



Sleep disturbances in perinatal period

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Disclosures

Neither I nor my spouse have relevant financial relationships with any commercial interests.





Learning objectives

- Identify and diagnose common sleep disorders occurring in pregnancy/peripartum
- Describe conditions associated with sleep disturbances in pregnancy/peripartum
- Identify evidence-based interventions for common sleep disturbances associated with pregnancy and peripartum



SLEEP DISORDERS*:

- Too much
- Too little
- Things that go bump in the night (parasomnias)

*Not official AASM or DSM nosology

SLEEP DISORDERS common in pregnancy

- Too much

 - Apparent* hypersomnia...

- Too little

 - Primary insomnia, obstructive sleep apnea, restless leg syndrome...

- Things that go bump in the night (parasomnias)

AASM and DSM nosology you can look up when you get home

“Across all months of pregnancy, women experienced poor sleep quality (76%), insufficient nighttime sleep (38%), and significant daytime sleepiness (49%). All women reported frequent nighttime awakenings (100%), and most women took daytime naps (78%). Symptoms of insomnia (57%), sleep-disordered breathing (19%), and restless legs syndrome (24%) were commonly endorsed, with no difference across the month of pregnancy for insomnia, sleep-disorder breathing, daytime sleepiness, or fatigue. In addition, high rates of pregnancy-related symptoms were found to disturb sleep, especially frequent urination (83%) and difficulty finding a comfortable sleep position (79%).*”

*Mindell JA, Cook RA, Nikolovski J. Sleep patterns and sleep disturbances across pregnancy. *Sleep Med.* 2015 Apr;16(4):483-8. doi: 10.1016/j.sleep.2014.12.006. Epub 2015 Jan 5. PMID: 25666847.

Life-ON study 2024

Results: 439 pregnant women (mean age 33.7 ± 4.2 yrs) were enrolled. Poor quality of sleep was reported by 34% of women in the first trimester of pregnancy, by 46% of women in the third trimester, and by as many as 71% of women in the first month after delivery. A similar trend was seen for insomnia. Excessive daytime sleepiness peaked in the first trimester (30% of women), and decreased in the third trimester, to 22% of women. Prevalence of restless legs syndrome was 25%, with a peak in the third trimester of pregnancy. Polysomnographic data, available for 353 women, revealed that 24% of women slept less than 6 h, and 30.6% of women had a sleep efficiency below 80%. Sleep-disordered breathing ($RDI \geq 5$) had a prevalence of 4.2% and correlated positively with BMI.

Manconi M, van der Gaag LC, Mangili F, Garbazza C, Riccardi S, Cajochen C, Mondini S, Furia F, Zambrelli E, Baiardi S, Giordano A, Rizzo N, Fonti C, Viora E, D'Agostino A, Cicolin A, Cirignotta F; Life-ON Study Group; Group of Milan (Italy); Aquilino D, Barassi A, Del Giudice R, Fior G, Gambini O, Giordano B, Martini A, Serrati C, Stefanelli R, Scarone S, Canevini M, Fanti V, Stein HC, Marconi AM; Group of Turin (Italy); Raimondo E, Viglietta E; Group of Bologna (Italy); Santoro R, Simonazzi G, Bianconcini A; Group of Lugano (Switzerland); Meani F, Piazza N, Filippakos F, Gyr T. Sleep and sleep disorders during pregnancy and postpartum: The Life-ON study. *Sleep Med.* 2024 Jan;113:41-48. doi: 10.1016/j.sleep.2023.10.021. Epub 2023 Nov 11. PMID: 37984016.

