

'Morning sickness' in pregnancy loses psychogenic stigma

Evidence refutes past beliefs, supports organic causes and psychological sequelae

Nausea and vomiting in pregnancy (NVP) is a misunderstood disorder associated with stress, anxiety, and depression. Prejudice toward women is thought to have guided the historical psychoanalytic concept of NVP as psychogenic, but this view is being replaced by newer biologic theories.

This article examines the evidence for psychological and organic causes of NVP to inform psychiatrists treating pregnant patients. We review guidelines for pharmacologic treatment of NVP and discuss potentially useful psychotherapies and alternative approaches.

Definitive cause unknown

"Morning sickness" affects 50% to 80% of pregnant women, occurring so commonly that NVP is often considered normal.^{1,2} Approximately 0.5% to 2% of women experience the most severe NVP—hyperemesis gravidarum (HG)³—characterized by intractable vomiting, weight loss, and electrolyte imbalance that can lead to hospitalization.

Without modern supportive care, HG can be lethal; although Charlotte Brontë's death certificate states she died of "phthisis" (tuberculosis), the author of *Jane Eyre* is popularly believed to have succumbed to HG.^{4,5}

The search for effective NVP treatments has been disappointing, partly because no cause has been identified. After other conditions that may lead to nausea and vomiting are ruled out (*Table 1, page 32*), NVP medical management is supportive. Correcting dehydration and encouraging dietary and lifestyle changes (*Table 2, page 33*)⁶ are important adjuncts to step-wise



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Samuel O. Sostre, MD

Psychiatry resident
University of Medicine and Dentistry of New Jersey
New Jersey Medical School, Newark

Deepti Varma, MD

Psychiatry resident
University of Medicine and Dentistry of New Jersey
New Jersey Medical School, Newark

Samuel S. Sostre, MD

Assistant professor
Department of psychiatry
Mount Sinai School of Medicine
New York, NY



Vomiting in pregnancy

Clinical Point

Stress, anxiety, and depression in women with NVP are thought to result from—rather than cause—its physical symptoms

Table 1

Medical causes of nausea and vomiting in pregnancy

Possible cause	How to rule it out
Appendicitis	History; do physical, order imaging
Hepatitis	Jaundice; order liver function tests, antibody studies, imaging
Pancreatitis	History of alcohol use, abdominal pain; check amylase and lipase level
Gastrointestinal obstruction	History of surgeries; order imaging
Peptic ulcer disease	History; order upper GI series/endoscopy
Thyroid disease	Thyroid function tests
Urinary tract infection	Urinalysis, culture-sensitivity
Trophoblastic disease	Check hCG,* order ultrasound
* Elevated human chorionic gonadotropin (hCG) has shown evidence of an association with NVP ²⁰	

pharmacologic treatment recommended by the American College of Obstetrics and Gynecology (*Algorithm, page 34*).⁷

Prejudice vs evidence

Psychological factors. Historically, psychological factors have been blamed for NVP, but support comes from a few poorly designed studies or case reports.^{3,4}

Psychoanalytically, pregnancy and childbirth are significant events in a woman's life and a rich environment for conflict that could lead to physical expression of symptoms. Freud believed pregnancy and childbirth involve the unconscious substitution of the penis with the child.⁸ Later writers viewed motherhood as woman's most powerful wish and the primary organizer of her sexual drive and personality.⁸

NVP has been considered a conversion or somatization disorder in which symptoms are a "hysterical" expression of unconscious conflict. A psychoanalytic view contends that women who experience NVP are ambivalent about the pregnancy and seek to reject it.^{1,9} Vomiting, in this view, represents an oral abortion attempt.¹⁰ Oth-

ers claim NVP is a rejection of femininity³ or that symptoms in women with overly attached maternal relationships mask unconscious aggressive feelings toward their mothers.¹¹

Robertson¹¹ proposed an association between NVP and a woman's view of sexual experiences and her ability to achieve orgasm. He interviewed 100 women and found that 40 of 57 with NVP had "disturbed sexual functioning" or were "frigid" (defined as experiencing coitus as undesirable and unaccompanied by orgasm).

