GI Bleed

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THE STORY IN ONE SENTENCE

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“Blood is leaking out of the gut. Find where it's coming from, replace what's lost, and plug the hole before the body runs out of volume to keep the brain and heart alive.”

Normal anatomy — the body's job

The whole digestive tract—esophagus, stomach, small intestine, and colon—is a smooth tube lined with a protective mucus layer and fed by a network of blood vessels that stay sealed inside the wall.

BODY'S JOB

The lining's job is to let food move through, absorb nutrients, and keep blood inside the vessels. The mucus layer in the stomach shields the tissue from acid. The vessels deliver oxygen and fuel to every cell along the tube and carry away waste.

1. Food enters the esophagus (the swallowing tube from your throat to your stomach).
2. It drops into the stomach, where acid breaks it down.
3. The partly digested mix moves into the small intestine, where most nutrients are absorbed.
4. What's left travels through the colon (large intestine), where water is pulled back into the body.
5. Waste exits through the rectum and anus.
6. All along this path, tiny blood vessels sit just under the lining, delivering oxygen and taking away carbon dioxide and nutrients—but they never leak into the tube.

What breaks

A hole, tear, or burst vessel anywhere along the gut tube lets blood spill into the digestive tract or out of the body.

CLINICAL TERM

Upper GI bleed (above the ligament of Treitz, roughly where the stomach meets the small intestine): peptic ulcer (a raw crater in the stomach or duodenum wall, often from H. pylori bacteria or NSAIDs like ibuprofen), esophageal or gastric varices (swollen veins that burst under high pressure from liver scarring / portal high blood pressure (hypertension)), Mallory-Weiss tear (a split in the esophagus lining from violent vomiting or retching), esophagitis or gastritis (inflamed lining that oozes blood), or cancer (a tumor that eats through a vessel). Lower GI bleed (small intestine, colon, rectum): diverticulosis (small pouches in the colon wall that pop and bleed), angiodysplasia (fragile, twisted vessels that leak, common in older adults), inflammatory bowel disease (Crohn's or ulcerative colitis—chronic inflammation that erodes the lining), colorectal polyps or cancer, blood-starved (ischemic) colitis (the colon doesn't get enough blood and the tissue dies), hemorrhoids (swollen veins around the anus), or anal fissure (a tear in the anal skin). No matter the cause, the result is the same: blood volume drops, the heart speeds up to try to push what's left, and blood pressure falls because there's not enough liquid to fill the system.

How the body compensates

The body tries to protect the brain and heart by speeding the heart, squeezing blood vessels, and shifting blood away from the gut and skin—so vital signs can look okay for a while even as blood volume silently drops. The danger is missing the slide toward shock before the system crashes.

1. {'what': 'A fast heart rate (Tachycardia) (fast heart rate)', 'why': 'The heart beats faster to pump the shrinking volume of blood around the body and keep oxygen delivery steady.'}
2. {'what': 'Peripheral vasoconstriction (cool, pale, clammy skin)', 'why': "Blood vessels in the skin and gut clamp down to redirect blood toward the brain, heart, and kidneys—the organs that can't go without oxygen."}
3. {'what': 'Normal or slightly low blood pressure (early shock)', 'why': "At first, the heart's speed and vessel squeezing keep the pressure up—this is the dangerous 'stable' window where the bleeding is hidden."}
4. {'what': 'Drop in blood pressure (hypotension, late shock)', 'why': "Once you've lost enough volume (often >30–40% of total blood), the heart can't keep up—pressure falls, organs stop getting oxygen, and the crash happens fast."}

5. {'what': 'Rising lactate, falling urine output, confusion', 'why': 'Tissues switch to survival metabolism without enough oxygen (making lactate), kidneys shut down to save fluid, and the brain gets foggy from low oxygen delivery.'}