Sleep disturbances are
~~common~~ **universal and**
expected in pregnancy



Percent of reported physical symptoms that disturbed sleep by month of pregnancy

	Nausea	Hunger	Reflux	Leg cramps	Frequent urination	Back pain	Hip/pelvic pain	Itchy skin	Uncomfortable position	Baby movement	Contractions
<2 months	32.4	41.2	28.4	20.9	72.3	49.3	31.3	30.4	56.1	1.4	2.0
3 months	48.9	48.9	31.4	20.4	82.5	54.7	38.7	32.1	72.3	9.5	4.4
4 months	28.9	43.7	33.1	24.6	84.5	50.7	40.1	26.1	81.7	19.0	3.5
5 months	18.3	34.4	34.4	31.3	80.2	51.1	45.8	26.0	76.3	27.5	3.1
6 months	15.8	34.6	49.6	42.1	78.9	60.9	55.6	28.6	81.2	55.6	5.3
7 months	10.8	35.7	55.4	47.8	86.0	68.2	64.3	21.0	86.0	64.3	12.1
8 months +	21.6	38.7	68.0	50.0	91.9	70.3	74.8	28.8	94.1	68.0	31.1
Total	24.9	39.5	45.0	35.2	83.1	59.0	52.1	27.6	79.4	37.8	10.6
Chi-squared/ ANOVA	74.82***	10.09	96.48***	69.02***	28.12***	31.42***	102.11***	5.97	88.74***	308.94***	135.54***
Effect size (ϕ)	0.26		0.30	0.25	0.16	0.17	0.31		0.29	0.54	0.36

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

*Mindell JA, Cook RA, Nikolovski J. Sleep patterns and sleep disturbances across pregnancy. *Sleep Med.* 2015 Apr;16(4):483-8. doi: 10.1016/j.sleep.2014.12.006. Epub 2015 Jan 5. PMID: 25666847.





Percent of reported psychological symptoms that disturbed sleep by month of pregnancy

	Vivid dreams	Worry about baby	Worry about pregnancy	Worry about labor/delivery
<2 months	43.2	34.5	37.2	16.2
3 months	52.6	50.4	54.0	26.3
4 months	52.1	36.6	37.3	21.8
5 months	46.6	32.8	34.4	16.0
6 months	39.1	41.4	41.4	23.3
7 months	42.7	37.6	29.9	25.5
8 months +	33.8	38.3	35.1	29.3
Total	43.5	38.7	38.0	23.2
Chi-squared/ANOVA	18.98**	11.64	21.46**	13.78*
Effect size (ϕ)	0.13		0.14	0.11

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

*Mindell JA, Cook RA, Nikolovski J. Sleep patterns and sleep disturbances across pregnancy. Sleep Med. 2015 Apr;16(4):483-8. doi: 10.1016/j.sleep.2014.12.006. Epub 2015 Jan 5. PMID: 25666847.



Associations with poor perinatal sleep

Recent findings: A systematic search was conducted according with PRISMA guidelines, and meta-analytic calculations were conducted. Totally, 34 studies were included and involved 835,021 perinatal women. Four meta-analysis yielded four statistically significant random-effect models. All models show that women with perinatal symptoms of insomnia possess increased odds of developing clinically relevant symptoms of **depression OR = 3.69**, $p = 0.001$ and **anxiety OR = 2.81**; $p < 0.001$, as well as increased **suicidal risk OR = 3.28***; $p < 0.001$, and **distress in the newborn OR = 2.80**** ($P = 0.007$). These findings emphasize the role of assessing and addressing insomnia during the perinatal period to mitigate its negative effect on maternal and infant mental health via sleep regulation.

Palagini L, Cipriani E, Caruso V, Sharma V, Gemignani A, Bramante A, Miniati M, Riemann D. Insomnia During the Perinatal Period and its Association with Maternal and Infant Psychopathology: A Systematic Review and Meta-Analysis. *Curr Psychiatry Rep.* 2023 Nov;25(11):617-641. doi: 10.1007/s11920-023-01463-3. Epub 2023 Oct 11. PMID: 37819491.

*suicidal ideation or behavior (including attempt), none studied completed suicide

**Poor mother-infant bonding, problems with long-term social-emotional development

Association with depression

Results: A total of ten studies involving 39,574 participants were included in our meta-analysis. Overall, women who experienced poor sleep quality during pregnancy were at a significantly higher risk of developing depression, with **antenatal depression 3.72 times higher, postpartum depression 2.71 times higher, and perinatal depression 3.46 times higher**, compared to those did not experience poor sleep quality.

Fu T, Wang C, Yan J, Zeng Q, Ma C. Relationship between antenatal sleep quality and depression in perinatal women: A comprehensive meta-analysis of observational studies. *J Affect Disord.* 2023 Apr 14;327:38-45. doi: 10.1016/j.jad.2023.01.125. Epub 2023 Feb 3. PMID: 36739002.