Higgins¹² in 1887 proposed that the cause of NVP "is sexual intercourse, the husband too eager for it and the wife too adverse." Additionally, NVP and HG have been associated with infantile, childish, immature, and hysterical personalities.¹²⁻¹⁴

Psychiatric comorbidities. Attempts have been made to associate NVP with other psychiatric disorders such as depression, bipolar disorder, schizophrenia, and anxiety disorders, including posttraumatic stress disorder (PTSD). No definitive association has been found between NVP and depressive illness, bipolar disorder, or schizophrenia¹⁵ or the use of antidepressants before or during early pregnancy.¹⁶ Studies reporting an association with depression have not established a cause-effect relationship.¹⁷

Seng¹⁸ reported increased NVP risk in women with PTSD. High levels of stress, anxiety, and depression found in women with NVP are thought to result from—rather than cause—NVP's physical symptoms, however.^{3,19,20}

Psychosocial stressors have been implicated, with higher NVP rates reported in unmarried women, those with unwanted or unplanned pregnancies, immigrants, and those living in crowded situations.²¹ NVP also is more frequent among women who experience emotionally disturbing events or interpersonal, economic, or occupational difficulties during pregnancy.²² Physical symptoms may provide secondary gain in attention and sympathy and a time-out from stressful home events.¹⁴

These psychosocial theories are poorly supported by data, but some clinicians

Table 2

Advice for patients: Strategies to manage NVP

Correct dehydration

Drink small amount of fluids frequently

Dietary changes

Eat frequent, small meals

Avoid high-fat foods

Snack before getting out of bed and before going to sleep

Don't force yourself to eat

Use candy and salty snacks to combat nausea

Avoid strong odors and scents; try cold foods, which may have less odor than hot foods

Take advantage of good days or good hours of the day for eating

Lifestyle changes

Get out of bed slowly

Lie down when nauseated

Avoid stressful situations

NVP: nausea and vomiting in pregnancy

Source: Reference 6

may still believe NVP has a psychogenic cause. Lennane and Lennane²³ proposed in 1973 that this perception may result from gender bias because:

- most conditions believed to have psychogenic causes affect women more than men
- the belief that NVP is psychogenic has been perpetuated primarily by male authors.

They argued that sexual prejudice may prevent women from receiving necessary symptomatic treatment and impede research into the cause of NVP.²³

Gender bias continues to be found in the diagnosis of women with physical complaints. In 2006, Chiaramonte and Friend²⁴ found strong, consistent gender bias among medical students and residents when evaluating women who reported coronary disease symptoms during stressful life events.

Organic theories

Organic theories view NVP as multifactorial, with contributions from evolution and multiple organ systems. Endocrine, vestib-

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Reference: 1. Barkley RA, Fischer M, Smallish L, Fletcher K. Young adult outcome of hyperactive children: adaptive functioning in major life activities. *J Am Acad Child Adolesc Psychiatry*. 2006;45:192-202.

