

NAUSEA/VOMITING OF PREGNANCY ALGORITHM

(HELP <20)

1. B6/Pyridoxine 10–25 mg PO with or without Doxylamine 10-25 mg 3 or 4 times per day. (Either separately or as delayed release combination.)
2. Thiamin/Benfotiamine 100 mg PO 1-3 times per day. (250 mg daily PO minimum after 20 weeks)
3. Continue prenatal vitamin if tolerated or change to single vitamins (B1, B9, D with K, Ca, Mg).
4. Add gastric/esophageal protection at bedtime with onset of vomiting or poor intake. (See shaded box below.)



NO

DEHYDRATION?



YES

(HELP ≥32)

Add up to 1 from each class:

1. Antihistamine (discontinue doxylamine)
 - *Dimenhydrinate* 25-50 mg q 4–6 hours PO or PR (limit to 200 mg per day if taking doxylamine)
 - *Diphenhydramine* 25–50 mg PO q 4–6 hours
 - *Meclizine* or *Cyclizine* 25 mg PO q 6–8 hours
2. Dopamine Antagonist (Use only 1 at a time or alternate.)
 - *Metoclopramide* 2.5-10 mg q 6-8 hours PO or ODT
 - *Promethazine* 25 mg q 4-6 hours PO or PR (avoid IM/IV)
 - *Prochlorperazine* 5-10 mg q 6-8 hours PO or 25 mg twice daily PR



Add scheduled bowel care option(s) and serotonin antagonist (strict schedule, NOT prn):

1. Bowel Care: Daily stool softener, magnesium (citrate, oxide), polyethylene glycol + stimulant laxative or enema up to 3x per week prn.
2. *Ondansetron* 4-8 mg q 3-6 hours PO or ODT, or ODT given vaginally (max 32 mg per day) **OR**
3. *Granisetron* 1 mg q 12 hours PO or 3 mg TD patch (give 1 mg oral/IV dose on days 1 and 2 until steady state)
NOTE: Monitor EKG if risk of QT prolongation.



Consider NUTRITION (see box on right) and one of the following:

1. *Mirtazapine* 15 mg q 8 hours PO or ODT (Dose not established for HG. Discontinue other serotonin antagonists.)
2. *Methylprednisolone* (if 9+ weeks) 16 mg q 8 hours PO or IV for 3 days. Taper over 2 weeks. Maintain on lowest effective dose if needed. Avoid administration exceeding 6 weeks.
3. *Chlorpromazine* 25–50 mg IV or 10–25 mg PO q 4-6 hours

GERD or gastric/esophageal protection options:

1. Calcium antacid (avoid Aluminum, Bismuth or Bicarbonate)
2. H2 antagonist BID: *famotidine* 20-40 mg PO
3. Proton Pump Inhibitor (PPI) q 24 hours at bedtime
 - *esomeprazole* 20-40 mg PO or IV
 - *lansoprazole* 15-30 mg PO or ODT
 - *pantoprazole* 40 mg PO or IV

IMPORTANT NOTES:

1. If symptoms persist, follow arrows to next level of care and consider non-oral forms of medications such as compounded, transdermal, IV, or SubQ. ALWAYS wean medications very slowly.
2. After IV therapy, use non-oral options or move slowly to oral medications as tolerated.
3. Most medications can cause QT prolongation, consider EKG or cardiac monitoring for high risk patients, high doses of medications, multiple medications, or electrolyte & vit B1 abnormalities.
4. Intramuscular injections (IM) not recommended due to muscle atrophy and pain sensitivity.
5. Dehydration and nutrient (e.g. electrolytes, B1) deficiencies decrease treatment response.
6. Start prophylactic anticoagulation if prolonged immobility or hospitalization over 72 hours.
7. Weaning too early or rapidly may result in worsening or refractory symptoms.
8. See less common medications on the HER Foundation website: www.hyperemesis.org/meds.
9. HELP = HyperEmissis Level Prediction Score. Learn more: www.hyperemesis.org/tools.

