

PPH · Postpartum Hemorrhage

After the baby is born, the uterus should clamp down tight like a fist to stop bleeding from the spot where the placenta was stuck. When it does not squeeze hard enough, blood pours out fast. Most postpartum bleeding (hemorrhage) comes from a soft, baggy uterus (atony). Check the 4 Ts: Tone (uterus not squeezing), Tissue (placenta pieces left inside), Trauma (tears in the cervix or vagina), and Thrombin (clotting problems). First, massage the uterus and give medicines (oxytocin, then methergine or misoprostol) to make it contract. If that fails, try a balloon inside the uterus to press on the bleeding, then move to surgery. Replace blood fast with transfusions and fluids to keep mom's heart and brain alive.

THE ONE-LINE TRUTH

Losing more than 1000 mL of blood after delivery — or any amount that makes the heart race and blood pressure drop — is postpartum bleeding (hemorrhage).

The chain — how it unfolds

1. The uterus stays soft and does not squeeze down after the placenta comes out. — why: Without muscle contraction, the spiral arteries (the blood vessels that fed the placenta) stay wide open like garden hoses, and blood pours freely into the uterine cavity and out through the vagina — this is uterine atony, the most common cause.
2. Blood loss climbs past 1000 mL fast, sometimes in just minutes. — why: The placental bed has huge, high-pressure vessels, so when they are not clamped by muscle, the bleeding is heavy and continuous — like a faucet left wide open.
3. Mom's heart starts racing (tachycardia) and her blood pressure may still look okay at first. — why: Her body is in compensated shock: the heart beats faster and blood vessels squeeze tight to keep blood reaching the brain and heart, so vital signs hide how much blood she has really lost — this middle stage is dangerous because it can fool the team.
4. If bleeding continues, blood pressure suddenly drops, heart rate climbs above 120, skin turns cold and pale, and mom feels dizzy or confused. — why: She has crossed into decompensated shock: the body can no longer keep up, and there is not enough blood left to fill the vessels and deliver oxygen to organs — this is the crash point.

5. Without fast transfusion and source control, organs begin to fail — kidneys stop making urine, brain function drops, and the heart may not have enough blood to pump. — why: When oxygen delivery falls below the critical threshold, cells switch to anaerobic metabolism (burning fuel without oxygen), lactic acid piles up, and tissue starts to die — this spiral leads to multi-organ failure and death.
6. If shock is severe and prolonged, the pituitary gland (the brain's hormone control center) can die from lack of blood, causing Sheehan syndrome months later. — why: The pituitary sits in a bony cup at the base of the skull and swells during pregnancy, making it extra vulnerable when blood pressure crashes — once it dies, mom loses the hormones that control breastfeeding, menstruation, and energy.
7. Massive bleeding can also trigger disseminated intravascular coagulation (DIC), where the body uses up all its clotting factors and then bleeds from everywhere. — why: The body tries so hard to clot the open vessels that it exhausts its supply of clotting proteins and platelets — then it cannot form clots anywhere, and bleeding becomes unstoppable without replacement of factors through transfusion.
8. The only way to stop the spiral is to make the uterus contract (with massage and medicines like oxytocin), replace lost blood with transfusions, and if needed, use a balloon or surgery to physically stop the bleeding. — why: Treating shock with fluids alone will not work if the source keeps pouring — you must close the faucet (stop the bleeding) and refill the tank (replace blood volume) at the same time, or mom will die from bleeding-driven (hemorrhagic) shock.

Spot it — what you see, and why

- Heavy bleeding that soaks one pad in under an hour or big clots the size of a lemon or larger: After delivery, if the uterus (the womb) stays soft and floppy instead of clamping down hard, the raw wound inside where the placenta was attached keeps bleeding freely because open blood vessels cannot seal off.
- A soft, puffy, or "boggy" uterus when the doctor or nurse presses on the belly: Normally the uterus muscle bundles squeeze down tight right after birth to pinch shut the torn vessels; when those muscle fibers stay relaxed (called uterine atony), the uterus feels soft and does not form a firm ball, so bleeding continues.
- Bright red blood that keeps flowing in a steady stream: Fresh arterial blood pouring from the placenta site or from a tear in the cervix, vagina, or perineum has not had time to clot, so it looks bright red and flows continuously rather than oozing slowly.
- Fast heartbeat (tachycardia): As blood volume drops, the heart tries to pump faster to keep enough oxygen reaching the brain and vital organs, compensating for the lost blood like a water pump working harder when the tank runs low.