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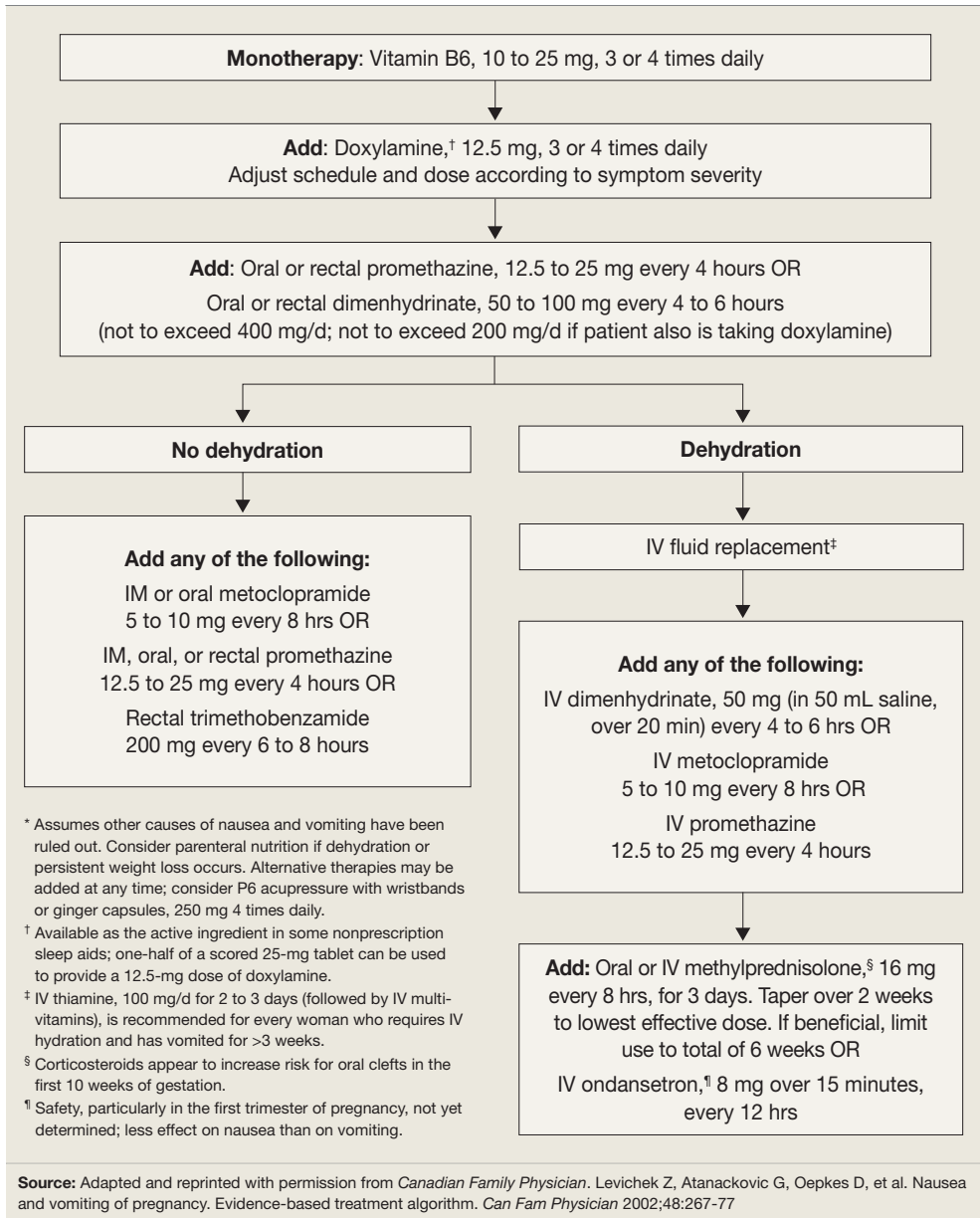
Vomiting in pregnancy

Clinical Point

Human chorionic gonadotropin shows a clear association with NVP and is thought by some researchers to be the most likely cause

Algorithm

Pharmacologic treatment of nausea and vomiting in pregnancy*



ular, gastrointestinal, and CNS contributions have been described, but none have solved NVP's etiologic mystery.

