



Addressing Perinatal Sleep Difficulties

CHRISTINA L. WICHMAN, DO

PROFESSOR OF PSYCHIATRY & BEHAVIORAL
MEDICINE AND OBSTETRICS & GYNECOLOGY
DIRECTOR, WOMEN'S MENTAL HEALTH
MEDICAL DIRECTOR, THE PERISCOPE PROJECT



Objectives

Understand basic changes in sleep over pregnancy

Identify risk factors for poor sleep during pregnancy

Be able to explain the basics of CBT-I

Describe the risks of sleep aids or in utero exposure to a fetus

Understand the relationship between sleep and postpartum depression



Sleep Difficulty Overview

Frequent and major problem

Underdiagnosed and undertreated

Anatomic, physiologic, hormonal, and psychosocial factors

Worsen pre-existing sleep disorder

Decreased sleep efficiency in **normal** pregnancy

- Increased nocturnal awakenings of increasing length
- Not because of difficulties falling asleep

Associations:

- Gestational diabetes, preeclampsia, pregnancy-induced hypertension, depression, and prolonged labor/cesarean birth

Modifiable!

1st Trimester Changes

Impaired by 10th Week



Total Sleep Time



Napping



Wake After Sleep Onset



Sleep Efficiency

2nd Trimester Changes

Initially better than first



Total Sleep Time



Wake After Sleep
Onset



Sleep Efficiency

3rd Trimester Changes

75-98% report sleep disturbances by end



Nocturnal Sleep
Time



Sleep Efficiency



Total Sleep Time



Number of Naps



Wake After Sleep
Onset

Risk Factors

Psychosocial Factors

Nulliparity or unplanned pregnancies

Lack of psychosocial support in first time pregnancies

Anxiety about labor/delivery and motherhood

Employment

Physiologic and Anatomic Factors

Pain, heartburn, leg cramps

Vivid dreams

Irregular uterine contractions, fetal movements

Risk Factors – Sleep Disordered Breathing

Abdominal Weight Gain

Nasal Congestion

Respiratory System Changes

Risk Factors – Restless Leg Syndrome

Hormonal Changes

Iron Deficiency

Risk Factors - Insomnia

CONTROLLABLE

