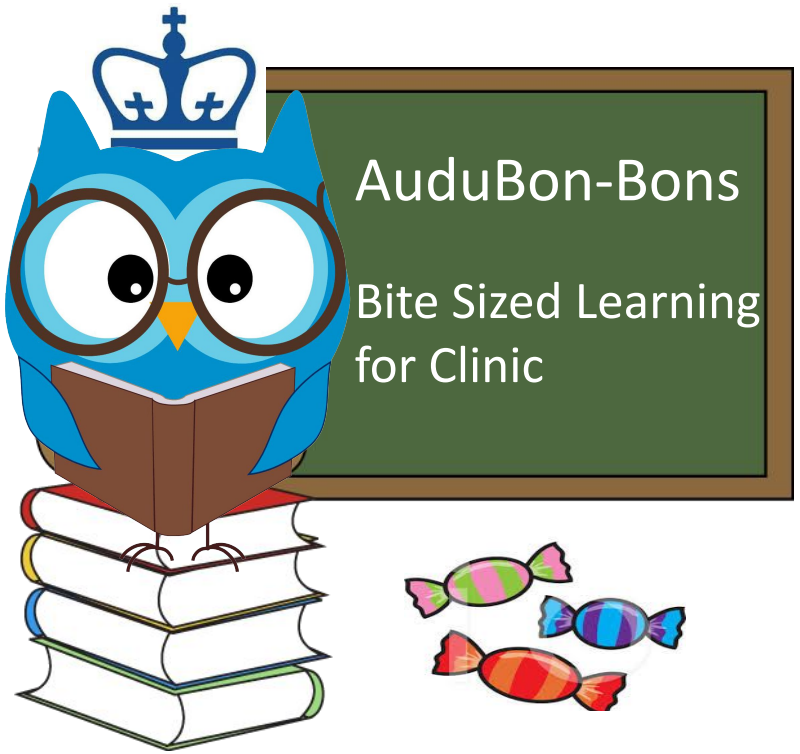
# PRENATAL CARE:
# NAUSEA AND VOMITING OF PREGNANCY




Week 16

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**Homework Assignment:**
Download APGO WellMom App on Managing NVP

Podcast: *CREOGS Over Coffee* Episode 8: Nausea and Vomiting of Early Pregnancy (11.18.18)

# LEARNING OBJECTIVES

- To be able to diagnosis NVP and HG
- To gain an understanding of the impact of NVP on both the fetus and mother
- To review recommendations for treatment of NVP
- To be comfortable managing NVP with both pharmacological and non-pharmacological treatment modalities

# CASE VIGNETTE

- Ms. Siento Mal is a 25 y.o. G2 P1001 woman @ 7w2d EGA who presents to establish PNC.
  - She reports developing nausea over the past week.  She states the nausea is present throughout the day and she usually vomits once at night.
  - She has missed one day of work last week secondary to these symptoms.
  - She would like to know if there is anything she can do to make her feel better but is nervous about taking medications during pregnancy.

# FOCUSED HISTORY

What elements of the patient's history of present illness are most important?

- **Timing:** ~ 6-7 weeks EGA
- **ROS:** Denies sick contacts, HA, fevers/chills, dysuria, flank pain, hematuria, cold/heat intolerance, new medications, weight loss
- **OBHx:** FT NSVD 2 years ago c/b HG
- **PMHx:** Denies
- **PSHx:** Denies
- **Meds:** None
- **All:** NKDA
- **SocHx:** Denies toxic habits

# PERTINENT PHYSICAL EXAM FINDINGS

What elements of the patient's physical exam are most important?