IV fluids and dilute vitamins; infuse slowly:

1. NS or LR + MVI + B1 + B Complex (B1, B2, B3, B6, B9)
 - Add prn: KCl, Na, vit D, Zn, Se, Fe, Mg & Ca.
 - Always give 200 mg B1 with IV dextrose (prevent WE).
 - Slowly replace low/marginal electrolytes (prevent CPM).
 - Consider restricted PO intake for 24-72 hours (gut rest).
 - Consider midline or central line for frequent IVs.
2. **Always include Thiamin 100-500 mg IV 3 times daily.**
3. Choose MVI containing vitamin K or add vitamin K prn.



If oral meds ineffective or not tolerated, change to ONE OF THE FOLLOWING with daily Bowel Care (see box on left):

1. *Ondansetron*:
 - IV: 4-8 mg over 15 minutes q 3-6 hours (up to 32 mg) or continuous infusion
 - Subcutaneous (SubQ) continuous infusion: 8 mg starting dose, then 12-40 mg/day; wean slowly to PO if stable
 2. *Granisetron* 1mg q 12 hours IV or continuous infusion or TD
- If symptoms continue, add one or both of these meds:**
1. *Dimenhydrinate* or *Diphenhydramine* 25-50 mg q 4–6 hours IV
 2. *Metoclopramide*:
 - IV: 2.5–10 mg q 8 hours SLOW infusion
 - SubQ continuous infusion: 2.5-10 mg loading dose, then up to 60 mg/day

*** Wean IV/SubQ to PO very slowly when stable, then monitor for at least 24 hours before discharge to home.**

NUTRITION - If weight loss ≥7% and/or persistent HG:

1. Consult with GI & Nutrition & IV access team.
2. Prevent Refeeding Syndrome: Very slowly restart nutrition & closely monitor weight, cardiac rhythm and electrolytes (especially phosphate) for 1+ week.
3. Consider EN/PN until gaining weight on PO intake.
 - *Enteral nutrition*: Gradually increase infusion (after resting GI tract) with or without additional parenteral/enteral fluids. (NJ or G/J-tube preferred). Insert SMALL bore nasal tube under sedation. Often poorly tolerated.
 - *Parenteral nutrition (partial peripheral or total central)*

Disclaimer: This is not medical advice. Do not change your diet, treatment or lifestyle without consultation from your medical provider.



HER
Foundation

www.hyperemesis.org/tools
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Hyperemesis Gravidarum (HG) is diagnosed when a patient has nausea and vomiting that requires medication and/or intravenous therapy due to severe nausea and vomiting with poor intake, possible weight loss, and debility. Failure to adequately treat may result in refractory and prolonged symptoms, along with serious complications for both mother and child. HG is caused in part to genes (e.g. *GDF15*) that reduce appetite, alter taste, and cause nausea, vomiting and muscle wasting. Additionally, infections, stress, and nutrient deficiencies (e.g. B1, Mg, and K+) worsen symptoms and may increase *GDF15* hormone levels. (hyperemesis.org/research/#cause)

ANTIEMETIC ESSENTIALS

1st Step: Δ dose/frequency

2nd Step: Δ route (SubQ, TD, rectal, IV, compounded)

3rd Step: Add/replace a medication

- Avoid abrupt Δ's in 1st trimester.
- Prevent/proactively treat side-effects.
- Give IV fluids SLOWLY and dilute irritating medications.
- Try continuous antiemetic infusions.
- **Cocktail:** Antihistamine + 5HT3 antagonist + acid reducer + promethazine OR metoclopramide.

Once stable for 2 weeks on IV or subcutaneous infusions, try transitioning to oral dosing, then if fails PO trial, return to IV/SubQ. Wait 2-4 weeks or until symptoms improve for 2 weeks before weaning again. Repeated failures to wean in later pregnancy suggest medications may be needed until delivery.

