Esophageal Variceal Bleeding FAQs

Variceal bleeding is a life-threatening complication of cirrhosis. Approximately one-third of patients with varices (i.e., enlarged/swollen veins usually in the esophagus or stomach) experience a variceal bleed. About 20% to 30% of these bleeds are fatal, and about 60% rebled within one year.1,3 There are several risk factors for developing varices (e.g., liver damage, degree of collateral blood flow due to elevated portal pressure, portal pressure >10 mmHg or >10% increase in portal pressure over time).1 Risk factors for a first episode of variceal bleeding include portal pressure >12 mmHg (pressure may be higher with larger varices), severity of liver disease, and size of varices (risk of bleeding is higher with larger varices).1 The chart below answers common questions about prevention and treatment of esophageal variceal bleeding.

**Abbreviations:** EVL = endoscopic variceal ligation; GI = gastrointestinal; PPI = proton pump inhibitor; TIPS = transjugular intrahepatic portosystemic shunt.

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| Prevention of initial variceal bleed (primary prophylaxis) | • Nonselective beta-blockers can be used to prevent a first variceal bleed in patients with medium or large esophageal varices or high-risk, small esophageal varices (e.g., small varices with red streaks or small varices in patients with Child-Pugh Class C liver disease).3a Beta-blocker options include:3
  - **Propranolol:** 20 to 40 mg orally twice daily, titrated every two or three days to one of the following:
    - Heart rate of 55 to 60 beats per minute.
    - Max daily dose of 320 mg or 160 mg (patients with refractory ascites or after spontaneous bacterial peritonitis).
  - **Nadolol:** 20 to 40 mg orally once daily, titrated every two or three days to one of the following:
    - Heart rate of 55 to 60 beats per minute.
    - Max daily dose of 160 mg or 80 mg (patients with refractory ascites or after spontaneous bacterial peritonitis).
  - For patients unable to tolerate propranolol or nadolol, consider a trial of carvedilol.
    - **Carvedilol:** 6.25 mg orally once daily initially, titrated to 6.25 mg twice daily after about three days.
    - Carvedilol is at least as effective as banding in preventing initial variceal bleeding [Evidence Level A-1].
  - The beta-blockers are inexpensive, easy to administer, and do not require specific prescriber expertise.3
  - Common side effects associated with beta-blockers include fatigue, weakness, and shortness of breath.3
  - The role for nonselective beta-blockers in patients with refractory ascites is controversial.6,8
    - Some data show reduced survival with continued use of nonselective beta-blockers in patients with refractory ascites.8
    - Some data show improved survival with continued use of nonselective beta-blockers in patients with refractory ascites.8
    - Consider reducing the dose or **temporarily** holding beta-blockers in patients with refractory ascites and systolic blood pressure <90 mmHg, serum sodium concentrations <130 mEq/L, or who develop hepatorenal syndrome.1,3
    - Avoid permanently discontinuing beta-blockers in patients with refractory ascites until more data are available.8
  - Patients using beta-blockers for prevention of initial variceal bleeding **do not need follow-up endoscopies** to monitor varices.3 |
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| Prevention of initial variceal bleed, continued                         | • EVL or “banding” is a procedure using elastic bands around varices to shrink and eliminate varices.³  
  o Expect banding to be performed about every two to eight weeks to eliminate varices.³  
  • Banding does not reduce portal pressure.³  
  • Patients using banding to prevent an initial variceal bleed need follow-up endoscopies to monitor varices.³  
  o Perform endoscopies about three to six months after eliminating varices and then repeat every six to 12 months.³  
  • Risks associated with banding include dysphagia, esophageal ulcerations, strictures, bleeding, and risks associated with sedation.³                                                                                                                                                                                                                                                   |
| What is the role for endoscopic variceal ligation (EVL) or “banding” to prevent initial variceal bleeding? |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| What is the preferred method to prevent initial variceal bleeding?      | • For small, high-risk varices (e.g., with red streaking, or patients with Child-Pugh Class C) nonselective beta-blockers are preferred over banding to prevent an initial variceal bleed.³  
  o There are limited data using banding and performing banding on small varices is challenging due to their small size.³  
  • For medium/large varices:  
  o Either beta-blockers (e.g., propranolol, nadolol, carvedilol) or banding can be used to prevent an initial variceal bleed.¹  
  o When deciding between beta-blockers and banding several factors should be considered (e.g., local resources and expertise, patient preference, adverse events).³  
    ▪ Some experts give a small preference to beta-blocker therapy over banding.¹  
  • Avoid combining beta-blocker and banding to prevent initial variceal bleeding.¹ ³ The combination is associated with more side effects and does NOT improve bleeding or mortality over using banding alone.¹ ³                                                                                                                                                                                                 |
| Acute management of variceal bleeding: Initial goals include endoscopy with banding (within 12 hours of presentation) to control bleeding, prevent early rebleeding (within five days), and prevent mortality. Initially, all patients should be managed with fluid resuscitation to maintain adequate blood flow and blood products (e.g., packed red blood cells [PRBCs]) to maintain a hemoglobin concentrations between 7 and 9 g/dL.³ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| What is the role for antibiotics in the acute management of variceal bleeding? | • In patients with cirrhosis, gram negative bacteria increase within the gastrointestinal (GI) tract and the GI tract becomes more permeable to these bacteria. Once bacteria reach a high enough concentration, they “spill over,” “translocating” to mesenteric lymph nodes. From the lymph nodes, bacteria can enter the bloodstream and ultimately enter other areas associated with bleeding to cause an infection (e.g., spontaneous bacterial peritonitis from bleeding varices).⁹  
  • Use short-term prophylactic antibiotics in all patients with variceal bleeding to reduce development of bacterial infections (e.g., urinary tract infections, spontaneous bacterial peritonitis), rebleeding, and mortality [Evidence Level A-1].¹ ³  
  • Use ceftriaxone (e.g., 1 gram IV once daily) or a quinolone (e.g., ciprofloxacin 400 mg IV every 12 hours) for up to seven days,¹ ³ Antibiotic choice should be based on local resistance patterns,¹ ³  
  o Can consider stopping prophylactic antibiotics when octreotide is stopped.³                                                                                                                                                                                                                                                                                                                                 |
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| What is the role for octreotide in the acute management of variceal bleeding? | • Start octreotide (*Sandostatin*) to help stop bleeding as soon as a variceal bleed is suspected (e.g., prior to endoscopy).<sup>3</sup>  
• Octreotide helps control bleeding and may lower transfusion requirements, but has not shown improved mortality.<sup>3,5</sup>  
• Start with an octreotide IV bolus of 50 mcg (may be repeated in the first hour with ongoing bleeding) followed by a continuous IV infusion (e.g., 25 to 50 mcg/hour) until bleeding stops or for a maximum of five days.<sup>1,3</sup>  
• A nonselective beta-blocker should be started when octreotide is discontinued in patients that do not have an early TIPS.<sup>3</sup>  |
| What is the role for proton pump inhibitors (PPIs) in the acute management of variceal bleeding? | • PPIs are commonly used during an acute GI bleed, while determining the source of the bleed.<sup>2</sup>  
  o PPIs should be discontinued (unless indicated based on a comorbid condition [e.g., active treatment of an ulcer]) if a variceal bleed is identified as the source.<sup>1,2</sup>  
    • No additional benefit is gained by continuing PPIs for an acute variceal bleed.<sup>1,2</sup>  
• Short-term PPI therapy can be considered (e.g., about 10 days) after endoscopic variceal ligation (EVL) or banding, to reduce band-related ulcer size if ulcer healing is a concern [Evidence Level B-2].<sup>2</sup>  
• Until more data are available, avoid use of high-dose PPI infusions or longer durations of therapy (>10 days).<sup>2</sup>  
• Separated and dedicated IV lines are needed to administer octreotide and IV pantoprazole (*Protonix*; incompatible [precipitation]) or IV esomeprazole (*Nexium*; no stability data).<sup>4</sup>  |
| What is the role for transjugular intrahepatic portosystemic shunt (TIPS) in the management of variceal bleeding? | • TIPS reduces portal pressure by using a stent to connect the hypertensive portal vein to a normotensive hepatic vein.<sup>3</sup>  
  o TIPS should be evaluated via ultrasound to ensure patency (open and not obstructed) every six months.<sup>3</sup>  
• Early TIPS (within 72 hours of endoscopy and banding) can be considered for high-risk patients (e.g., Child-Pugh Class C or Class B with active bleeding).<sup>1,3,a</sup>  
• A rescue TIPS can be performed in lower-risk patients with continued bleeding despite banding and octreotide.<sup>1,3</sup>  
• Octreotide can be discontinued after a successful early or rescue TIPS procedure.<sup>3</sup>  
• Beta-blockers are not necessary after a successful early or rescue TIPS procedure.<sup>3</sup>  
• TIPS may increase the risk of encephalopathy, but may be more cost-effective than repeated banding procedures.<sup>1,3</sup>  |
### Question
Prevention of RECURRENT variceal bleeding (secondary prophylaxis):