- **Vitals:** T37C, BP 110/70, HR 82, RR 18
- **HEENT:** No thyromegaly, no goiter
- **Abdominal exam:** Nondistended, + BS, soft, nontender, no masses
- **Fetal assessment:** + single IUP c/w 7+ weeks, + FH

# DEFINITION AND INCIDENCE

- NVP is very a common condition
  - Prevalence for *nausea*: **50-80%**
  - Prevalence for *vomiting and retching*: **50%**
  - Recurrence rates vary: 15-81%
- No single accepted definition for **Hyperemesis Gravidarum**
  - Clinical diagnosis of EXCLUSION
  - Most commonly cited criteria:
    - Persistent vomiting NOT related to other causes
    - Ketonuria
    - Weight loss (≥ 5% of prepregnancy weight)
    - ± electrolyte, thyroid and liver abnormalities
  - MOST COMMON indication for **admission to hospital** in early pregnancy

# DIFFERENTIAL DIAGNOSIS

- Gastrointestinal
  - Gastroenteritis
  - Gastroparesis
  - Achalasia
  - Biliary tract disease
  - Hepatitis
  - Intestinal obstruction
  - Peptic ulcer disease
  - Helicobacter pylori
  - Pancreatitis
  - Appendicitis

- Genitourinary tract
  - Pyelonephritis
  - Uremia
  - Ovarian torsion

# PATHOPHYSIOLOGY

- Unknown - various theories have been proposed:
  - Hormonal stimulus
    - bHCG
    - Estrogen
  - Evolutionary adaptation
  - Psychologic predisposition – not enough evidence to support

- Risk factors:
  - Increased placental mass – molar pregnancy, multiples
  - History of motion sickness, migraines, family history, personal h/o HG in prior pregnancy
  - Female fetus

# MATERAL AND FETAL EFFECTS

## Maternal Effects

- Wernicke encephalopathy
- Splenic avulsion
- Esophageal rupture
- Pneuothorax
- Acute tubular necrosis
- Increased hospital admissions
- Psychosocial morbidity
  - Depression
  - Anxiety
- Termination of pregnancy

## Fetal Effects

- Mild – moderate NVP

# EVALUATION

- Focused history
- Focused physical exam
- Serology
  - CMP
  - Bilirubin (<4 mg/dL)
  - Amylase (up to 5x greater than normal level)
  - ± TFTs
- Ultrasound
  - Multiple gestations
  - Molar gestation

# COUNSELING

## Dietary modifications

- Eating frequent, small amounts (q1-2h)
- Eating high-carb, low–fat foods
- Add protein to meals and snacks
- BRAT diet
- Drink small amounts of cold, clear, carbonated liquids (2L/day)
- Keep solids and liquids separate (wait 20-30 min to drink after eating)
- Avoid iron preparations

## Behavioral modifications

- Rest as needed
- Change positions slowly
- Avoid offensive foods and smells
- Treat symptoms of GERD
- Not brushing teeth after eating

# MANAGEMENT

**Early treatment of NVP is recommended to prevent progression to HG**

**First Line Therapy: Nonpharmacologic options**

Convert prenatal vitamin to folic acid supplement only
Ginger capsules 250 mg four times daily
Consider P6 acupressure with wrist bands

↓ Persistent symptoms

**Pharmacologic Options***

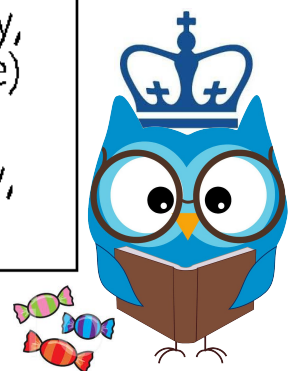
Vitamin $B_6$ (pyridoxine) 10–25 mg orally (either taken alone or in combination with Doxylamine† 12.5 mg orally), 3 or 4 times per day. Adjust schedule and dose according to severity of patient's symptoms.