Kimber's RULE OF 2'S

Wean medications for HG:



Wean each medication in 2nd trimester or later



After 2 weeks with minimal symptoms



Over 2+ weeks

ADDITIONAL MEDICATION TIPS

- Serotonin Syndrome - avoid combining 5HT3 antagonists with SSRIs and SSNIs
- Headache - common with ondansetron; switch to another serotonin antagonist
- Ptyalism - use anticholinergic medication
- Anxiety - commonly caused by metoclopramide
- EPS - commonly caused by phenothiazines and metoclopramide; switch medication/class at onset; limit duration

WERNICKE'S ESSENTIALS ****Screen each visit****

Causes: Thiamin and electrolyte deficiency/shifts

Risks: Infection, diuretic, malabsorption, atrophy, malnutrition

Signs: Change in vision or speech or gait or mental status, abdominal pain, headache, cardiac symptoms (tachy then brady), somnolence, dizziness, weakness, aphasia, tremor, irritability, spastic paresis, seizure, myalgia, myoclonus, anorexia, dysphagia, elevated transaminase, refractory HG

Diagnosis: MRI may be negative. Assume WE if B1 improves.

Prevention/Ongoing Recovery: oral/IV thiamin 100-500 mg 1-3x daily; continue until consistent, healthy diet for 3+ months. Take while breastfeeding for mother/baby.

Acute Care: Thiamin 500 mg IV TID until asymptomatic, 5+ days. (See WE & Thiamin Fact Sheets. hyperemesis.org/tools)

SUMMARY OF CLINICAL KEYS

1. Changing medications abruptly or frequently may cause severe and/or refractory symptoms. Add different classes.
2. Increasing dose, increasing frequency, changing route and combining medications can improve treatment efficacy.
3. Scheduled dosing and non-oral medications are beneficial.
4. Lack of nutrition/hydration reduce medication response, worsen symptoms, and increase risks/complications.
5. Side-effects are better prevented than managed.
6. If a history of HG or severe symptoms, rapidly intervene and move to non-oral medications if orals not tolerated.
7. Wean each medication separately and slowly after 2+ weeks of minimal symptoms with adequate intake and hydration.
8. Medication and IV therapy may be needed until delivery.
9. Listen as patients can offer valuable insight into their care.
10. HG is traumatic so treat with compassion and refer to the HER Foundation for resources. hyperemesis.org/support

COMFORT MEASURES

- Private room (avoid triggers)
- Avoid IM injections (atrophy)
- Warm IV fluids/blankets
- Use anesthetic for IVs
- Offer preferred foods when feeling least ill

CONSULTS/ADJUNCTIVE CARE

Consults: GI, nutrition, home health, mental health, social work, perinatology/MFM, case management, physical therapy

Adjunctive care: hypnosis, acupuncture, homeopathy, osteopathic manipulation



The Genes Have Spoken:
**not in her HEAD
but in her GENES**

PATIENT/FAMILY EDUCATION

- Symptom relief not 100%
- Most meds don't help nausea
- Multiple meds typical
- May need non-oral meds
- Dose changes common
- Dosing same in pregnancy
- Don't stop meds abruptly
- Meds possible until delivery

Δ = Change
GERD = gastroesophageal reflux disease
GI = gastrointestinal
IM = Intramuscular
IV = Intravenous
LR = Lactated Ringers
MFM = Maternal-Fetal Medicine
ODS = Osmotic Demyelination Syndrome
CPM = Central Pontine Myelinolysis

I's of IMMEDIATE INTERVENTION

- Inability to tolerate antiemetics
- Intake of ≤1 meal/day
- Inadequate UOP/ketonuria
- Increased weight loss (>2 lbs (1 kg) per week)
- Inability to cope or function
- Increasing HELP Score

PMAD = Perinatal Mood/Anxiety Disorder
HELP = HyperEmesis Level Prediction Score
PO = Per oral
PTSD = Post Traumatic Stress Disorder
SubQ = Subcutaneous
TID = 3 times/day
UOP = urine output
UTI = Urinary Tract Infection
WE = Wernicke's encephalopathy

SELECTED REFERENCES

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