Evolutionary. NVP may provide an evolutionary advantage by protecting the embryo and mother. This theory states that potential toxins are present in many foods, especially if eaten in large quantities. NVP prevents the pregnant woman from eating very much and harming the embryo. Below-average miscarriage rates are seen in women with NVP.^{1,2,25}

And because a woman's immune system is depressed during pregnancy, NVP may be advantageous for the mother by limiting her ingestion of potential toxins.²⁵

Endocrine. Human chorionic gonadotropin (hCG), estrogens, progesterone, and leptin, as well as adrenal cortex insufficiencies have been investigated for a role in NVP. Only hCG has shown clear evidence of an association, and some researchers believe it is the most likely cause of NVP.²⁰

NVP rates are higher in pregnancies with elevated hCG. Molar and multiple-gestation pregnancies—each associated with elevated hCG—are complicated more frequently with the severest form of NVP.^{20,26} Conversely, NVP is less common in women who smoke, which is associated with lower hCG.²⁶

During pregnancy, actions of hCG stimulate the thyroid. Hyperstimulation, leading to transient hyperthyroidism, has been implicated in NVP development.^{20,26} Symptom severity and the degree of thyroid stimulating hormone (TSH) suppression are closely correlated.²⁶

Elevated hCG levels, hypersensitive TSH receptors, and the presence of a hyperactive hCG isoform have been proposed.²⁰

Gastrointestinal disorders are believed to be involved in the pathogenesis of persistent NVP. Women with NVP usually lack structural or mucosal abnormalities and have normal endoscopic upper GI evaluations. They may, however, have disorders of the stomach's neuromuscular function. Severe cases of gastric dysrhythmias and abnormalities of gastric tone may lead to gastroparesis.²⁷

Stomach motility in pregnancy is influenced by neurohormonal changes, specifically in estrogen and thyroid hormones. Gastric motility abnormalities—evaluated by electrogastrography (EGG)—have been associated with NVP symptoms and normal EGGs with the absence of symptoms. Some women who had NVP and abnormal EGGs were retested after delivery when symptom-free and found to have normal myoelectric EGG patterns.²⁷

Helicobacter pylori also may be involved in NVP, and at least 1 study found active *H pylori* infection and HG to be highly correlated. Pregnancy is not believed to predispose to *H pylori* infection, but active infection compounded by pregnancy's hormonal changes may exacerbate NVP.²⁸



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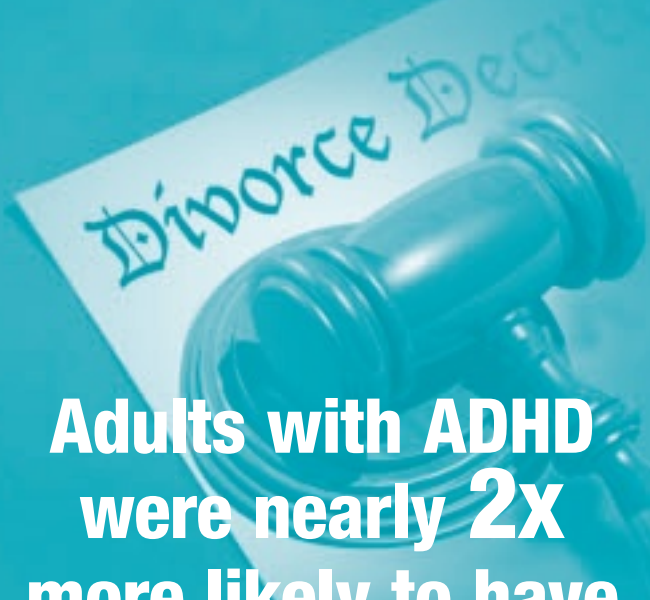
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*Results from a population survey of 500 ADHD adults and 501 gender- and age-matched non-ADHD adults which investigated characteristics of ADHD and its impact on education, employment, socialization, and personal outlook.

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Vomiting in pregnancy

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Mirtazapine exhibits an antiemetic effect and has been reported to ameliorate NVP symptoms, usually within 24 hours

Figure Wristband to manage nausea and vomiting in pregnancy



The FDA-cleared BioBand acupressure wristband may help control nausea and vomiting in pregnancy by stimulating the Neiguan point (P6) on the wrist.