...not to mention other associations

A total of 120 studies with 58,123,250 pregnant women were included. Sleep disturbances were assessed, including poor sleep quality, extreme sleep duration, insomnia symptoms, restless legs syndrome, subjective sleep-disordered breathing and diagnosed obstructive sleep apnea. Significant associations were found between sleep disturbances in pregnancy and a variety of maternal complications and adverse fetal outcomes. Overall sleep disturbances were significantly associated with **pre-eclampsia** (odds ratio = 2.80, 95% confidence interval: 2.38-3.30), **gestational hypertension** (1.74, 1.54-1.97), **gestational diabetes mellitus** (1.59, 1.45-1.76), cesarean section (1.47, 1.31-1.64), **preterm birth** (1.38, 1.26-1.51), **large for gestational age** (1.40, 1.11-1.77), and **stillbirth** (1.25, 1.08-1.45), but not small for gestational age (1.03, 0.92-1.16), or low birth weight (1.27, 0.98-1.64). Sleep disturbances were related to **higher morbidities in pregnant women who are 30 y or older and overweight before pregnancy.**

Lu Q, Zhang X, Wang Y, Li J, Xu Y, Song X, Su S, Zhu X, Vitiello MV, Shi J, Bao Y, Lu L. Sleep disturbances during pregnancy and adverse maternal and fetal outcomes: A systematic review and meta-analysis. *Sleep Med Rev.* 2021 Aug;58:101436. doi: 10.1016/j.smrv.2021.101436. Epub 2021 Jan 22. PMID: 33571887.

SLEEP DISORDERS common in Pregnancy

- insomnia (formal DSM 5TR and informal)
- obstructive sleep apnea
- restless leg syndrome



Diagnosis of perinatal insomnia

- Complaint and self-report
- Standardized instruments (e.g. Pittsburgh Sleep Questionnaire, Epworth Sleepiness Scale, Insomnia Symptoms Questionnaire), including parts of larger instruments (PHQ-9, Edinburg Depression Scale)
 - <https://www.sleep.pitt.edu/research/measures-and-study-instruments>
- Polysomnography

McIntyre JP, Ingham CM, Hutchinson BL, Thompson JM, McCowan LM, Stone PR, Veale AG, Cronin R, Stewart AW, Elyett KM, Mitchell EA. A description of sleep behaviour in healthy late pregnancy, and the accuracy of self-reports. *BMC Pregnancy Childbirth*. 2016 May 18;16(1):115. doi: 10.1186/s12884-016-0905-0. PMID: 27194093; PMCID: PMC4870756.





DSM-5 criteria for insomnia

A. Complaint of dissatisfaction with sleep quantity or quality [or both], associated with one (or more) of the following symptoms:

- Difficulty initiating sleep
- Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep
- Early-morning awakening with inability to return to sleep

B. The sleep difficulty is present for at least 3 months

C. The sleep disturbance causes clinically significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning.

D. The sleep difficulty occurs at least 3 nights per week.

E. The sleep difficulty occurs despite adequate opportunity for sleep.

F. The insomnia is not better explained by and does not occur exclusively during the course of another sleep-wake disorder (e.g., narcolepsy, a breathing-related sleep disorder, a circadian rhythm sleep-wake disorder, a parasomnia).

G. Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC:



AASM treatment for chronic insomnia in adults*

1. We recommend that clinicians use multicomponent cognitive behavioral therapy for insomnia for the treatment of chronic insomnia disorder in adults. (**STRONG**)
2. We suggest that clinicians use multicomponent brief therapies for insomnia for the treatment of chronic insomnia disorder in adults. (**CONDITIONAL**)
3. We suggest that clinicians use stimulus control as a single component therapy for the treatment of chronic insomnia disorder in adults. (**CONDITIONAL**)
4. We suggest that clinicians use sleep restriction therapy as a single-component therapy for the treatment of chronic insomnia disorder in adults. (**CONDITIONAL**)
5. We suggest that clinicians use relaxation therapy as a single component therapy for the treatment of chronic insomnia disorder in adults. (**CONDITIONAL**)
6. We suggest that clinicians **not use** sleep hygiene as a single component therapy for the treatment of chronic insomnia disorder in adults. (**CONDITIONAL**)

Edinger JD, Arnedt JT, Bertisch SM, Carney CE, Harrington JJ, Lichstein KL, Sateia MJ, Troxel WM, Zhou ES, Kazmi U, Heald JL, Martin JL. Behavioral and psychological treatments for chronic insomnia disorder in adults: an American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med*. 2021 Feb 1;17(2):255-262. doi: 10.5664/jcsm.8986. PMID: 33164742; PMCID: PMC7853203.