Noise from children

Negative body image

Nighttime light exposure

Smoking

Bed partners

UNCONTROLLABLE

Single parent

30+ year old

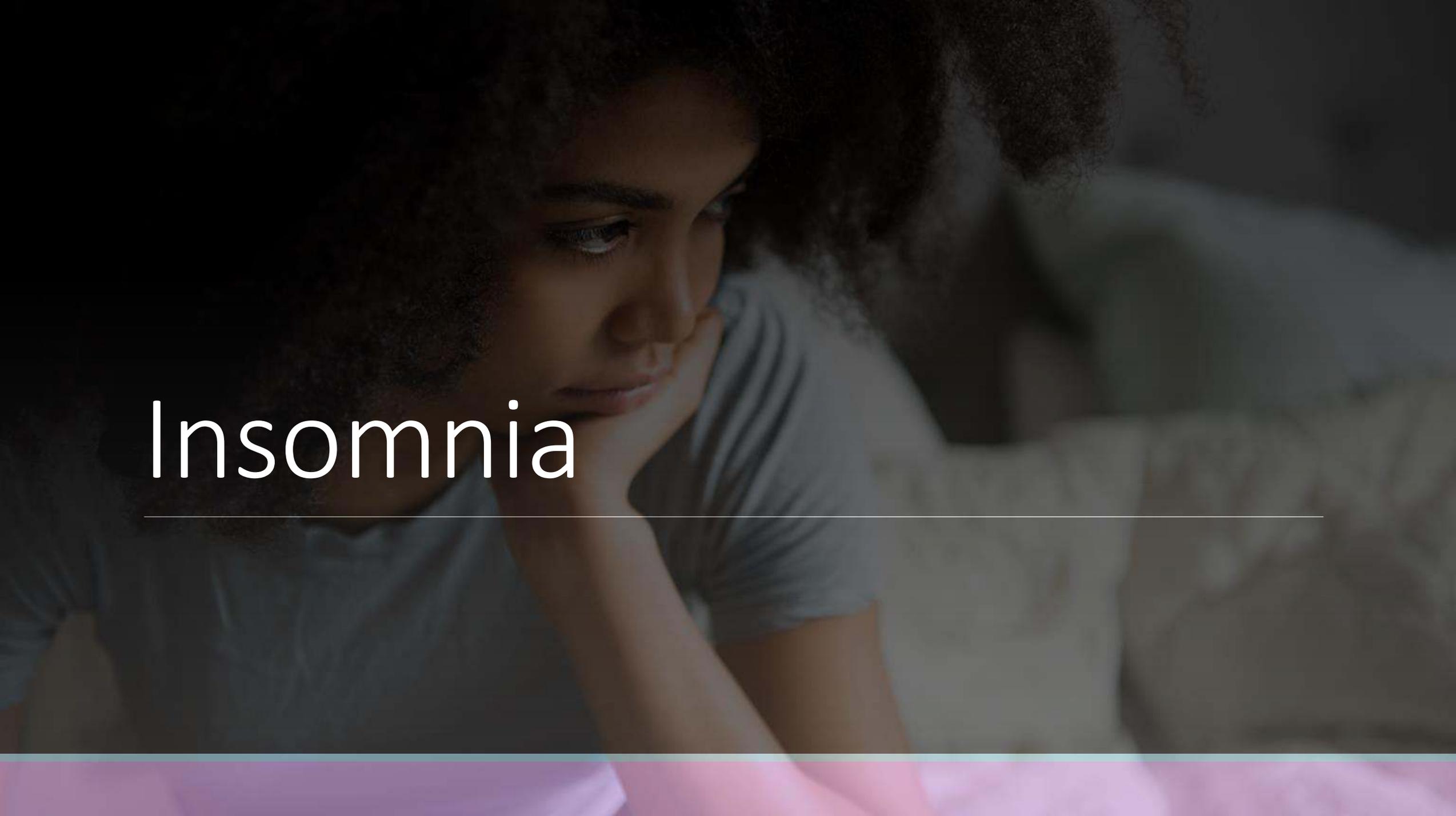
Pre-pregnancy affective disorder

Perinatal depression

Nulliparity

Preeclampsia

Pregnancy induced hypertension

A young woman with dark, curly hair is lying in bed, looking down with a thoughtful or concerned expression. She is wearing a light-colored t-shirt. The background is dark, suggesting a nighttime setting. The overall mood is contemplative and somber.

Insomnia

DSM-V Insomnia Diagnostic Criteria

A predominant complaint of dissatisfaction with sleep quantity or quality, associated with one (or more) of the following symptoms:

- Difficulty initiating sleep
- Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakenings.
- Early-morning awakening with inability to return to sleep.
- The sleep disturbance causes clinically significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning.
- The sleep difficulty occurs at least 3 nights per week for at least 3 months
- The sleep difficulty occurs **despite adequate opportunity for sleep.**
- The insomnia is not better explained by another sleep-wake disorder
- The insomnia is not attributable to the physiological effects of a substance
- Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia.

Pregnancy Associated Insomnia

Severely under-researched

52% of pregnant women

Highest prevalence in third trimester

Maladaptive sleep behaviors may worsen symptoms

Many women do not seek treatment

- Believe insomnia will subside after giving birth
- Want to avoid medications



Diagnostic Overview

Full medical and psychiatric history

- Is the insomnia an effect of another condition or its own condition?

Assess nocturnal and daytime sleep-related symptoms

Ask about thoughts and behaviors before bed, while trying to fall asleep, during nighttime awakenings, and after final wake time