Source: Reference 36

NVP and motion sickness share many features, suggesting that NVP treatment could be targeted if a vestibular disorder could be discovered.²⁹ Abnormal electroencephalography—particularly generalized slowing—that is not present in asymptomatic pregnant women has been reported in women with NVP.³⁰

CNS contributions. Persistent NVP may be a learned behavior,²⁴ a view based on findings of anticipatory nausea and vomiting in chemotherapy patients. Through conditioning, a pregnant woman may associate her physical symptoms with elements in her life that maintain the cycle of nausea and vomiting.³¹

Treating psychological symptoms

Brief psychotherapy to identify and correct sources of anxiety in pregnancy may alleviate a patient's nausea and vomiting.³²

- Progressive muscle relaxation training, often combined with guided imagery, can decrease nausea and vomiting associated with chemotherapy and may prevent anticipatory symptoms by decreasing anxiety.

- Systematic desensitization is successful in most chemotherapy patients who try it. In this technique, relaxation is counter-conditioned as a response to stimuli known to elicit symptoms.³¹

Hypnosis allows patients to achieve a physiologic state incompatible with nausea and vomiting³¹ and can terminate vomiting after 1 to 3 sessions.³

Medication. Similar to ondansetron, the antidepressant mirtazapine exhibits an antiemetic effect by blocking the 5-HT₃ receptor. In treatment-resistant cases, mirtazapine, 30 mg/d, has been reported to ameliorate NVP symptoms, usually within 24 hours. Patients were able to return to normal diets and discontinue treatment after 6 to 10 days. Mirtazapine appears to be safe during pregnancy, based on animal studies using 17 and 20 times the maximum recommended human dose.³³

For patients with anxiety symptoms, consider other medications—including selective serotonin reuptake inhibitors and benzodiazepines—only after counseling the patient about potential risks and benefits to her and the fetus.³⁴

Alternative treatments. In traditional Indian medicine, a mixture of powdered ginger and honey is given to women with NVP. At least 2 studies demonstrate ginger's efficacy.³⁵

In traditional Chinese medicine, stimulating the Neiguan point (P6) on the wrist is believed to relieve nausea and vomiting. Although results are inconclusive, studies suggest that P6 stimulation can help control NVP.³⁶ The FDA has approved wristbands that stimulate the P6 site, either electrically or by acupressure (*Figure*).³⁶

Consider thiamine supplementation for women with severe symptoms, as Wernicke's encephalopathy is a rare complication of prolonged NVP.^{19,37}

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Related Resources

• Motherisk Program at The Hospital for Sick Children, Toronto, Ontario, Canada. Website with information on vomiting during pregnancy: www.motherisk.org/women/morningSickness.jsp. Nausea and vomiting of pregnancy (NVP) forum. www.motherisk.org/women/forum.jsp.

• BioBand acupuncture wristband. www.BioBands.com.

• Koren G, Bishai R, eds. *Nausea and vomiting of pregnancy: state of the art 2000*. Toronto, Ontario, Canada: The Motherisk Program; 2000.

Drug Brand Names

Dimenhydrinate • Dramamine Mirtazapine • Remeron
Doxylamine • Unisom Ondansetron • Zofran
Methylprednisolone • Medrol Promethazine • Phenergan
Metoclopramide • Reglan Trimethobenzamide • Tigan

Disclosure

The authors report no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

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Clinical Point

Hypnosis allows patients to achieve a physiologic state incompatible with nausea and vomiting

Bottom Line

Severe nausea and vomiting in pregnancy is no longer viewed as psychogenic but as arising from biopsychosocial factors. Rule out medical causes of vomiting and correct dehydration. Consider mirtazapine for treatment-resistant cases. To reduce stress, anxiety, and anticipatory vomiting, consider brief psychotherapy, progressive muscle relaxation, systematic desensitization, or hypnosis.