Cognitive behavioral therapy for insomnia (CBT-I), as for insomnia patients, should be the preferred treatment choice during peripartum, and it may be useful to also improve mood, anxiety symptoms, and fatigue. Pharmacological treatment may be considered when women who present with severe forms of insomnia symptoms do not respond to nonpharmacologic therapy.

Palagini L, Bramante A, Baglioni C, Tang N, Grassi L, Altena E, Johann AF, Geoffroy PA, Biggio G, Mencacci C, Sharma V, Riemann D. Insomnia evaluation and treatment during peripartum: a joint position paper from the European Insomnia Network task force "Sleep and Women," the Italian Marcè Society and international experts task force for perinatal mental health. *Arch Womens Ment Health*. 2022 Jun;25(3):561-575. doi: 10.1007/s00737-022-01226-8. Epub 2022 Apr 13. PMID: 35419652; PMCID: PMC9072480.

But where do I find CBTi?

- Perelman School of Medicine (UPenn)

- <https://cbti.directory/search-for-a-clinician/united-states>

- BUT: for NYS, there are 38 listed providers, 31 in NYC/5 Burroughs

- Commercial providers (web search reveals many)

- Digital CBTi has been shown to be effective*: AASM has a list:

- <https://aasm.org/digital-cognitive-behavioral-therapy-for-insomnia-platforms-and-characteristics/>

Espie CA, Emsley R, Kyle SD, Gordon C, Drake CL, Siriwardena AN, Cape J, Ong JC, Sheaves B, Foster R, Freeman D, Costa-Font J, Marsden A, Luik AI. Effect of Digital Cognitive Behavioral Therapy for Insomnia on Health, Psychological Well-being, and Sleep-Related Quality of Life: A Randomized Clinical Trial. *JAMA Psychiatry*. 2019 Jan 1;76(1):21-30. doi: 10.1001/jamapsychiatry.2018.2745. PMID: 30264137; PMCID: PMC6583463.

Espie CA, Henry AL. Disseminating cognitive behavioural therapy (CBT) for insomnia at scale: capitalising on the potential of digital CBT to deliver clinical guideline care. *J Sleep Res*. 2023 Dec;32(6):e14025. doi: 10.1111/jsr.14025. Epub 2023 Aug 29. PMID: 37642008.

Pharmacological treatment of insomnia in pregnancy and peripartum

(if you must)

When is must?

- ⚡ When first line treatment has failed
- ⚡ When distress is so severe that delay is unreasonable
- ⚡ When you have considered and rejected other sleep disorders

AASM Pharmacologic Treatment of Chronic Insomnia in Adults

1. We suggest that clinicians use suvorexant as a treatment for sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
2. We suggest that clinicians use eszopiclone as a treatment for sleep onset and sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
3. We suggest that clinicians use zaleplon as a treatment for sleep onset insomnia (versus no treatment) in adults. (WEAK)
4. We suggest that clinicians use zolpidem as a treatment for sleep onset and sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
5. We suggest that clinicians use triazolam as a treatment for sleep onset insomnia (versus no treatment) in adults. (WEAK)
6. We suggest that clinicians use temazepam as a treatment for sleep onset and sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
7. We suggest that clinicians use ramelteon as a treatment for sleep onset insomnia (versus no treatment) in adults. (WEAK)
8. We suggest that clinicians use doxepin as a treatment for sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
9. We suggest that clinicians **not** use trazodone as a treatment for sleep onset or sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
10. We suggest that clinicians **not** use tiagabine as a treatment for sleep onset or sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
11. We suggest that clinicians **not** use diphenhydramine as a treatment for sleep onset and sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
12. We suggest that clinicians **not** use melatonin as a treatment for sleep onset or sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
13. We suggest that clinicians **not** use tryptophan as a treatment for sleep onset or sleep maintenance insomnia (versus no treatment) in adults. (WEAK)
14. We suggest that clinicians **not** use valerian as a treatment for sleep onset or sleep maintenance insomnia (versus no treatment) in adults. (WEAK)