Diagnostic Difficulties

Difficult to diagnose during pregnancy and postpartum

Need adequate sleep opportunity

Differentiating pregnancy-discomfort awakenings and insomnia

May be comorbid condition of sleep disordered breathing or depression

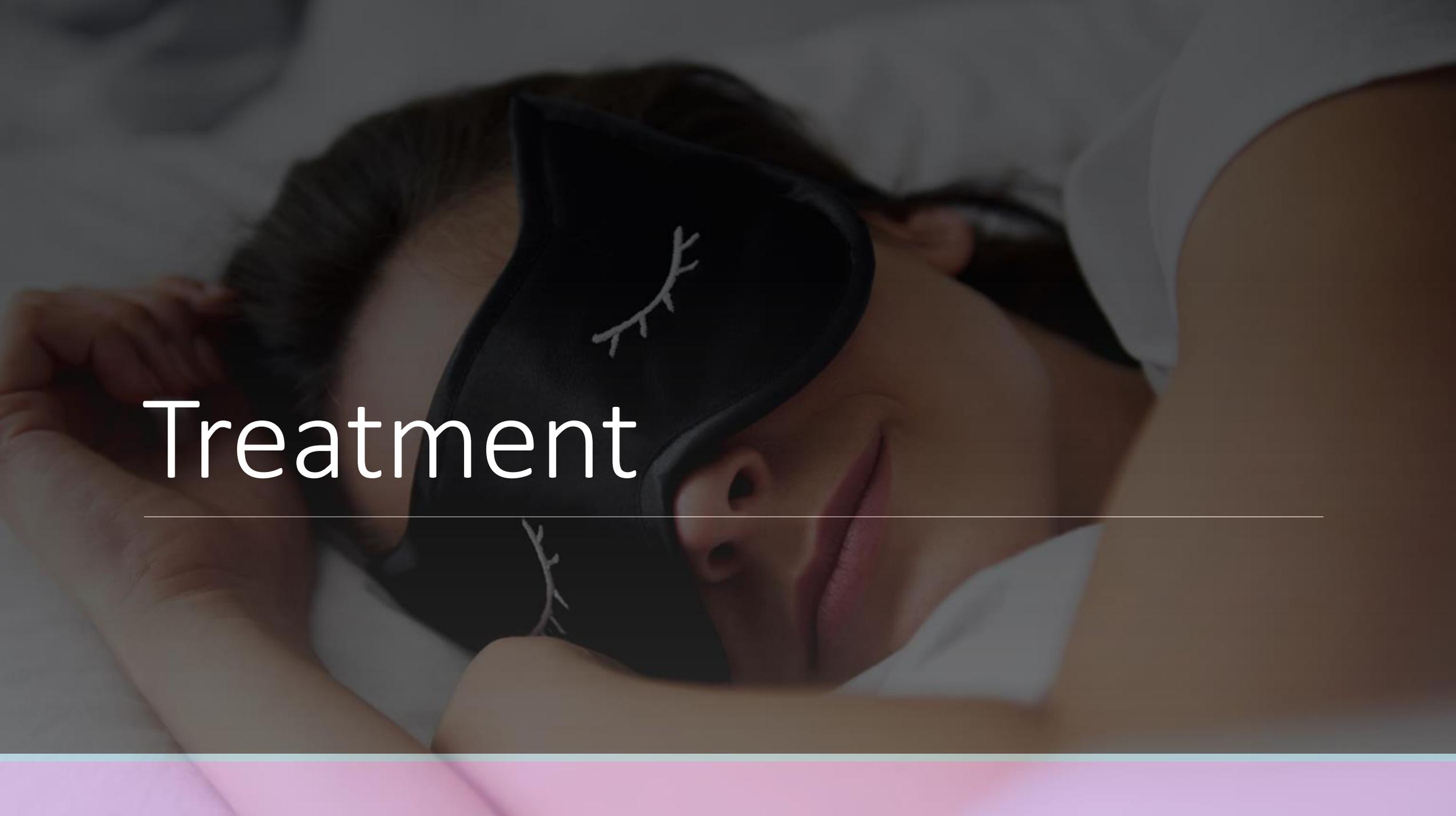
Must take these into account

Diagnostic Tools

Polysomnography not needed unless sleep apnea, limb movement disorder, an injurious parasomnia is suspected, or usual treatment approaches fail

2-week sleep diary

- Bedtime
- Time it takes to fall asleep
- Number of awakenings
- Duration of awakenings
- Rise time



Treatment

Treating Restless Leg Syndrome

Treat iron deficiency

- IV iron if oral iron cannot raise ferritin > 50 ng/mL

Treat folate deficiency

Good sleep hygiene

- Avoid caffeine, nicotine alcohol
- Avoid sleep deprivation

Relaxation techniques

Walking, stretching, massaging legs, heat application

Pharmacologic treatment 3rd trimester for severe RLS

- Levodopa, clonazepam, or opioids at lowest effective dosage

Treating Nocturnal GERD

No food intake within 3 hours of bedtime

Elevate head

Sleep on left side

Avoid spicy, acidic, and fried foods

Pharmacologic:

- Try nonpharmacologic first
- Antacids or sucralfate as needed



Cognitive Behavioral Therapy for Insomnia (CBT-I)

First line treatment for insomnia

Preference among pregnant women

Winkelman, J. W. (2015). Insomnia disorder. *New England Journal of Medicine*, 373(15), 1437–1444. <https://doi.org/10.1056/nejmcp1412740>

Bacaro V, et al. Interventions for sleep problems during pregnancy: A systematic review. *Sleep Med Rev*. 2020 Apr;50:101234. doi: 10.1016/j.smrv.2019.101234. Epub 2019 Nov 14. PMID: 31801099.

