Iron Deficiency Anemia in Women's Health: Prevention, Awareness & Management

Iron Corner
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SUMMARY

- Iron deficiency (with or without anemia) affects 30–40% of women and is often underrecognized and undertreated (WHO, 2025; ACOG, 2021).
- It negatively impacts quality of life, increases morbidity and mortality, and is linked to adverse maternal/fetal outcomes (Govindappagari & Burwick, 2019; Wassef et al., 2019).
- Early recognition and treatment should be a high priority (Shander et al., 2023).

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- Iron Deficiency without Anemia
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- Perimenopause

Introduction

- Global anemia prevalence: 24.8% (~1.62 billion people); 41.8% are pregnant women, and 30.2% are nonpregnant women (WHO, 2025)
- IDA affects women across all life stages: adolescents, reproductive-aged, pregnant, and perimenopausal.
- **In pregnancy, anemia is an independent risk factor for maternal and fetal morbidity/mortality** (ACOG, 2021).
- **Racial disparities in anemia rates** (women <50):
  - 3.3% of Caucasians
  - 8.7% of Latinas
  - 24.5% of Black Americans (Krule et al., 2022)
- IDA affects 12% of premenopausal women; prevalence rises to 19% in Black women (Krule et al., 2022)
- **Early screening and supplementation are essential to prevention** (CDC, 2024; WHO, 2025).

Causes of IDA

- **Nutritional deficiency**: Low dietary intake or poor iron bioavailability (ODS, 2025)
- **Blood loss**:
  - Heavy menstrual bleeding (CDC, 2024)
  - Gastrointestinal bleeding in postmenopausal women (Kaunitz, 2019)
- **Impaired absorption**:
  - IBD, gastric bypass, celiac disease, proton pump inhibitors, autoimmune gastritis (Shander et al., 2023)
- **Pregnancy**: Increased iron demand and fetal iron transfer often outpace maternal intake, especially in women with marginal status before pregnancy (ACOG, 2021; WHO, 2025).

Symptoms of IDA

- Fatigue, low stamina, reduced exercise tolerance (Wassef et al., 2019)
- Palpitations, shortness of breath
- Headaches, cold intolerance
- Mood changes, depression, "brain fog" (Wassef et al., 2019)
- Alopecia, glossitis, koilonychia
- Restless legs syndrome
- Pica, especially pagophagia (ice-chewing) — often misrecognized, delaying diagnosis (Wassef et al., 2019)

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Iron Deficiency Without Anemia

- Low ferritin may cause symptoms even in absence of anemia (Van Remoortel et al., 2021).
  - Fatigue
  - Reduced work performance
  - Reduced quality of life
- Early treatment improves symptoms and may prevent progression to anemia (Govindappagari & Burwick, 2019).

Consequences in Women and Children

Consequences Linked to Iron Deficiency Anemia in Pregnancy

- Preterm birth, IUGR, postpartum hemorrhage, increased infection (ACOG, 2021)
- Small-for-gestational-age newborns
- Postpartum depression and impaired maternal-neonatal bonding (Wassef et al., 2019)

Fetal-Neonatal Complications Linked to Maternal Iron Deficiency/Anemia

- **Increased Risk of Schizophrenia:**
  - Maternal hemoglobin levels ≤10.0 g/dL during pregnancy are associated with a nearly fourfold increased risk of schizophrenia spectrum disorders in offspring. Each 1 g/dL increase in maternal hemoglobin reduced schizophrenia risk by 27% (Insel et al., 2008).
- **Elevated Autism Spectrum Disorder (ASD) Risk:**
  - Mothers with low iron intake during pregnancy had a fivefold greater risk of having a child with ASD, especially among older mothers or those with metabolic conditions (Schmidt et al., 2014).
- **Cognitive and Behavioral Delays:**
  - Early-life iron deficiency is associated with long-lasting neurocognitive impacts, including deficits in learning, memory, and behavioral regulation (Beard & Connor., 2003).
- **Impaired Recognition Memory in Infants:**
  - Infants with fetal-neonatal iron deficiency exhibited altered recognition memory as early as 2 months of age Lukowski, et al., 2015).
- **Association with Intellectual Disability and ADHD:**
  - Anemia diagnosed before 30 weeks' gestation was linked with increased risks of autism, ADHD, and intellectual disability in offspring (Sundelin et al., 2019).