Sateia MJ, Buysse DJ, Krystal AD, Neubauer DN, Heald JL. Clinical Practice Guideline for the Pharmacologic Treatment of Chronic Insomnia in Adults: An American Academy of Sleep Medicine Clinical Practice Guideline. *J Clin Sleep Med*. 2017 Feb 15;13(2):307-349. doi: 10.5664/jcsm.6470. PMID: 27998379; PMCID: PMC5263087.

What's in the arsenal?

- Orexin receptor[s] antagonists (suvorexant, lemborexant, daridorexant)
- Benzodiazepine receptor agonists (BRZA, the Z-drugs) and benzodiazepines
- Melatonin and melatonin receptor agonists (ramelteon, agomelatine, tasimelteon)
- Sedating antihistamines (diphenhydramine, doxylamine)
- Antidepressants (doxepin, trazodone, mirtazapine, TCAs)
- Antipsychotics (quetiapine, others)

More about the arsenal

- ⚡ Almost all of these drugs, except benzodiazepines, have little to no real data in human pregnancy and peripartum
- ⚡ “Benefit outweighs risk” is hard to determine without knowing the value of either
- ⚡ Teratogenicity and other fetal effects are often unknown for newer drugs
- ⚡ Postnatal considerations (neonatal abstinence syndrome, floppy baby syndrome, long-term developmental effects)

What's in the arsenal again?

- ⚡ Benzodiazepines and benzodiazepine receptor agonists (BRZA, the Z-drugs) -Let's talk
- ⚡ Melatonin and melatonin receptor agonists (ramelteon, ~~agomelatine~~, tasimelteon)- Maybe
- ⚡ Sedating antihistamines (diphenhydramine, doxylamine) -Let's talk
- ⚡ Orexin receptor[s] antagonists (suvorexant, lemborexant, daridorexant) - we know little (what we know is not great)
- ⚡ Antidepressants (doxepin, ~~trazodone~~, mirtazapine, TCAs)-not without more
- ⚡ Antipsychotics (quetiapine, others)- not without more

Benzodiazepines

- Spontaneous abortions OR 2.39*
- Preterm birth 2.03*
- Negative study for teratogenic risk (cardiovascular malformation, cleft lip) (OR 1.07 cohort studies, 1.27 case-control studies)
- Studies of teratogenicity and other long-term effects of benzodiazepines and benzodiazepine-related drugs are inconclusive

Palagini L, Cipriani E, Caruso V, Sharma V, Gemignani A, Bramante A, Miniati M, Riemann D. Insomnia During the Perinatal Period and its Association with Maternal and Infant Psychopathology: A Systematic Review and Meta-Analysis. *Curr Psychiatry Rep.* 2023 Nov;25(11):617-641. doi: 10.1007/s11920-023-01463-3. Epub 2023 Oct 11. PMID: 37819491.

Chaudhry SK, Susser LC. Considerations in Treating Insomnia During Pregnancy: A Literature Review. *Psychosomatics.* 2018 Jul-Aug;59(4):341-348. doi: 10.1016/j.psych.2018.03.009. Epub 2018 Mar 21. PMID: 29706359.

Benzodiazepines

- Especially in late pregnancy, floppy baby syndrome, poor neonatal adaptation and abstinence
- STILL reinforcing, amnestic, dangerous with other sedatives, opioids, and worsen OSA
- Z-drugs have some inconsistent positive teratogenicity in animal studies, less data overall

Palagini L, Cipriani E, Caruso V, Sharma V, Gemignani A, Bramante A, Miniati M, Riemann D. Insomnia During the Perinatal Period and its Association with Maternal and Infant Psychopathology: A Systematic Review and Meta-Analysis. *Curr Psychiatry Rep.* 2023 Nov;25(11):617-641. doi: 10.1007/s11920-023-01463-3. Epub 2023 Oct 11. PMID: 37819491.