- Low blood pressure (hypotension): Less blood in the body means less pressure in the blood vessels, the same way a garden hose loses pressure when you drain water out of it; if bleeding continues, blood pressure can fall dangerously low.
- Feeling dizzy, weak, or light-headed: The brain is not getting enough oxygen because there is less blood to carry it; this signals that blood volume has dropped and the body is struggling to keep up.

Red flags — act now

- Bleeding that soaks more than one pad per hour or produces clots bigger than a golf ball
- Blood pressure dropping below 90/60 or heart rate climbing above 110 beats per minute
- Confusion, severe dizziness, fainting, or trouble staying awake
- The uterus stays soft and will not firm up even with massage
- Signs of shock: cold clammy skin, rapid weak pulse, very pale face, gasping for air

Treat it — in this order

1. Bimanual uterine massage + IV oxytocin 10 units slow push or 10–40 units/L continuous infusion → Your hand compresses the uterus like a fist from outside (and sometimes inside through the vagina), and oxytocin binds to receptors on uterine smooth muscle cells to trigger strong, sustained contractions. The muscle fibers squeeze tight and clamp shut the spiral arteries (the open blood vessels where the placenta was attached). This stops bleeding at the source. Uterine atony is the cause of 70–80% of PPH, so this is the most common fix.
2. IV tranexamic acid (TXA) 1 gram over 10 minutes, given within 3 hours of birth → TXA blocks plasmin (the enzyme that breaks down fibrin clots), so clots stay glued in place and do not dissolve too early. This buys time for the uterus to contract and for you to replace lost blood. The WOMAN trial (2017) showed TXA reduces death from PPH by 19% if given within 3 hours.
3. Massive transfusion protocol (MTP): packed red blood cells, fresh frozen plasma, platelets in 1:1:1 ratio → You are replacing the whole blood the mother lost — red cells to carry oxygen, plasma to restore clotting factors (fibrinogen, prothrombin, and others), and platelets to plug bleeding vessel walls. This keeps her heart pumping something with oxygen in it and prevents impaired blood clotting (coagulopathy) from dilution and consumption. The 1:1:1 ratio mimics whole blood and prevents the spiral of bleeding → clotting failure → more bleeding.

4. Add methylergonovine 0.2 mg IM or carboprost 250 µg IM if oxytocin alone does not work → Methylergonovine (an ergot alkaloid) and carboprost (a prostaglandin F2-alpha analog) both trigger strong uterine contractions through different receptor pathways than oxytocin. This gives you a second and third chemical squeeze when oxytocin is not enough. Methylergonovine is contraindicated in high blood pressure (hypertension) (it raises blood pressure). Carboprost is contraindicated in asthma (it can trigger bronchospasm).
5. Manual exploration of the uterus to remove retained placental fragments; repair all lacerations with sutures under good light → Manual removal scoops out any placental tissue still stuck to the uterine wall so the muscle can contract fully and close off bleeding vessels. Suturing tears closes the ripped blood vessels in the cervix, vagina, or perineum so blood stops leaking from those sites.

Your top priorities at the bedside

1. Start two large-bore IV lines (18-gauge or bigger) and give lactated Ringer's or normal saline wide open. — why: The heart and brain need fluid volume fast to replace lost blood and keep blood pressure up. Large IVs allow rapid fluid and blood product delivery.
2. Perform firm continuous uterine massage by placing one hand on the lower belly and rubbing the uterus in circles until it feels hard like a grapefruit. — why: A soft boggy uterus (atony) has open blood vessels inside. Massage makes the muscle squeeze tight and clamps down those vessels to stop bleeding.
3. Measure and record all blood loss by weighing pads and chux (1 gram equals 1 mL) and checking for pooled blood under the patient's bottom every 15 minutes. — why: Accurate measurement tells you if bleeding is getting better or worse and when to activate the massive transfusion protocol at 1000 mL total loss.