Domino effect

1. A break opens in the gut lining—ulcer, torn vein, burst pouch, or fragile vessel. — Blood that should stay sealed inside the vessel wall now spills into the stomach, intestines, or out through the rectum.
2. You see the bleeding: vomiting red blood or coffee-ground material (hematemesis), passing black tarry stool (melena), or bright/dark red blood in the toilet (hematochezia). — If the bleed is in the stomach or esophagus, blood may come up through the mouth or get digested by acid into black, sticky stool. If it's in the colon or rectum, blood exits red or maroon because it hasn't been digested.
3. Blood volume drops inside the vessels—less liquid to fill every heartbeat. — The circulatory system is a closed loop; when you lose blood out of the loop, there's not enough fluid left to keep pressure steady and deliver oxygen everywhere.
4. The heart speeds up (tachycardia) and blood vessels squeeze (vasoconstriction)—skin turns pale, cool, and sweaty. — The body's emergency reflex (the sympathetic nervous system) dumps adrenaline to keep blood pressure up and protect the brain and heart—it's buying time, not fixing the leak.
5. Blood pressure stays normal for a while, then suddenly drops (hypotension). — Compensation works—until it doesn't. Once you've lost roughly a third of your blood volume, the heart can't keep up, pressure crashes, and shock arrives.
6. Organs start failing: kidneys stop making urine, brain gets confused, skin stays cold, lactate rises. — Without enough oxygen delivery, cells switch to emergency metabolism (making lactate), kidneys shut down to save fluid, and the brain—most sensitive to low oxygen—gets foggy or unconscious.
7. Without fast fluid replacement (IV saline, blood transfusion) and plugging the bleed (scope, medicine, surgery), shock leads to cardiac arrest and death. — The heart muscle itself runs out of oxygen and stops—once that happens, the window to bring the patient back closes in minutes.

Symptoms · what the patient feels, and why

- Black, tarry stools (melena): Blood from high in the gut (stomach or small intestine) gets digested by stomach acid and turns black and sticky, like tar, by the time it comes out.

- Bright red blood in stool or vomit (hematochezia or vomiting blood (hematemesis)): Blood is pouring fast from the gut — either from the lower bowel (bright red in stool) or the stomach/esophagus (bright red or coffee-ground vomit) — so fast it doesn't have time to turn black.
- Feeling dizzy or lightheaded, especially when standing up: Losing blood drops the volume in your blood vessels, so when you stand up, not enough blood reaches your brain for a moment.
- Fast heart rate (tachycardia): Your heart pumps faster to try to keep oxygen flowing to your organs even though you have less blood in the tank.
- Low blood pressure (hypotension): When you lose a lot of blood, the pressure inside your blood vessels drops because there is less fluid pushing against the walls.
- Pale skin and pale inner eyelids: Red blood cells carry the color; when you lose blood, your skin and the wet tissue inside your eyelids look washed out.
- Feeling weak or very tired: Red blood cells carry oxygen to your muscles and brain; losing blood means less oxygen delivered, so your body feels drained.
- Belly pain or cramping: The bleed itself (like an ulcer eating through the gut wall) irritates the lining, or blood sitting in the intestine stretches it and triggers cramps.
- Confusion or trouble staying awake: Severe blood loss means your brain is not getting enough oxygen, so thinking gets foggy and you may feel sleepy or out of it.

Focused exam

- Vomit with blood or coffee-ground material (hematemesis): Tells you the bleeding is in the upper GI tract — the esophagus, stomach, or the first part of the small intestine. Coffee-ground vomit means old blood that sat in stomach acid and turned dark brown, like used coffee grounds.
- Black, tarry, sticky stool (melena): Blood traveled through the whole digestive tube and got digested by stomach acid and gut bacteria, turning it black and sticky like tar. This means the bleeding started hours ago in the upper part of the GI tract.
- Bright red blood in stool (hematochezia): Fresh blood that came out quickly, usually from the lower GI tract (colon or rectum), or from very heavy upper bleeding that moved through fast without time to turn black. Tells you the bleeding is active right now.
- Heart rate over 100, blood pressure dropping below 90 systolic: The body lost so much blood that the heart has to beat faster to push what's left to the brain and organs. When blood pressure starts dropping, it means the body is running out of volume fast — this is the danger zone.

- Pale skin, cold hands and feet: The body pulled blood away from the skin and sent it to protect the brain, heart, and kidneys. Skin looks white because the tiny blood vessels there shut down to save what's left for the most important organs.
- Belly pain or tenderness when you press: Could mean an ulcer ate through the stomach lining, a tear in the esophagus, or inflammation from the bleed. Pain tells you where the break might be and whether the bleed irritated the belly lining.

Diagnostics · every test answers a question

- Complete blood count (CBC) with hemoglobin and hematocrit → How much blood has the body lost, and is the bone marrow keeping up by making more red blood cells?
- Basic metabolic panel (BMP) → Are the kidneys still working, and is the body dehydrated from blood loss?
- Coagulation panel (PT/INR and aPTT) → Can the blood clot properly, or is something blocking the clotting system?
- Type and cross-match (blood type and antibody screen) → What is the patient's blood type, and do we have safe donor blood ready if we need to transfuse?
- Lactate level → Are the organs getting enough oxygen, or is the body switching to survival mode?
- Platelet count → Does the body have enough platelets (tiny clotting cells) to plug the bleeding vessel?