Chaudhry SK, Susser LC. Considerations in Treating Insomnia During Pregnancy: A Literature Review. *Psychosomatics.* 2018 Jul-Aug;59(4):341-348. doi: 10.1016/j.psych.2018.03.009. Epub 2018 Mar 21. PMID: 29706359.

Melatonin receptor agonists

- Ramelteon is teratogenic in animals, no human data, no breastfeeding data (transferred in breast milk in animals): not recommended
- OTC melatonin is uncertain in potency and purity, may cause problems with fetal circadian entrainment, transferred in breast milk in animals: not recommended

Miller MA, Mehta N, Clark-Bilodeau C, Bourjeily G. Sleep Pharmacotherapy for Common Sleep Disorders in Pregnancy and Lactation. *Chest*. 2020 Jan;157(1):184-197. doi: 10.1016/j.chest.2019.09.026. Epub 2019 Oct 14. PMID: 31622589; PMCID: PMC6965691.

Sedating antihistamine

- Most animal studies do not support teratogenicity
- Diphenhydramine (at least) not associated with major ill effects in newborn
- Doxylamine plus pyridoxine is approved by FDA for nausea
- Caution in breastfeeding
- May be cognitively impairing
- Additive with other sedatives

Miller MA, Mehta N, Clark-Bilodeau C, Bourjeily G. Sleep Pharmacotherapy for Common Sleep Disorders in Pregnancy and Lactation. *Chest*. 2020 Jan;157(1):184-197. doi: 10.1016/j.chest.2019.09.026. Epub 2019 Oct 14. PMID: 31622589; PMCID: PMC6965691.

Orexin receptor antagonists

- Some animal studies support low fetal weight (not teratogenicity)
- No human studies
- High concentration in breastmilk
- (expensive)

Miller MA, Mehta N, Clark-Bilodeau C, Bourjeily G. Sleep Pharmacotherapy for Common Sleep Disorders in Pregnancy and Lactation. *Chest*. 2020 Jan;157(1):184-197. doi: 10.1016/j.chest.2019.09.026. Epub 2019 Oct 14. PMID: 31622589; PMCID: PMC6965691.

Antidepressants

- ⚡ Doxepin is an exception and is approved for insomnia at very low doses (3 and 6 mg)
- ⚡ Not expected to increase malformation risk
- ⚡ Muscle hypotonia and respiratory depression has been reported
- ⚡ Some amount in breastmilk
- ⚡ (do not use antidepressant doses)

Miller MA, Mehta N, Clark-Bilodeau C, Bourjeily G. Sleep Pharmacotherapy for Common Sleep Disorders in Pregnancy and Lactation. *Chest*. 2020 Jan;157(1):184-197. doi: 10.1016/j.chest.2019.09.026. Epub 2019 Oct 14. PMID: 31622589; PMCID: PMC6965691.

Antidepressants

- ⚡ Trazodone is not recommended. Decreased fetal viability in rats. Small amounts in milk. Also, not recommended.
- ⚡ (other) TCAs are not the best way to get their effect and are not recommended.
- ⚡ Mirtazapine has a negative study for miscarriage, was category C

Miller MA, Mehta N, Clark-Bilodeau C, Bourjeily G. Sleep Pharmacotherapy for Common Sleep Disorders in Pregnancy and Lactation. *Chest*. 2020 Jan;157(1):184-197. doi: 10.1016/j.chest.2019.09.026. Epub 2019 Oct 14. PMID: 31622589; PMCID: PMC6965691.

Other antidepressants, antipsychotics

- Without a primary indication for the drug, such as a psychotic or mood disorder, would avoid these in pregnancy
- Quetiapine is not a sleeping pill, has a number of black box warnings, is not recommended by either AASM or European equivalent
- ...And carries a warning for TD risk

Gugger JJ, Cassagnol M. Low-dose quetiapine is not a benign sedative-hypnotic agent. *Am J Addict.* 2008 Sep-Oct;17(5):454-5. doi: 10.1080/10550490802266185. PMID: 18770092.

