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/Benfotamine 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, Ca).
4. Add gastric/esophageal protection at bedtime with onset of vomiting or poor intake. (See shaded box below.)

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 6 hours PO or ODT, or ODT given vaginally OR
3. Granisetron 1 mg q 12 hours PO or 3 mg TD patch (may need 1 mg oral/IV dose on days 1 and 2)
   NOTE: Monitor EKG if risk of QT prolongation.

Consider NUTRITION (see box to 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.

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 options on left box):
1. Ondansetron:
   • IV: 4-8 mg over 15 minutes q 6 hours or continuous infusion
   • Subcutaneous (SubQ) continuous infusion: 8 mg starting dose, then 12-40 mg/day; wean slowly to PO if stable
2. Granisetron 1 mg q 12 hours IV or continuous infusion or TD
   *If needed, add one or both of these meds:
3. Dimenhydrinate or Diphenhydramine 25-50 mg q 4–6 hours
4. Metoclopramide:
   • IV: 2.5–10 mg q 8 hours SLOW infusion
   • SubQ continuous infusion: 2.5-10 mg loading dose, then up to 40 mg/day
   *Wean IV/SubQ to PO when stable, then monitor for at least 24 hours before discharge to home.

NUTRITION - If weight loss ≥7% and/or persistent HG
• Consult with GI & Nutrition & IV access team.
• Prevent Refeeding Syndrome: Slowly restart nutrition & monitor weight, cardiac rhythm and electrolytes (especially phosphate).
• Continue until gaining weight on PO intake and meds.
1. Enteral therapy: Gradually increase infusion (after resting GI tract) with or without additional parenteral/enteral fluids. (NJ or J/G-tube preferred). Insert SMALL bore nasal tube under sedation.
2. Parenteral nutrition (partial peripheral or total central)

Disclaimers: This is not medical advice. Do not change your diet, treat- ment or lifestyle without consultation from your medical provider.

(HELP <32) NO DEHYDRATION? (HELP ≥32) YES
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)

**WE/ODS ESSENTIALS**  **Screen each visit**

**Causes:** Thiamin and electrolyte deficiency/shocks

**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

**Prevention/Ongoing Recovery:** oral/IV thiamin 100-500 mg 1-3x daily; continue until consistent, healthy diet for 3+ months after HG resolves. 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 more severe or refractory symptoms.
2. Increasing dose, increasing frequency, changing route and combining medications can improve treatment efficacy.
3. Scheduled dosing and non-oral medications are beneficial.
4. Inadequate nutrition and hydration often reduce medication response, worsen symptoms, and increase 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 women 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

**CONSULTS/ADJUNCTIVE CARE**

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

**Adjuvant care:** hypnosis, acupuncture, homeopathy, osteopathic manipulation

**SELECTED REFERENCES**