Treatment logic

- Two large-bore IV lines + rapid infusion of crystalloid fluids (normal saline or lactated Ringer's) + transfuse packed red blood cells to keep hemoglobin at or above 7 g/dL → Replaces lost blood volume and pumps liquid back into the vessels so the heart has something to push. Brings oxygen-carrying red cells back so the brain, heart, and kidneys can breathe. Stops the body's panic signals — the racing heart and dropping blood pressure.
- IV proton pump inhibitor (pantoprazole 80 mg bolus, then 8 mg per hour continuous drip) for suspected upper GI bleed → Shuts down the pumps in the stomach lining that make acid. Without acid burning the tissue, any ulcer or tear can start to heal and stop bleeding. Acid dissolves clots; no acid lets clots stick.
- Octreotide IV infusion (50 mcg bolus, then 50 mcg per hour) + ceftriaxone 1 g IV daily if varices (burst esophageal veins from liver scarring) are suspected → Octreotide (a synthetic hormone) squeezes the blood vessels in the portal system (the veins around the liver) so less blood tries to escape through the burst vein. Ceftriaxone (an antibiotic) prevents infection of the fluid inside the belly, which happens often when the liver is sick.

- Upper endoscopy (esophagogastroduodenoscopy, or EGD) within 24 hours to find the bleeding source and treat it with cautery (burning), clips, bands, or injection → A camera on a flexible tube goes down the throat and into the stomach so the doctor can see exactly where the blood is coming from. Then the doctor can burn the vessel shut, clip it closed, band a burst vein, or inject medicine to stop the bleed right there.
- Colonoscopy once the patient is stable to find lower GI bleeding from diverticulosis (small pouches in the colon wall), angiodysplasia (twisted fragile vessels), hemorrhoids, or cancer → A camera goes through the rectum and up into the colon to find the bleeding spot. The doctor can then burn it, clip it, or inject it to stop the bleeding.
- Stop all anticoagulants (warfarin, apixaban, rivaroxaban, dabigatran) and antiplatelet drugs (aspirin, clopidogrel) immediately, and reverse if needed with vitamin K, prothrombin complex concentrate, or idarucizumab → Removes the chemical brake on clotting so the body's natural platelets and clotting proteins can plug the leak. Reversal agents rebuild clotting factors fast if the drug is still active in the blood.
- Transfuse platelets if count is below 50,000 per microliter, or fresh frozen plasma if INR is above 1.5 and bleeding is severe → Brings in the missing clotting cells (platelets) or clotting proteins (from plasma) so the blood can clot properly and plug the vessel. Helps stop bleeding when the body's own clotting system is broken.

Medications

Crystalloid fluids (normal saline or lactated Ringer's solution) · Intravenous resuscitation fluid

These are salt-water solutions pumped through two large IV lines straight into your veins. They quickly refill the tank of liquid in your blood vessels so your blood pressure doesn't drop to dangerous levels and your organs stay fed with oxygen. Think of it like topping off a car's radiator before the engine overheats—the fluid keeps everything running while doctors fix the leak.

1. Two large-bore IV catheters (thick tubes) are placed in arm veins so fluid can flow in fast.
2. Crystalloid solution flows in under pressure, raising the total volume of liquid in your blood vessels within minutes.
3. Blood pressure comes back up, and oxygen delivery to your brain, heart, kidneys, and other organs improves.
4. This buys time for the bleeding source to be found and stopped—it does NOT stop the bleeding itself.

SAFETY WATCH

Too much fluid too fast can overload the heart and lungs, causing shortness of breath and swelling (especially in people with heart failure or kidney disease). · Nurses and doctors watch your urine output, breathing, and blood pressure closely to avoid flooding the system.

Packed red blood cells (pRBCs) · Blood transfusion product

These are bags of donated red blood cells—the oxygen-carrying trucks of your blood. When you lose a lot of blood from a GI bleed, your hemoglobin (the oxygen-holding protein inside red cells) drops. Transfusing pRBCs brings your hemoglobin back up to around 7 grams per deciliter, which is enough to keep your organs fed with oxygen without overloading your system. The target is 7 (not higher) because studies show lower targets are safer in most GI bleeds—they reduce the risk of rebleeding and keep clotting balance better.