Obstructive sleep apnea during pregnancy

Physics

- It may be hard to breathe with miniature humans pressing up on the diaphragm
- Unless you are boarded in Sleep Medicine, you should probably farm out treatment EXCEPT:
 - Positioning (NOT SUPINE)
 - Monitoring
 - Desperation and reassurance

Obstructive sleep apnea during pregnancy

- Snoring is the complaint with the least accuracy in self-report
- It may be that excessive daytime somnolence is the only obvious complaint
- Sleep partner, other household members
- STOP-BANG*, clinical features drive index of suspicion and further referral

Carvalho AA, Amorim FF, Santana LA, de Almeida KJQ, Santana ANC, Neves FAR. STOP-Bang questionnaire should be used in all adults with Down Syndrome to screen for moderate to severe obstructive sleep apnea. PLoS One. 2020 May 8;15(5):e0232596. doi: 10.1371/journal.pone.0232596. PMID: 32384092; PMCID: PMC7209101.

McIntyre JP, Ingham CM, Hutchinson BL, Thompson JM, McCowan LM, Stone PR, Veale AG, Cronin R, Stewart AW, Ellyett KM, Mitchell EA. A description of sleep behaviour in healthy late pregnancy, and the accuracy of self-reports. BMC Pregnancy Childbirth. 2016 May 18;16(1):115. doi: 10.1186/s12884-016-0905-0. PMID: 27194093; PMCID: PMC4870756.

Obstructive sleep apnea during pregnancy

- ⋮ loud **Snoring** [louder than talking]
- ⋮ **Tiredness** [excessive daytime sleepiness]
- ⋮ **Observed** apnea
- ⋮ **Pressure** [elevated blood pressure*]
- ⋮ **BMI** [greater than 35]
- ⋮ **Age** [greater than 50]
- ⋮ **Neck** circumference [more than 16 inches]
- ⋮ **Gender** [Male > female]

1 point for each feature present, 5 or more likely moderate to severe OSA, 3-4 equivocal, 2 or less probably not

Restless leg syndrome (DSM 5)

- ⚡ A. An urge to move the legs, usually accompanied by or in response to uncomfortable and unpleasant sensations in the legs, characterized by all of the following:
 - ⚡ 1. The urge to move the legs begins or worsens during periods of rest or inactivity
 - ⚡ 2. The urge to move the legs is partially or totally relieved by movement*
 - ⚡ 3. The urge to move the legs is worse in the evening or at night than during the day, or occurs only in the evening or at night

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC:

Srivanitchapoom P, Pandey S, Hallett M. Restless legs syndrome and pregnancy: a review. *Parkinsonism Relat Disord*. 2014 Jul;20(7):716-22. doi: 10.1016/j.parkreldis.2014.03.027. Epub 2014 Apr 8. PMID: 24768121; PMCID: PMC4058350.

Restless leg syndrome (DSM 5)