OR

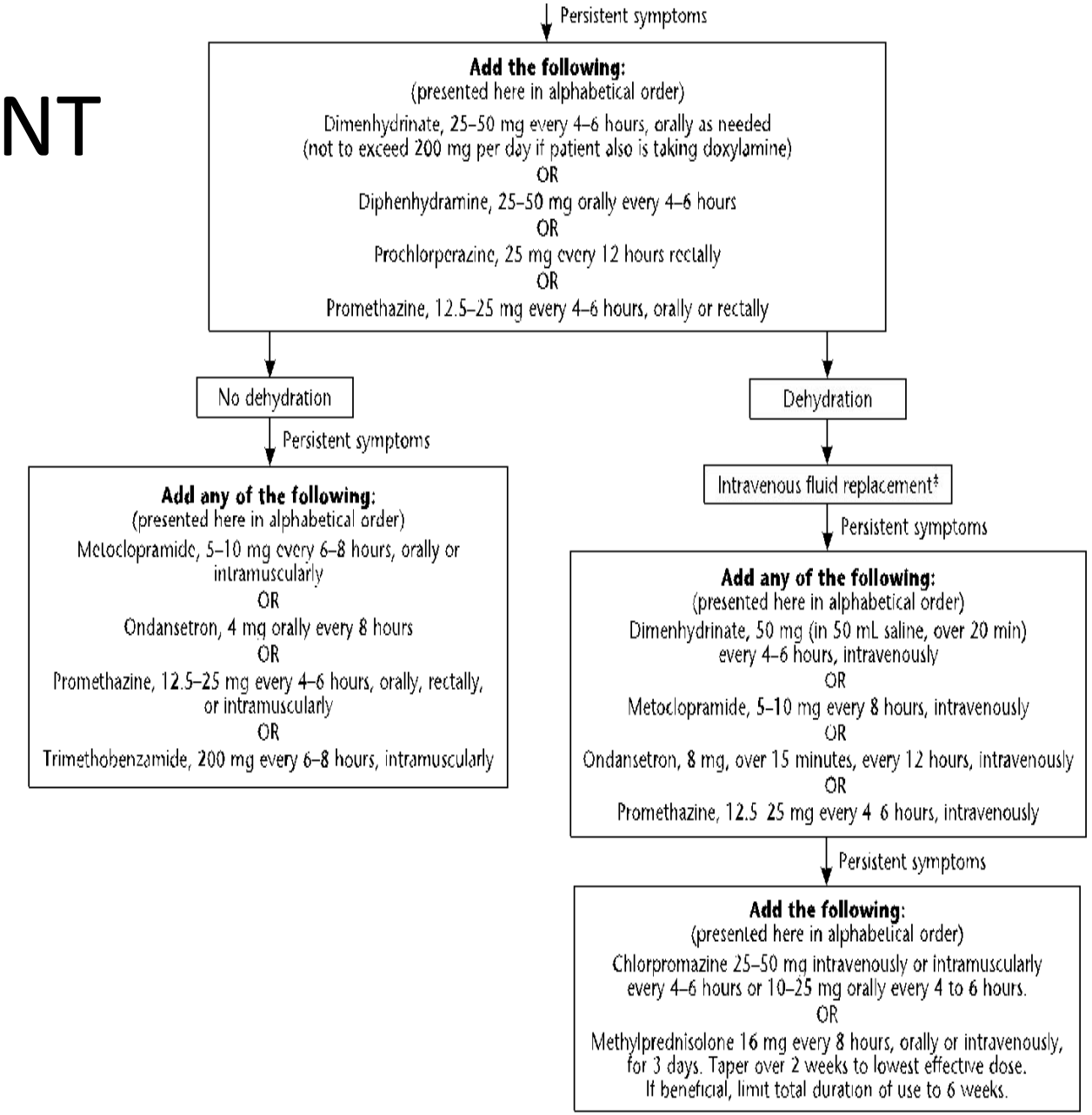
Vitamin $B_6$ (pyridoxine) 10 mg/Doxylamine 10 mg combination product, two tablets orally at bedtime initially, up to four tablets per day (one tablet in the morning, one tablet in midafternoon, and two tablets at bedtime)

OR

Vitamin $B_6$ (pyridoxine) 20 mg/Doxylamine 20 mg combination product, one tablet orally at bedtime initially, up to two tablets per day (one tablet in the morning and one tablet at bedtime)