1. A unit of packed red blood cells is typed and cross-matched to your blood to avoid reactions.
2. The blood is transfused slowly through an IV, usually over 2–4 hours per unit.
3. New red cells join your circulation, boosting hemoglobin and oxygen-carrying capacity.
4. Your heart doesn't have to work as hard, and your organs get the oxygen they need while the bleeding is controlled.

SAFETY WATCH

Transfusion reactions (fever, chills, itching, or worse if the blood type mismatches—rare but serious). · Risk of infection or antibody reactions with repeated transfusions over time. · Volume overload (too much fluid in the system), especially in older adults or people with heart or kidney disease.

Proton pump inhibitor (PPI) – intravenous (e.g. pantoprazole, esomeprazole) · Proton pump inhibitor (PPI)

In the lining of your stomach, tiny pumps called proton pumps churn out acid every day to help digest food. When an ulcer (a raw crater in the stomach or duodenum) bleeds, acid eats away at the clot trying to form and keeps the wound open. A PPI shuts down these acid pumps almost completely. Given first as a quick IV bolus (a push shot) and then as a continuous drip, it raises the stomach's pH above 6—turning the stomach from a harsh acid bath into a gentler environment where clots can stick and the ulcer can start to heal. This is used for upper GI

bleeds (stomach, duodenum, esophagus) but NOT for lower GI bleeds (colon), where acid isn't the problem.

1. An IV bolus (80 mg pantoprazole or 40 mg esomeprazole) is given as soon as an upper GI bleed is suspected.
2. The drug travels through your bloodstream to the stomach lining and locks onto the proton pumps.
3. Acid production drops by more than 90% within an hour.
4. A continuous IV infusion (8 mg/hour pantoprazole) keeps acid shut off for 72 hours, giving the ulcer a chance to seal and stabilize.

SAFETY WATCH

Generally very safe in the short term. · Long-term PPI use (months to years) is linked to slightly higher risk of bone fractures, low magnesium, kidney disease, and gut infections (C. difficile), but these risks don't apply to the 3-day IV treatment for acute bleeding. · Rarely, allergic reactions (rash, itching).

Octreotide · Synthetic somatostatin analog

Octreotide is a lab-made copy of somatostatin, a natural hormone your body uses to slow things down in the gut. In people with cirrhosis (scarred liver), blood backs up and pushes into veins in the esophagus and stomach, swelling them into fragile balloons called varices. These can burst and bleed massively. Octreotide tightens (constricts) the splanchnic arteries—the blood vessels feeding your gut—which drops the pressure in the portal vein (the highway carrying blood from the gut to the liver). Lower pressure means less force pushing on the varices, so bleeding slows or stops. It's given as an IV bolus and then a continuous drip, and it's used ONLY for variceal bleeds, not ulcers or other causes.

1. An IV bolus of 50 mcg octreotide is given as soon as variceal bleeding is suspected.
2. The drug binds to somatostatin receptors on arteries in the gut, causing them to tighten.
3. Blood flow to the gut drops, which lowers the pressure in the portal vein.
4. A continuous infusion (50 mcg/hour) is started and runs for 2–5 days to keep pressure low while endoscopy (banding or sclerotherapy) fixes the varices.

SAFETY WATCH

Can slow heart rate or cause mild drops in blood pressure. · May cause nausea, cramping, or diarrhea. · Rarely, high blood sugar (hyperglycemia) or gallstones with long-term use (not an issue in short 2–5 day courses).

Ceftriaxone · Third-generation cephalosporin antibiotic

When you have cirrhosis and a variceal bleed, bacteria living in your gut can sneak across the intestinal wall into your bloodstream—a problem called spontaneous bacterial peritonitis (SBP) or bacteremia (bacteria in the blood). This happens because the bleeding weakens your defenses and cirrhosis already leaves your immune system shaky. Ceftriaxone is a strong antibiotic that kills common gut bacteria (especially E. coli and Klebsiella) by punching holes in their cell walls. Studies show giving it early cuts the risk of infection in half and lowers the chance of rebleeding and death. It's given as a single daily IV dose for up to 7 days.

1. Ceftriaxone (1 gram IV once daily) is started as soon as a variceal bleed is confirmed or strongly suspected in a person with cirrhosis.
2. The drug spreads through your blood and tissues, finding bacteria.
3. It binds to proteins in bacterial cell walls and stops them from building properly, so the bacteria burst and die.
4. This prevents infections that would otherwise complicate the bleed and make outcomes worse.

> **SAFETY WATCH**
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> Allergic reactions (rash, hives; serious reactions rare but possible if you have a severe penicillin allergy). · Diarrhea or upset stomach. · Rarely, can cause gallbladder sludge (especially in children) or low blood counts.