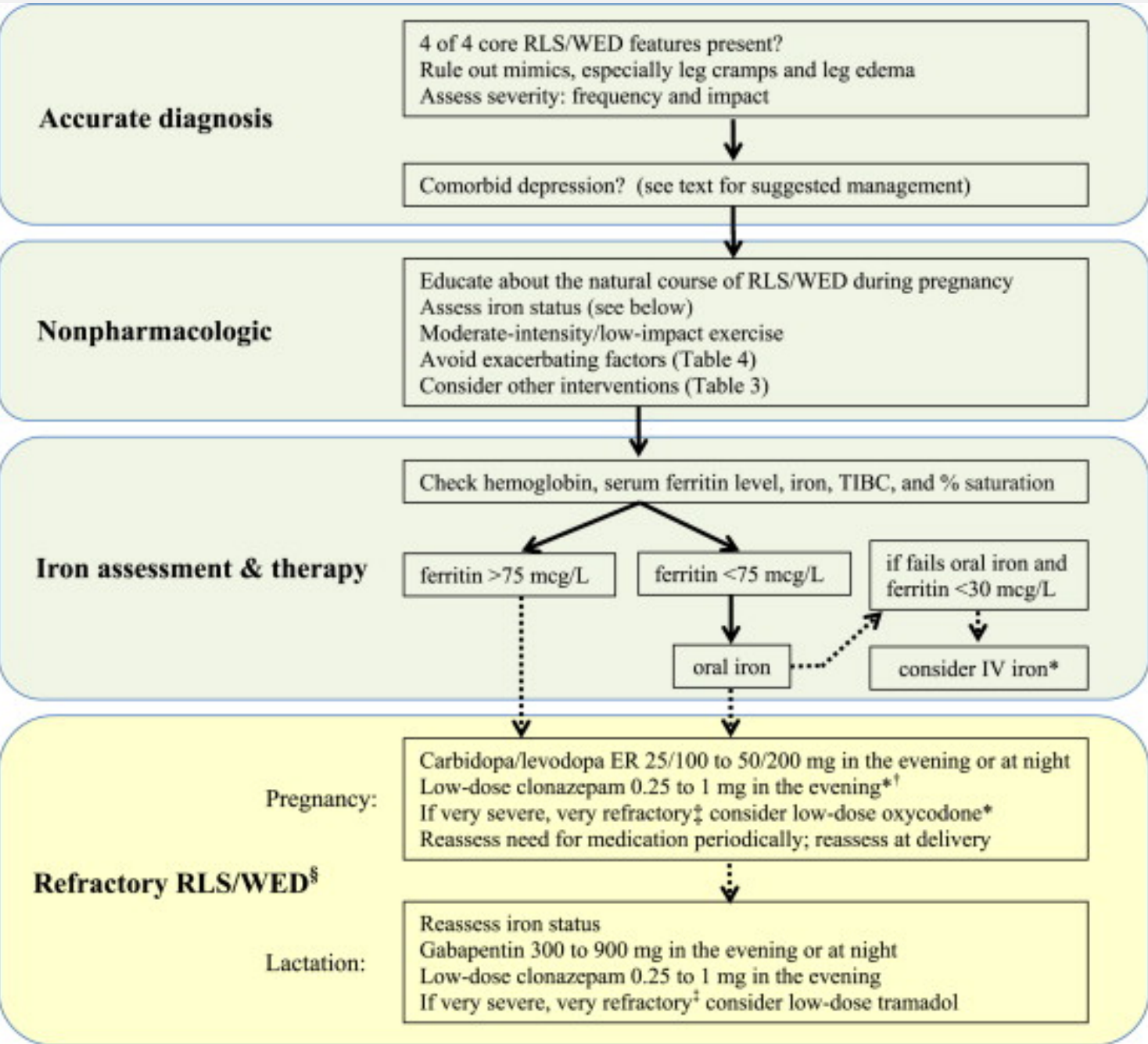
- ⚡ B. The symptoms in Criterion A occur at least three times per week and have been present for at least 3 months.
- ⚡ C. The symptoms in Criterion A are accompanied by significant distress or impairment in social, occupational, educational, academic, behavioral or other important areas of functioning.
- ⚡ D. The symptoms in Criterion are not attributable to another mental disorder or medical condition...
- ⚡ E. The symptoms are not attributable to the physiological effects of a drug of abuse or medication...

Srivanitchapoom P, Pandey S, Hallett M. Restless legs syndrome and pregnancy: a review. *Parkinsonism Relat Disord*. 2014 Jul;20(7):716-22. doi: 10.1016/j.parkreldis.2014.03.027. Epub 2014 Apr 8. PMID: 24768121; PMCID: PMC4058350.

RLS in pregnancy management

- ⚡ Stepped approach per IRLSSG statement (table follows)
- ⚡ Reassurance, exercise, avoid exacerbating factors
- ⚡ Iron repletion
- ⚡ Cautious approach to pharmacotherapy
 - ⚡ levodopa-carbidopa
 - ⚡ low-dose clonazepam
 - ⚡ gabapentin, others
 - ⚡ (mentions drugs that worsen RLS: antidepressants, neuroleptics, anti-emetics, and sedating antihistamines)

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Summary

- Sleep disturbances are essentially universal in pregnancy/peripartum
 - The most common are insomnia (formal and informal), OSA and RLS
- CBTi is strongly recommended as first-line treatment of insomnia (and may be helpful for other sleep disorders, too)
- OSA needs referral, and care in the interval
- RLS is common, distressing and treatable

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