# MANAGEMENT


Persistent symptoms
Add the following:
(presented here in alphabetical order)
Dimenhydrinate, 25–50 mg every 4–6 hours, orally as needed
(not to exceed 200 mg per day if patient also is taking doxylamine)
OR
Diphenhydramine, 25–50 mg orally every 4–6 hours
OR
Prochlorperazine, 25 mg every 12 hours rectally
OR
Promethazine, 12.5–25 mg every 4–6 hours, orally or rectally
No dehydration
Persistent symptoms
Add any of the following:
(presented here in alphabetical order)
Metoclopramide, 5–10 mg every 6–8 hours, orally or intramuscularly
OR
Ondansetron, 4 mg orally every 8 hours
OR
Promethazine, 12.5–25 mg every 4–6 hours, orally, rectally, or intramuscularly
OR
Trimethobenzamide, 200 mg every 6–8 hours, intramuscularly
Dehydration
Intravenous fluid replacement‡
Persistent symptoms
Add any of the following:
(presented here in alphabetical order)
Dimenhydrinate, 50 mg (in 50 mL saline, over 20 min) every 4–6 hours, intravenously
OR
Metoclopramide, 5–10 mg every 8 hours, intravenously
OR
Ondansetron, 8 mg, over 15 minutes, every 12 hours, intravenously
OR
Promethazine, 12.5 25 mg every 4 6 hours, intravenously
Persistent symptoms
Add the following:
(presented here in alphabetical order)
Chlorpromazine 25–50 mg intravenously or intramuscularly every 4–6 hours or 10–25 mg orally every 4 to 6 hours.
OR
Methylprednisolone 16 mg every 8 hours, orally or intravenously, for 3 days. Taper over 2 weeks to lowest effective dose.
If beneficial, limit total duration of use to 6 weeks.

# MANAGEMENT – SAFETY

- **Vitamin B6 (pyridoxine) ± Doxylamine:** safe and effective
  - SE: Sleepiness, tiredness, drowsiness

- **Dopamine antagonists:** safe and effective
  - Metoclopramide (less SE vs phenothiazine meds)
  - Phenothiazine medications
  - SE: Dry mouth, dizziness, dystonia, sedation
  - Parallel use of dopamine antagonists may result in increased risk of extrapyramidal effects or neuroleptic malignant syndrome

- **Antihistamines (Diphenhydramine):** safe and effective
  - SE: Sedation, dry mouth, lightheadedness, constipation

# MANAGEMENT – SAFETY

- **Serotonin 5-HT3 inhibitors (Ondansetron)**
  - Limited evidence on safety or efficacy however Cat B medication
  - SE: HA, drowsiness, fatigue, constipation
  - Can prolong the QT interval
  - Possible a/w use in 1st trimester and cleft palate
    - Limited data – small sample size, potential recall-reporting bias
  - Absolute risk to fetus is low however use of ondanestron before 10 weeks should be individualized weighing risks and benefits

- **Steroids**
  - Use with caution
  - Three studies confirmed a/w oral clefts with use in 1st trimester

# SOCIAL DETERMINANTS OF HEALTH

- Few studies have been conducted looking at the epidemiology of NVP
- Of the studies available, conflicting findings have been reported regarding the prevalence of NVP among different races and ethnicities
  - One study done in Canada showed race and ethnicity is associated with the reporting of NVP in the 1st trimester
    - Black and Asian women are less likely to report NVP than Caucasian women
    - It is unknown if this is due to a true physiological difference in prevalence vs different cultural acceptability
- There is evidence that low socioeconomic status is associated with NVP however the definition of low SES differs among studies

More research is needed looking at the association between social determinants of health and prevalence of NVP as well as disparities in management of NVP.

# Epic .phrase

**BBonNauseaVomitingofPregnancy**

Description: Evaluation, counseling and initial management for NVP

After obtaining a focused history and physical exam and ruling out other etiologies, a diagnosis of nausea and vomiting of pregnancy was given to the patient. She was counseled on both dietary and behavioral modifications as first line management. Additionally, the decision was made to convert her prenatal vitamins to folic acid supplementation only and she was advised to start ginger capsules 250mg four times daily. In the event that non-pharmacologic options do not control her symptoms the patient was given a prescription for Vitamin B6/Doxylamine. She was educated on the R/B/A of this medication and on correct timing of administration. The patient was advised to contact the office if her symptoms persist despite the above mentioned measures and to present to L&D if she is unable to tolerate PO.