Reversal agents for anticoagulants (e.g. vitamin K, prothrombin complex concentrate, idarucizumab, andexanet alfa) · Anticoagulant reversal agents

Many people take blood thinners (anticoagulants like warfarin, apixaban, rivaroxaban, dabigatran) to prevent strokes or clots. But when a GI bleed starts, these drugs keep your blood from clotting where it needs to, turning a small bleed into a flood. Reversal agents are antidotes that bring clotting ability back fast. Vitamin K helps your liver rebuild clotting factors over 6–24 hours if you're on warfarin. Prothrombin complex concentrate (PCC) delivers ready-made clotting proteins instantly. Idarucizumab is a specific blocker for dabigatran, and andexanet alfa blocks direct Xa inhibitors like apixaban and rivaroxaban. The choice depends on which blood thinner you're taking and how severe the bleed is.

1. If you're on warfarin, IV vitamin K (10 mg) helps your liver make new clotting factors (II, VII, IX, X) over several hours, and PCC (25–50 units/kg) supplies them immediately.
2. If you're on dabigatran, IV idarucizumab (5 grams) binds to the drug and pulls it out of circulation in minutes.
3. If you're on apixaban or rivaroxaban, IV andexanet alfa (dosing depends on drug and timing) binds and inactivates the drug.

4. Clotting ability returns, and the bleeding becomes easier to control with endoscopy or other interventions.

SAFETY WATCH

Reversing anticoagulation increases your risk of clots (stroke, heart attack, pulmonary embolism (a clot lodging in a lung artery)) in the days after treatment—doctors balance this carefully. · PCC can rarely cause clotting complications or allergic reactions. · Andexanet alfa carries a black-box warning for serious thromboembolic events (clots).

Endoscopic therapy (not a medication but a key intervention) · Procedural intervention

Endoscopy means passing a flexible camera tube (endoscope) down your throat (for upper GI bleeds) or up through your rectum (for lower GI bleeds) to find the bleeding spot and fix it on the spot. For ulcers, the doctor can inject epinephrine (a drug that tightens blood vessels), place clips to pinch the vessel shut, or use heat (cautery) to seal it. For varices, rubber bands are snapped around the swollen veins to choke off blood flow (band ligation), or a hardening agent is injected (sclerotherapy). For tumors or abnormal vessels, cautery or clips may be used. Upper endoscopy (EGD) should happen within 24 hours of arrival if the bleed is from the esophagus, stomach, or duodenum. Colonoscopy is done once you're stable if the bleed is from the colon.

1. You're given sedation (medicine to make you sleepy and comfortable).
2. The endoscope is gently advanced to the bleeding site.
3. The doctor uses tools passed through the scope—clips, bands, cautery probes, or injection needles—to stop the bleeding directly.
4. The scope is withdrawn, and you're monitored as sedation wears off.

SAFETY WATCH

Perforation (tearing a hole in the gut wall—rare but serious). · Bleeding worsened by the procedure (rare). · Reactions to sedation (low oxygen, low blood pressure). · Aspiration (breathing in stomach contents if you vomit during the procedure).

Interventional radiology embolization · Procedural intervention

If bleeding doesn't stop with endoscopy, a radiologist can thread a tiny catheter (tube) through an artery in your groin up to the bleeding vessel in your gut. Using live X-ray (fluoroscopy), they find the leaking artery and plug it with coils (tiny metal springs) or particles that clog the vessel like a dam. Blood flow stops, and the bleeding halts. This is called embolization. It's used

when endoscopy fails or can't reach the bleed (e.g. small-bowel bleeding, some diverticular bleeds).

1. You're given local numbing medicine and sedation.
2. A catheter is inserted into the femoral artery (in your groin) and guided up to the gut arteries.
3. Contrast dye is injected, and X-rays show where blood is leaking.
4. Coils or particles are pushed through the catheter into the bleeding vessel, blocking it off.
5. Blood flow to that spot stops, and the bleeding ends.

> **SAFETY WATCH**
> Starved blood flow (Ischemia) or tissue death from blocked blood flow (infarction) (dead tissue) in the bowel if too much artery is blocked. · Rebleeding if collateral vessels (backup routes) open up later. · Contrast dye can harm kidneys, especially if you're dehydrated or have kidney disease. · Rare: bleeding or infection at the groin puncture site.