Cognitive Behavioral Therapy for Insomnia (CBT-I)

Component	Purpose	Patient Instructions
Sleep Restriction	Enhance sleep drive and normalize circadian rhythm	Limit time in bed to perceived total sleep time, but not less than 5-6 hours. Patient can choose sleep period based on their preference. As sleep efficiency improves, increase time in bed
Stimuli Control	Strengthen psychosomatic association between bed and sleep	Try to sleep at night only when sleepy. Get out of bed and do leisure activity in dim light if unable to sleep for 30 minutes, at any point in the night. Use bed only for sleep and sexual activity.
Sleep Hygiene	Limit behaviors that impair sleep or cause inappropriate arousal	Limit caffeine, alcohol, keep bedroom dark, avoid bright light exposure 1 hour before bed, avoid napping, increase exercise (not close to bedtime), place bedroom clock in out of sight area

CBT-I Continued

Component	Purpose	Patient Instructions
Cognitive Therapy	To challenge and alter inaccurate beliefs about the health and daytime functioning consequences of insomnia	Maintain realistic expectations. Examine previous insomnia episodes. Identify and challenge instances of catastrophizing ramifications of insomnia
Relaxation Techniques	Create environment conducive to sleep	Try progressive muscle relaxation, breathing exercises, mindfulness techniques



Pharmacological Treatment

Dietary Supplementation: Magnesium

Small studies looking at non-pregnant patients for use with insomnia which have had controversial data supporting improvement in sleep

Multiple studies looking at use of magnesium supplementation on pregnancy outcomes

- No differences in major malformations or pregnancy outcomes reviewed, although quality of studies varied

Relief for pregnancy-induced leg cramps (which may impact sleep)

Clinical use guidelines:

- Typically recommend magnesium oxide 400 mg at bedtime.
- May be beneficial to try as initial strategy given lack of harm to pregnancy.

Over the Counter Sleep Aids: Diphenhydramine and Doxylamine

Long term use of diphenhydramine despite relatively little data in pregnancy

Plethora of data given FDA approval of doxylamine for utilization in pregnant women

Diclegis (combination of doxylamine succinate and Vitamin B6) and Bonjesta (also combination of doxylamine succinate and Vitamin B6, but in higher dose and extended release) approved by FDA for utilization in pregnant women with nausea/vomiting

Two separate meta-analyses have assessed pregnancy outcomes following first trimester exposure to the combination of pyridoxine and doxylamine: over 200,000 exposures without an increased risk for major malformations

Most common side effect is sedation!

Benzodiazepines

Early reports suggested in an increase risk of cleft lip/palate

- “Worst” data suggests rate of 0.7%, but NOT confirmed by more recent studies

UK primary care database study: 1990-2010

- Compared to 19,193 children whose mothers had diagnosed depression and/or anxiety but no first trimester drug exposures; rate of malformations = 2.7%

Toxicity in newborns

- Sedation, floppy baby syndrome, respiratory depression

Concern for potential of physiological dependence and withdrawal for infant with chronic use throughout pregnancy

Clinical use guidelines:

- Sparingly, however PRN use can be appropriate
- Recommend less than three doses weekly

Zolpidem (Ambien)

Several studies - only one large study completed

Nationwide population-based study (Taiwan)

- N = 2,497 who received treatment during pregnancy

No increased risk of major malformations

Adjusted odds ratios (ORs) for adverse pregnancy outcomes:

- LBW infant: 1.39 (95% CI = 1.17-1.64)
- Preterm deliveries 1.49 (95% CI = 1.28-1.74)
- SGA infants 1.34 (95% CI = 1.20-1.49)
- Cesarean delivery 1.74 (95% CI = 1.59-1.90)

Excludes women with a formal psychiatric diagnosis; do not assess symptoms of depression or anxiety or insomnia severity

Do these results reflect the adverse effects of exposure to zolpidem? Or are they related to an underlying mood or anxiety disorder?

Clinical use guidelines:

- Sparingly, however PRN use can be appropriate
- Recommend less than three doses weekly

Zaleplon (Sonata)

Primarily utilized for initial insomnia (falling asleep) given its short half-life (60-90 minutes)

No data with utilization in pregnancy

Transfer rate into breastmilk appears to be low

Clinical guidelines:

- Avoidance of use during pregnancy if possible given lack of data
- In postpartum period, may be helpful to manage initial or middle insomnia (post awakening with infant) with limited time to sleep, however need to have partner/support available to care for baby if baby were to awaken shortly after taking

Trazodone (Desyrel)

Very limited data specific to trazodone use in pregnancy

- n = 58, no increase in major malformations

Need to utilize knowledge of other similar medication classes (SSRIs and TCAs) to delineate risks with patients