Heavy Menstrual Bleeding

- Menorrhagia: >80 mL or >7 days/cycle (CDC, 2024)
- Iron loss can be gradual and overlooked
- RDA: 18 mg iron/day (ODS, 2025)
- Fatigue is often misattributed or normalized (Kaunitz, 2019)
- Screening questions:
  - How often do you saturate a pad or tampon?
  - Does bleeding last more than 7 days?
  - Do you bleed through clothes?
  - Does it disrupt school or work?

Pregnancy

- Up to 40% of women start pregnancy with depleted iron stores (Shander et al., 2023).
- Physiologic anemia expected (Hgb 10–11 g/dL)
- A comprehensive analysis of 272 studies found that **maternal Hgb levels below 11 g/dL are associated with increased risks of low birth weight, preterm birth, small-for-gestational-age infants, stillbirth, and perinatal and neonatal mortality** (Rahman et al., 2016).

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- Contributing factors:
  - ↑40–50% plasma volume, ↑20–30% RBC mass, fetal iron transfer
- WHO (2024): Recommends 30–60 mg elemental iron + 0.4 mg folic acid daily to reduce anemia, low birth weight, and sepsisg
- ACOG (2021) recommend: IV iron after 1st trimester if oral iron fails or is intolerable
- Blood loss at delivery increases need.

IV Iron in Pregnancy

- IV iron is more effective than oral iron for increasing hemoglobin and replenishing iron stores (Govindappagari & Burwick, 2019).
- A 2024 Cochrane review found that IV iron improves anemia and hemoglobin levels without increasing adverse maternal or neonatal outcomes (Cochrane Review, 2024).
- A meta-analysis of 34 studies showed fewer adverse events with IV iron compared to oral iron (Nature Scientific Reports, 2023).
- A large 2025 multicenter study found a single dose of IV iron in the second trimester was safe and effective (SMFM, 2025).
- IV iron isomaltoside was not associated with increased maternal or fetal complications; side effects were mild and infrequent (Qassim et al., 2020).
- ACOG (2021): Recommends IV iron after the first trimester if oral iron is not tolerated or is ineffective.

Postpartum

- Hgb <10 g/dL = clinically significant anemia (ACOG, 2021)
- Hemoglobin typically lowest ~48 hours after birth
- Ferritin unreliable postpartum due to inflammation; reassess after 6 weeks if needed (Wassef et al., 2019)
- Risk factors:
  - Multiparity, obesity, adolescent mothers, low socioeconomic status
- WIC study (n=60,000):
  - 27% postpartum anemia overall
  - 40% Hispanic; 48% Black women (Wassef et al., 2019)
- **Postpartum Depression:**
  - 8/10 studies found higher PPD risk with IDA
  - 4/5 studies showed reduced risk with iron therapy (Wassef et al., 2019)

Perimenopause

- Perimenopause is the transitional stage before menopause when estrogen and progesterone levels begin to fluctuate.
- These hormonal changes lead to irregular ovulation, which can cause unpredictable or heavy menstrual bleeding.
- **Heavy bleeding** during this stage can result in significant iron loss and contribute to iron deficiency or anemia, especially if untreated.
  - Signs of concern: Saturating pads/tampons every 2 hours, bleeding >8 days (CDC, 2024)
- **Symptoms of iron deficiency in perimenopause**:
  - Fatigue, low energy, brain fog, poor concentration
  - Decreased work productivity, reduced quality of life
  - Mood changes, low self-esteem, difficulty coping with stress
- **Mental health impact**:
  - Depression affects 4 in 10 perimenopausal women, often linked to both hormonal shifts and iron deficiency (Wassef et al., 2019)
  - These challenges can persist for years and are often underrecognized

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- **Iron requirements**:
  - Recommended intake: 18 mg/day (Office of Dietary Supplements, 2025)
  - Many women may be unaware of iron depletion unless screened
- **Treatment and management options**:
  - Iron-rich diet (e.g., lean red meat, leafy greens, fortified grains)
  - Oral iron supplementation (first-line)
  - IV iron infusion if oral iron is not tolerated or ineffective
- **Menstrual bleeding control strategies**:
  - Hormonal contraception (e.g., oral contraceptives)
  - Intrauterine devices (IUDs)
  - Tranexamic acid (TXA) to reduce blood loss
  - Endometrial ablation in refractory cases
- **Clinical considerations**:
  - Symptoms are often dismissed or minimized by providers
  - Regular OB/GYN visits can help address both bleeding and mood symptoms
  - Mental health referrals may be appropriate for persistent depression or anxiety

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