

Cirrhosis-Associated Coagulation Dysfunction

A plain-English guide for you and your family

WHAT IS HAPPENING

Normally, your liver makes many proteins that help your blood clot when you are injured and other proteins that prevent clots from forming when you do not need them. When cirrhosis scars the liver, it cannot make normal amounts of these proteins, so your blood tests may look abnormal. Doctors used to think cirrhosis only caused bleeding problems, but we now know patients can also form dangerous clots in veins. Your body tries to rebalance the clotting system, but this balance is fragile and can tip toward bleeding or clotting depending on stress, infection, or procedures. This is why your care team watches you closely and does not automatically give blood-thinning medications based only on lab numbers.

What you might feel

- Easy bruising with minor trauma
- Bleeding gums when brushing teeth
- Nosebleeds that last longer than 10 minutes
- Black tarry stools or vomiting blood
- Prolonged bleeding after blood draws or procedures
- Spider-like blood vessels on skin (telangiectasias)
- Heavy or prolonged menstrual periods
- Sudden severe abdominal pain with distension

Call the doctor right away if...

- Vomiting blood (Hematemesis) (vomiting bright red blood) or black tarry stool (melena) (black tarry stools) indicating active gastrointestinal bleeding
- INR above 3.0 with any bleeding symptom suggesting severe impaired blood clotting (coagulopathy) requiring immediate factor replacement
- Platelet count below 20,000 with spontaneous bleeding into skin or mucous membranes

- Sudden severe abdominal pain with low blood pressure (hypotension) (systolic BP below 90) suggesting variceal rupture or intra-abdominal bleeding (hemorrhage)

What the care team will do

- Monitor for active bleeding from multiple sites (gums, venipuncture sites, gastrointestinal tract)
- Avoid unnecessary invasive procedures and coordinate essential procedures with hematology
- Hold anticoagulants and antiplatelet agents unless specifically ordered for clot formation (thrombosis) treatment
- Assess for signs of portal high blood pressure (hypertension) complications including variceal bleeding
- Monitor liver synthetic function markers (INR, albumin, bilirubin) and platelet count daily
- Educate patient to report bleeding symptoms immediately (black tarry stools, coffee-ground vomit, increased bruising)
- Question orders for fresh frozen plasma or platelet transfusions before procedures unless patient has active bleeding
- Collaborate with pharmacy to review all medications for bleeding risk and hepatotoxicity (liver damage)

Medicines you may be given — and why

propranolol

This drug blocks beta receptors on blood vessels in the gut and on the heart. By blocking gut vessel beta-2 receptors it causes vasoconstriction (vessel narrowing) which lowers blood flow to the portal vein. By blocking heart beta-1 receptors it slows heart rate and reduces how hard the heart pumps which also decreases portal pressure.

octreotide

This medication mimics somatostatin which is a natural hormone that turns off blood flow to the gut. When given intravenously during active variceal bleeding it causes powerful constriction of splanchnic arteries reducing the amount of blood flowing into the already high-pressure portal vein. This gives endoscopy and banding procedures better chance to control the bleeding source.

fresh frozen plasma (FFP)

FFP is the liquid part of donated blood that has been frozen within 8 hours of collection to preserve all clotting factors. When thawed and transfused it temporarily replaces deficient factors II, V, VII, IX, X and fibrinogen that the cirrhotic liver cannot make. The infused factors circulate and participate in clot formation for 12-24 hours until they are consumed or degraded.

cryoprecipitate

Cryoprecipitate is the cold-insoluble portion of plasma that precipitates when FFP is thawed slowly. It contains concentrated fibrinogen, factor VIII, von Willebrand factor, and factor XIII in a small volume. When fibrinogen drops below 100 mg/dL in cirrhosis this product rapidly replaces fibrinogen which is the final building block that thrombin converts to fibrin threads forming the clot structure.

vitamin K (phytonadione)

Vitamin K is required for the liver enzyme gamma-glutamyl carboxylase to activate clotting factors II, VII, IX, and X by adding carbon dioxide groups to glutamic acid residues. In cirrhosis with cholestasis or malnutrition vitamin K absorption is impaired leaving factors in inactive form. Supplementing vitamin K allows any remaining functional liver tissue to produce active factors.

platelet transfusion

Platelet transfusions contain platelets separated from whole blood donations and suspended in plasma. When transfused the donor platelets circulate and participate in primary hemostasis by adhering to damaged blood vessel walls and aggregating to form initial platelet plug. In cirrhosis with a low platelet count (thrombocytopenia) from splenic sequestration transfusion temporarily raises count to safer levels before procedures or during active bleeding.

Where this information comes from

- American Association for the Study of Liver Diseases (AASLD) guidelines on complications of cirrhosis, including management of coagulation disorders and variceal bleeding (2016-2021)
- American Society of Hematology (ASH) guidelines on plasma transfusion and platelet transfusion in adults (2021)
- Baveno VII Consensus Workshop on portal hypertension and variceal bleeding management (2022)
- Northup PG, et al. Coagulation in liver disease: a guide for the clinician. Clinical Gastroenterology and Hepatology (2013) on rebalanced hemostasis in cirrhosis

Last reviewed: 2026-08-29