Surgery · Procedural intervention

Surgery is the last resort when endoscopy and embolization fail or aren't possible. A surgeon opens your abdomen, finds the bleeding spot, and fixes it by cutting out the damaged section (resection), oversewing (stitching) the bleeding vessel, or bypassing it. For example, part of the stomach or colon may be removed, or a bleeding ulcer may be sutured shut. Surgery is riskier than endoscopy or embolization, so it's used only when nothing else works or the patient is deteriorating despite maximal medical care.

1. You're taken to the operating room under general anesthesia (fully asleep).
2. The surgeon opens your abdomen and inspects the gut to find the bleeding.
3. The bleeding segment is removed, or the vessel is tied off or sutured.
4. The abdomen is closed, and you recover in the ICU.

> **SAFETY WATCH**
> High risk of complications (infection, leak at the surgical join, blood clots, pneumonia, heart events). · Longer recovery and hospital stay. · Mortality risk is higher in surgery than in endoscopy, especially in sicker or older patients.

Red flags

- Vomiting bright red blood or dark coffee-ground material
- Large amounts of bright red blood in the stool

- Feeling faint, confused, or passing out
- Heart racing over 100 beats per minute at rest or blood pressure dropping below 90 systolic
- Pale, cold, clammy skin with sweating

Nursing priorities

1. Establish two large-bore IV lines (18-gauge or larger) and start crystalloid fluid bolus at wide-open rate. — Bleeding-driven (Hemorrhagic) shock (dangerous low blood pressure from bleeding) kills by reducing oxygen delivery to organs; large IVs allow rapid volume replacement because flow rate depends on catheter diameter, and crystalloids (salt water solutions) restore circulating volume fast.
2. Measure heart rate, blood pressure, and orthostatic vital signs every 15 minutes until stable. — A fast heart rate (Tachycardia) (fast heart rate over 100) and low blood pressure (hypotension) (systolic BP under 90) indicate hypovolemia (low blood volume); orthostatic changes (BP drops or pulse rises when sitting up) show at least 15 percent blood volume loss even before obvious shock appears.
3. Draw blood for type and crossmatch, complete blood count, INR, PT, metabolic panel, and lactate before giving any products. — Hemoglobin and hematocrit lag behind acute bleeding so initial values underestimate loss; crossmatch takes 45 minutes so order early; INR and PT (clotting tests) detect impaired blood clotting (coagulopathy) (poor clotting); lactate over 2 mmol/L means tissues are not getting enough oxygen.
4. Keep patient NPO (nothing by mouth) and prepare for urgent endoscopy within 24 hours. — Food in the stomach increases aspiration risk (breathing vomit into lungs) during sedation (sleepy medicines) for endoscopy; the scope both finds the bleeding source and allows therapeutic intervention like cautery (burning to stop bleeding) or banding (putting rubber bands on varices).
5. Start IV proton pump inhibitor bolus then continuous infusion if upper GI bleed suspected. — Acid in the stomach prevents clot formation; PPIs (proton pump inhibitors like pantoprazole 80 mg IV then 8 mg/hour) raise gastric pH above 6 which stabilizes clots on ulcers and reduces rebleeding risk by 50 percent.
6. Transfuse packed red blood cells to keep hemoglobin at or above 7 g/dL, or 9 g/dL if patient has coronary artery disease. — Hemoglobin carries oxygen; below 7 g/dL tissues become blood-starved (ischemic) (starved of oxygen); heart patients need higher threshold because their coronary arteries (heart blood vessels) are already narrowed and cannot compensate for anemia (low red blood cells).

7. Look for signs of liver disease including yellowing of the skin and eyes (jaundice), fluid buildup in the belly (ascites), spider angiomas, and altered mental status; notify provider immediately if present. — Variceal bleeding (burst veins from liver scarring) has 15 to 20 percent mortality in first episode; these patients need octreotide (shrinks blood vessels) and ceftriaxone (antibiotic to prevent infection) started within one hour, plus urgent endoscopy for band ligation (tying off the veins).
8. Place patient on continuous pulse oximetry and cardiac monitor; keep bed flat or in Trendelenburg if with low blood pressure (hypotensive). — Acute blood loss causes arrhythmias (irregular heartbeats) from poor coronary blood flow (perfusion) and low oxygen in the blood (hypoxemia) (low oxygen) from reduced oxygen-carrying capacity; supine position or head-down tilt increases venous return (blood back to heart) and maintains cerebral blood flow (brain blood flow).

Sources

- ACG Clinical Guideline: Upper Gastrointestinal and Ulcer Bleeding, 2021
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