Limited information with lactation, but appears that transfer rate into breastmilk is low

Longer half-life (5-13 hours), making it helpful with middle insomnia or sleep maintenance

- However, concern about morning grogginess

Melatonin

Typical dose of melatonin (1-3 mg) elevates blood melatonin levels 20x

Placenta produces melatonin

- Thought to be important to a normal, healthy pregnancy

Animal studies: supplementation with melatonin decreases the risk of pre-eclampsia, preterm birth and intrauterine growth retardation (IUGR)

- Studies of melatonin in humans with IUGR and pre-eclampsia are in early phases

Animal studies have shown importance of melatonin in pregnancy

- Night-time concentrations of melatonin increase > 24 weeks of gestation.
- There is solid evidence that melatonin is neuroprotective and plays an important role in training circadian rhythms in the developing fetus; however, melatonin may have other important actions outside of the brain

Avoidance secondary to lack of evidence; natural does not always mean “safer”

Comparison of Sleep Aids for Use in Pregnancy

AS NEEDED UTILIZATION

OTC sleep aids (not melatonin) *

- Doxylamine and diphenhydramine

Low dose benzodiazepines *

Zolpidem *

Zaleplon

CHRONIC, NIGHTLY USE

OTC sleep aids (not melatonin) *

- Doxylamine and diphenhydramine

Mirtazapine *

Sedating tricyclic antidepressants *

Trazodone

* = more data with utilization in pregnancy

Sleep Aids and Breast Milk Supply

Majority of sleep medications will NOT impact lactation/breast milk supply

However, any medication with anti-cholinergic properties CAN decrease breast milk production:

- OTC: diphenhydramine and doxylamine
- Mirtazapine
- Tricyclic antidepressants >> trazodone

Less concern if supply is well-established, however patients may still experience decrease in supply

Be certain to advise patients about this risk during pregnancy as well as postpartum period

Sleep and the Postpartum Period



Sleep and Postpartum Depression

Significant sleep loss and infant sleep problems → increased risk of postpartum depression

Night awakenings related to negative mood one month postpartum

Mothers exhibiting MDD symptoms at four and eight weeks postpartum reported:

- Getting less than six hours of sleep in one 24 hour period over the past week
- Being awakened by their baby 3+ times between 10:00 pm and 6:00 am

Infant sleep problems at 6-12 months associated with MDD symptoms in mothers

- May perceive infant's sleep more negatively
- May be more likely to report problems

Sleepiness Postpartum

If a sleep disorder developed during pregnancy, evaluate postpartum to see if continued treatment required

Excessive sleepiness, fatigue, or sleep loss

- Increased risk of morbidity and mortality
- Associated with:
 - Anemia
 - Infection
 - Thyroid dysfunction
 - Postpartum depression
 - Postpartum psychosis

Severe sleep deprivation in mothers with history of bipolar disorder

- Risk for development of postpartum psychosis
- Monitor inability to sleep or decreased need for sleep

Infant and Maternal Sleep

Brief behavioral interventions targeting infant sleep problems

- Decreased reports of infant sleep problems and maternal symptoms of depression

Parental training focused on developing healthy infant sleep patterns

- Improved parental competence and marital satisfaction
- Decreased parental stress

Research findings do not support switching to formula as a means to improve sleep

- No study on quality of sleep has reported any difference between parents who breastfed and those who used formula

Sleeping Arrangements

“Room-sharing” sleeping arrangement recommended by the American Academy of Pediatrics

- ABC: Alone, Back, Crib

Bed sharing mothers had more awakenings than mothers who roomed shared at 6 weeks

Occasional bed sharing may be more disruptive to self-reported sleep quality than routine bed sharing

Sociocultural factors

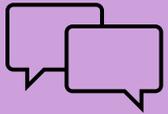
- Bed sharing is a common in Brazil, Japan, Malaysia, and Thailand



THE PERISCOPE PROJECT

PERINATAL SPECIALTY CONSULT PSYCHIATRY EXTENSION

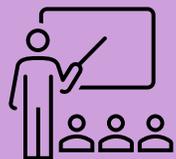
Perinatal psychiatric access program available to providers and professionals caring for pregnant & postpartum women struggling with behavioral health disorders offered at no cost.



Real time consultation between eligible provider and perinatal psychiatrist



Community resource information



Educational materials (live didactic, web-based presentations, toolkit)

Questions?

CHRISTINA L. WICHMAN, DO | THE PERISCOPE PROJECT

THEPERISCOPEPROJECT@MCW.EDU | THE-PERISCOPE-PROJECT.ORG

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