement • Substance use and care of baby including safety plan (e.g. alternative carer for baby if planning to substance use) • Engage with social work for supportive discharge planning

6.3 Discharge

Table 16 Discharge considerations

Aspect	Considerations
Context	• Timely and thorough written discharge plans, initiated during pregnancy and prepared in consultation with the woman assist with adequate referral to community support services
Discharge considerations	• Discuss considerations such as: o Involvement of Department of Child Safety and notification of discharge o Adequate housing arrangements and support available o Ability and willingness to care for her baby o Ongoing mental health issues o Continued substance dependence/use o Pain relief requirements on discharge[37] and safe storage of the medications • Refer to Queensland Clinical Guidelines *Perinatal substance use Neonatal*[45] for baby discharge criteria
Referral	• Discuss community support services available after discharge including, but not limited to: o Community based services o General practitioner/social work services o Aboriginal and/or Torres Strait Islander liaison healthcare services (and other cultural liaison services) o Home visiting midwife/child health nurse o Substance and alcohol support services o Early intervention programs • Ensure formal handover from hospital to community services • Refer for ongoing surveillance and management of medical conditions, (e.g. liver disease and sexually transmitted diseases)[37]
Contraception	• Discuss options available based on individual preference[48] o Particularly long-acting reversible methods • Provide relevant information and referrals • Discuss sexually transmitted infections and safe sex practices • If substance use is continuing discuss future pregnancy planning to facilitate planned rather than unplanned pregnancies[49] • Refer appropriately to the necessary outpatient/community services to support choice
Longer term follow up	• Consider further assessment and use clinical judgement for long term follow up including, but not limited to: o Cumulative risk factors o Domain of developmental difficulty o Quality of the care-giving environment • Ophthalmological follow up for myopia and strabismus • Growth, neurodevelopment, emotional and behavioural problems o Developmental follow up is suggested for at least 12 to 24 months • Intervention programs for speech and language, occupational and behavioural issues are beneficial • Refer baby and parents to available infant mental health or child and youth mental health services

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Appendix A: Breastfeeding recommendations by substance

Assess breastfeeding decisions on an individual basis and type of substance use. Refer to references below for additional information and support in decision making.

Substance	Breastfeeding (BF) consideration
Opioid/opiate	• May provide milder withdrawal signs • May reduce requirement for pharmacological treatment **Recommendation** • Encourage BF unless other contraindication
Benzodiazepines	• Short acting (e.g. temazepam) unlikely to affect baby if short term use • Long acting, (e.g. clonazepam) may cause apnoea and sedation **Recommendation** • Assess BF decisions on an individual basis • Avoid BF immediately after taking short acting benzodiazepines • Avoid long-acting benzodiazepines
Amphetamines	• Effect on neurological development not well studied • Dosages for *medical* indications unlikely to cause adverse effects • Excretion in breast milk may be dose-dependent **Recommendation** • Discourage use when BF • After individual use, avoid BF for 24–48 hours
Cocaine	• Serious adverse reactions reported **Recommendation** • If regular use, BF not recommended • After individual dose, avoid BF for 24 hours
Alcohol	• More than two standard drinks per day linked to decreased lactation, decreased feeding and arousal, and psychomotor development **Recommendation** • Limit alcohol to two standard drinks in a day • Avoid consumption immediately before feeding • If excessive use, consider expressing breast milk in advance • If chronic alcohol use avoid BF
Codeine	• Dose-response relationship between maternal use and neonatal toxicity • Associated with neonatal bradycardia, apnoea, cyanosis, drowsiness and death **Recommendation** • Contraindicated for BF women
Cannabis	• The psychoactive component (tetrahydrocannabinol (THC)) is excreted in breast milk • May have negative neurodevelopmental outcomes but unclear if risks related to antenatal exposure, BF or multiple substance use • Smoke exposure may increase risk of SUDI **Recommendation** • Discourage use when BF • Avoid other co-exposures such as alcohol and tobacco • Avoid BF within 1 hour of inhaled use (to reduce risk of exposure to highest concentration of THC in breast milk)
SSRI/SNRI	• Minimal amounts found in breast milk • Fluoxetine higher concentrations in breast milk than other SSRI • Sertraline generally the preferred antidepressant during BF **Recommendation** • Encourage BF
Tobacco	• Exposure to environmental smoke increases risk of respiratory allergy and SUDI **Recommendation** • Encourage BF • Support smoking cessation strategies (e.g. nicotine patch/gum) • Advise to avoid infant exposure to second-hand smoke

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