

AUB • Abnormal Uterine Bleeding

Use PALM-COEIN to organize causes: Polyp (a small bump on the lining), Adenomyosis (lining tissue burrowing into muscle), Leiomyoma (fibroid—a benign muscle knot), Malignancy (cancer), Impaired blood clotting (Coagulopathy) (bleeding disorder stopping vessel sealing), Ovulatory dysfunction (ovary skips releasing an egg so hormones run wild), Endometrial (the lining itself becomes inflamed or overgrown), Caused by medical care (Iatrogenic) (medicines or devices causing bleeding), Not-yet-classified—then treat the root problem.

THE ONE-LINE TRUTH

Abnormal uterine bleeding (periods that are too heavy, too long, too often, or happen at the wrong time) happens when something breaks the normal hormone cycle, a growth forms in the uterus, blood clotting fails, or cancer develops.

The chain — how it unfolds

1. Anovulation, a structural lesion, a clotting disorder, or cancer breaks normal shedding or vessel sealing. — why: Anovulation leaves estrogen unopposed—progesterone never arrives to lock the lining, so it grows thick and fragile and sheds in chaotic chunks (common in adolescence, perimenopause, PCOS, thyroid disorders). Structural lesions (polyp, submucosal fibroid, adenomyosis) warp the surface and tear or expose blood vessels. Impaired blood clotting (Coagulopathy) (von Willebrand disease, a low platelet count (thrombocytopenia), anticoagulant therapy) stops the platelet plug and fibrin net that normally seal vessels in minutes. Endometrial or cervical cancer creates abnormal, fragile tissue that bleeds irregularly and heavily.
2. Heavy menstrual bleeding (more than 80 mL per cycle—soaking through a pad or tampon every 1–2 hours, passing clots larger than a quarter), prolonged bleeding (more than 7 days), or intermenstrual bleeding happens. — why: Unopposed estrogen causes prolonged, unpredictable shedding of thick, weak lining. Structural problems create rough surfaces that bleed continuously. Impaired blood clotting (Coagulopathy) prevents the platelet-fibrin seal that stops flow. Cancer tissue bleeds from abnormal, leaky vessels.

3. Iron-deficiency anemia develops as blood loss outruns dietary iron absorption and bone marrow red-cell production. — why: Each milliliter of blood carries 0.5 milligrams of iron (mostly in hemoglobin). Chronic heavy bleeding drains iron stores (ferritin drops first, then serum iron, then hemoglobin) faster than your gut can absorb iron from food (even with supplements) and your marrow can make new red blood cells—so hemoglobin and hematocrit fall.
4. Fatigue, shortness of breath with activity (dyspnea on exertion), dizziness, headache, pale skin and conjunctiva (pallor), and sometimes pica (craving ice or non-food items) appear as tissues run low on oxygen. — why: Low hemoglobin means your blood carries less oxygen (each hemoglobin molecule binds four oxygen molecules). Muscles, brain, and organs cannot meet their energy needs—especially during exercise—so you feel tired, weak, and breathless. Pica reflects severe iron depletion affecting brain chemistry.
5. Compensatory a fast heart rate (tachycardia) (fast heart rate) and peripheral vasoconstriction (narrowed vessels in arms, legs, skin) try to keep oxygen delivery to vital organs normal. — why: Your cardiovascular system compensates by speeding your heart (more beats per minute pushes more blood) and narrowing vessels in your skin and limbs (shunting blood toward brain, heart, kidneys)—keeping critical organs fed even as total oxygen-carrying capacity drops.
6. If bleeding continues or a sudden massive bleed occurs, compensation fails and hypovolemic shock (shock from low blood volume) hits—severe a fast heart rate (tachycardia) (heart rate over 120), low blood pressure (hypotension) (systolic below 90 mmHg), fainting (syncope) (fainting), cold clammy skin, confusion, and organ poor blood flow (hypoperfusion) (not enough blood reaching tissues). — why: Once circulating volume drops below a critical threshold (losing roughly 30–40 percent of blood volume), your heart cannot pump enough blood to maintain pressure—even at maximum speed and vasoconstriction. Oxygen delivery collapses, cells switch to anaerobic metabolism (making energy without oxygen—much less efficient), lactic acid builds up (causing too much acid in the blood (acidosis)), and organs begin to fail (acute kidney injury, altered mental status, myocardial starved blood flow (ischemia)).
7. Missed or delayed diagnosis of endometrial hyperplasia (precancerous overgrowth) or endometrial cancer allows disease to progress—especially in women over 35, obese, with diabetes, PCOS, or taking tamoxifen or unopposed estrogen. — why: Chronic anovulation floods the endometrium with estrogen without progesterone to trigger shedding and oppose growth—cells pile up and can develop atypia (abnormal changes) and cancer. Current guidelines (ACOG, SGO) say any woman ≥ 45 years with abnormal uterine bleeding, or any woman with risk factors (obesity, PCOS, anovulation, diabetes, family history of Lynch syndrome, tamoxifen use), needs endometrial sampling (office biopsy or dilation and curettage) to rule out hyperplasia and cancer before assuming a benign cause.