# CODING AND BILLING

- Diagnostic Codes (ICD-10)
  - R11  Nausea and vomiting
  - O21 Excessive vomiting in pregnancy
    - O21.0 Mild hyperemesis gravidarum
    - O21.1 Hyperemesis gravidarum with metabolic disturbance
    - O21.2 Late vomiting of pregnancy
    - O21.8 Other vomiting complicating pregnancy
    - O21.9 Vomiting of pregnancy, unspecified

# CODING AND BILLING – NEW PATIENT

| HISTORY | EXAM | MEDICAL DIAGNOSIS MAKING | CODE | APPLICABLE GUIDELINES |
|---|---|---|---|---|
| Problem focused:<br>- Chief complaint<br>- HPI (1-3) | Problem focused:<br>- 1 body system | Straight forward:<br>- Diagnosis: minimal<br>- Data: minimal<br>- Risk: minimal | 99201 | - Personally provided<br>- Primary care exception<br>- Physicians at teaching hospitals |
| Expanded problem focused:<br>- Chief complaint<br>- HPI (1-3)<br>- ROS (1-3) | Expanded problem focused:<br>- Affected areas and others | Straight forward:<br>- Diagnosis: minimal<br>- Data: minimal<br>- Risk: minimal | 99202 | - Personally provided<br>- Primary care exception<br>- Physicians at teaching hospitals |
| Comprehensive<br>- Chief complaint<br>- HPI (4)<br>- ROS (2-9)<br>- Past, family, social history (1) | Detailed:<br>- 7 systems | Low:<br>- Diagnosis: limited<br>- Data: limited<br>- Risk: low | 99203 | - Personally provided<br>- Primary care exception<br>- Physicians at teaching hospitals |
| Comprehensive<br>- Chief complaint<br>- HPI (4+)<br>- ROS (10+)<br>- Past, family, social history (3) | Comprehensive:<br>- 8 or more systems | Moderate:<br>- Diagnosis: multiple<br>- Data: moderate<br>- Risk: moderate | 99204 | - Personally provided<br>- Physicians at teaching hospitals |
| Comprehensive<br>- Chief complaint<br>- HPI (4+)<br>- ROS (10+)<br>- Past, family, social history (3) | Comprehensive:<br>- 8 or more systems | High:<br>- Diagnosis: extended<br>- Data: extended<br>- Risk: high | 99205 | - Personally provided<br>- Physicians at teaching hospitals |

# CODING AND BILLING – ESTABLISHED PATIENT

| HISTORY | EXAM | MEDICAL DIAGNOSIS MAKING | CODE | APPLICABLE GUIDELINES |
|---|---|---|---|---|
| Expanded problem focused:<br>- Chief complaint<br>- HPI (1-3) | Problem focused:<br>- 1 body system | Straight forward:<br>- Diagnosis: minimal<br>- Data: minimal<br>- Risk: minimal | 99212 | - Personally provided<br>- Primary care exception<br>- Physicians at teaching hospitals |
| Expanded problem focused:<br>- Chief complaint<br>- HPI (1-3)<br>- ROS (1) | Expanded problem focused:<br>- Affected area and others | Low:<br>- Diagnosis: limited<br>- Data: limited<br>- Risk: low | 99213 | - Personally provided<br>- Primary care exception<br>- Physicians at teaching hospitals |
| Detailed<br>- Chief complaint<br>- HPI (4+)<br>- ROS (10+)<br>- Past, family, social history (3) | Detailed:<br>- 7 systems | Moderate:<br>- Diagnosis: multiple<br>- Data: moderate<br>- Risk: moderate | 99214 | - Personally provided<br>- Physicians at teaching hospitals |
| Comprehensive<br>- Chief complaint<br>- HPI (4+)<br>- ROS (10+)<br>- Past, family, social history (2) | Comprehensive:<br>- 8 or more systems | High:<br>- Diagnosis: extended<br>- Data: extended<br>- Risk: high | 99215 | - Personally provided<br>- Physicians at teaching hospitals |

# EVIDENCE

- References
  - Lacasse A, Rey E, Ferreira E, Morin C, Bérard A. Determinants of early medical management of nausea and vomiting of pregnancy. Birth. 2009 Mar;36(1):70-7. doi: 10.1111/j.1523-536X.2008.00297.x. PMID: 19278386.
  - LactMed. Drugs and Lactations Database. https://toxnet.nlm.nih.gov/newtoxnet/lactmed.htm. (Accessed September 13, 2019).
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