8. Tracing back to the one broken step upstream—anovulation, a structural lesion, a clotting disorder, or cancer—guides the right treatment to stop bleeding at the source and prevent recurrence. — why: Treating symptoms alone (transfusing blood without fixing the cause) lets the cycle repeat and risks missing cancer. Hormonal therapy (combined oral contraceptives for cycle control, oral or intrauterine progestins to oppose estrogen, tranexamic acid to enhance clotting) restores normal cycles in anovulatory bleeding. Surgical options (hysteroscopic polypectomy, myomectomy, endometrial ablation, hysterectomy) remove structural causes. Hematology manages impaired blood clotting (coagulopathy) with desmopressin (DDAVP for von Willebrand disease), factor replacement, or platelet transfusion. Oncology treats hyperplasia (progestin therapy, hysterectomy if atypical) and cancer (hysterectomy with staging, radiation, chemotherapy per NCCN guidelines).

Spot it — what you see, and why

- Heavy menstrual bleeding (soaking through one or more pads or tampons every hour, passing clots bigger than a quarter, or losing more than 80 mL per cycle): When you don't ovulate, estrogen keeps building up the uterus lining with no progesterone to balance it. That lining gets thick and fragile, so it floods when it finally breaks down. A growth inside the uterus—like a polyp (small grape-like bump), fibroid (muscle knot), adenomyosis (lining growing into muscle), or cancer—tears open big blood vessels. If you have a clotting disorder, your blood can't form the tiny plugs that normally seal vessels during your period.
- Prolonged menstrual bleeding (periods lasting more than 7 days): When you don't ovulate, your body never makes the progesterone burst that normally tells the lining to stop shedding after a few days, so bleeding drags on and on. Structural problems—like fibroids or polyps—create rough, uneven surfaces that keep bleeding. A clotting disorder stops your vessels from sealing on time.
- Intermenstrual bleeding (bleeding between periods): Estrogen without progesterone makes random patches of lining break down whenever they feel like it. Polyps and fibroids have fragile surface blood vessels that bleed on their own. Endometrial hyperplasia (the lining grows too thick and cells look abnormal) or cancer sheds in unpredictable bursts. Hormonal birth control or an IUD can thin the lining so much that tiny vessels leak through (breakthrough bleeding).
- Fatigue and weakness: Losing blood month after month drains your iron stores. Without iron, your body can't make enough hemoglobin (the protein in red blood cells that carries oxygen). Low hemoglobin means your muscles and brain get less oxygen, so normal activities—like climbing stairs or thinking clearly—feel exhausting.

- Shortness of breath with activity (dyspnea on exertion): Low hemoglobin can't carry enough oxygen to meet the extra demand when you move or exercise. Your brain notices the oxygen shortage and tells you to breathe faster and deeper to compensate.
- Pale skin and mucous membranes (pallor, especially inside eyelids and under nails): Hemoglobin gives blood its red color. When you have less hemoglobin flowing through the tiny vessels (capillaries) under your skin and inside your eyelids, those areas look pale instead of pink.

Red flags — act now

- Fainting, severe dizziness, or blood pressure below 90/60 mmHg — means sudden heavy bleeding has dropped your blood volume so low that your body is going into shock (hypovolemic shock). You need IV fluids, possibly a blood transfusion, and hospital admission right away.
- Any vaginal bleeding more than 12 months after your last period (postmenopausal bleeding) — endometrial cancer until proven otherwise. Requires urgent endometrial biopsy or transvaginal ultrasound within days.
- Hemoglobin below 7 g/dL or severe anemia symptoms (chest pain, shortness of breath at rest, confusion) — your oxygen delivery is dangerously low. Requires blood transfusion and hospital admission.
- Positive pregnancy test with abnormal bleeding — ectopic pregnancy (pregnancy growing outside the uterus, often in a tube) or miscarriage must be ruled out immediately with a blood test (quantitative β -hCG) and ultrasound. An ectopic can rupture and cause life-threatening internal bleeding.
- Bleeding that will not stop despite medicine, or signs your circulation is failing (cold skin, rapid weak pulse, confusion) — may need an emergency procedure: D&C (scraping the lining out), uterine artery embolization (blocking the vessels that feed the uterus), or hysterectomy (removing the uterus).

Treat it — in this order

1. Acute management for life-threatening bleeding: intravenous fluids, packed red blood cell transfusion if hemoglobin is below 7 g/dL or if the patient has severe symptoms (chest pain, shortness of breath, confusion, severe dizziness) at any hemoglobin level, high-dose intravenous conjugated estrogen (25 mg IV every 4 to 6 hours for up to 24 hours), or intravenous tranexamic acid (10 mg per kilogram, up to 1 gram, every 6 to 8 hours). → IV fluids restore blood volume (the amount of fluid inside the blood vessels) so the heart has enough volume to pump and blood pressure stays up. Transfusion immediately increases the number of red blood cells that carry oxygen, relieving symptoms of severe anemia. High-dose IV estrogen floods the fragile, disorganized lining of the uterus with hormone. This helps the lining grow a new surface layer (re-epithelialization) quickly and promotes clotting, so bleeding slows. Tranexamic acid blocks plasmin (an enzyme that dissolves clots), so the clots that have already formed stay in place and seal the bleeding vessels longer.
2. First-line hormonal therapy for non-acute abnormal uterine bleeding: combined oral contraceptive pills (contain both estrogen and progestin, taken daily), progestin-only pills (medroxyprogesterone acetate 10 mg daily for 10 to 14 days each month, or norethindrone 5 mg daily), or a levonorgestrel-releasing intrauterine device (LNG-IUD, a small T-shaped device placed inside the uterus that releases progestin locally). → These hormones restore the normal cycle of signals the uterine lining needs. Normally, in the first half of the cycle, estrogen builds the lining. At mid-cycle, you ovulate and form a corpus luteum (a temporary gland on the ovary that releases progesterone). Progesterone stabilizes the lining and organizes the shedding. Without ovulation, there is no corpus luteum, no progesterone, and estrogen keeps stimulating the lining to grow. Progestin (synthetic progesterone) opposes estrogen's growth signal, strengthens the blood vessels in the lining, and prevents chaotic, heavy shedding. The LNG-IUD releases progestin directly to the lining, making it very thin so there is almost nothing to shed. Menstrual blood loss drops by 90 percent or more with the LNG-IUD.
3. Tranexamic acid (oral, 1300 mg three times daily during menstruation only, for a maximum of five days per cycle) for women who ovulate regularly but have heavy menstrual bleeding and a normal uterus on imaging. → Tranexamic acid blocks plasmin, the enzyme that breaks down fibrin clots in the uterine lining. When clots last longer, the blood vessels stay sealed longer and less blood leaks out. Menstrual blood loss decreases by about 40 to 50 percent. This is a non-hormonal option for women who ovulate normally but still bleed heavily.

4. Nonsteroidal anti-inflammatory drugs (NSAIDs): ibuprofen 600 to 800 mg three times daily, or naproxen 500 mg twice daily, taken during menstruation only. → NSAIDs block cyclooxygenase (COX) enzymes, which make prostaglandins. Prostaglandins are chemicals that cause the uterus to contract and blood vessels in the lining to widen (vasodilation). By blocking prostaglandins, NSAIDs reduce menstrual flow by about 20 to 30 percent and also reduce cramping (dysmenorrhea, painful periods).
5. Surgical management: hysteroscopic resection of polyps or submucosal fibroids (fibroids that bulge into the uterine cavity), endometrial ablation (destroying the lining of the uterus using heat, cold, or radiofrequency energy), or hysterectomy (removing the uterus completely through the vagina or through small cuts in the belly). → Hysteroscopic resection physically removes polyps or fibroids that distort the inside of the uterus and disrupt normal shedding. Endometrial ablation destroys the deepest layer of the lining (the basal layer) so the lining cannot grow back. Bleeding stops or becomes very light. Hysterectomy removes the entire uterus, so menstruation stops permanently and abnormal uterine bleeding is cured. Hysterectomy is definitive for structural causes like large fibroids, adenomyosis, or hyperplasia that does not respond to medical management.

Your top priorities at the bedside

1. Check vital signs immediately including blood pressure lying down and standing up, heart rate, and oxygen saturation, and repeat every 15 to 30 minutes if bleeding is heavy. — why: Blood pressure below 90/60 mmHg, heart rate above 100 beats per minute (tachycardia), or a drop in systolic blood pressure of 20 mmHg or more when standing (orthostatic low blood pressure (hypotension)) means the patient has lost enough blood volume to cause shock and needs immediate IV access and fluids before organs fail from lack of oxygen.
2. Start two large-bore IV lines (18-gauge or bigger) and give isotonic crystalloid fluids like normal saline or lactated Ringer solution wide open if the patient shows any signs of shock. — why: Large IV lines let you give fluids and blood products fast to replace lost blood volume, and isotonic fluids expand the blood volume quickly to keep blood pressure high enough to deliver oxygen to the brain, heart, and kidneys before permanent organ damage happens.
3. Draw blood for complete blood count (CBC measures red cells, hemoglobin, and platelets), type and crossmatch (prepares matched blood for transfusion), coagulation studies (PT/INR and aPTT measure clotting ability), and beta-hCG pregnancy test in all women of childbearing age. — why: Hemoglobin below 7 g/dL means severe anemia requiring transfusion, platelet count below 50,000 or abnormal clotting times may explain why bleeding will not stop, and a positive pregnancy test completely changes the diagnosis to pregnancy complication needing obstetric emergency care instead of hormonal treatment.