- Use a combination of a beta-blocker, either **propranolol** or **nadolol**, and banding in patients who did not have a TIPS placed at the time of the variceal bleed.\(^1\),\(^3\)
  - Some experts suggest **carvedilol** as an alternative to propranolol or nadolol, for intolerant patients.\(^1\)
  - Either a beta-blocker or banding can be used alone as an alternative to the combo based on patient preference or intolerance.\(^1\)
  - The frequency of banding to eradicate varices increases after a variceal bleed to about every one to four weeks.\(^1\),\(^3\)
  - In patients using beta-blocker monotherapy to prevent rebleeding, endoscopies are not recommended to monitor varices.\(^1\),\(^3\)
- TIPS should be performed in patients who rebleed with beta-blocker plus banding therapy or either beta-blocker or banding therapy alone.\(^3\)

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| What is the role for beta-blockers and banding to prevent recurrent variceal bleeding (secondary prophylaxis)? | - Use a combination of a beta-blocker, either **propranolol** or **nadolol**, and banding in patients who did not have a TIPS placed at the time of the variceal bleed.\(^1\),\(^3\)  
  - Some experts suggest **carvedilol** as an alternative to propranolol or nadolol, for intolerant patients.\(^1\)  
  - Either a beta-blocker or banding can be used alone as an alternative to the combo based on patient preference or intolerance.\(^1\)  
  - The frequency of banding to eradicate varices increases after a variceal bleed to about every one to four weeks.\(^1\),\(^3\)  
  - In patients using beta-blocker monotherapy to prevent rebleeding, endoscopies are not recommended to monitor varices.\(^1\),\(^3\)  
  - TIPS should be performed in patients who rebleed with beta-blocker plus banding therapy or either beta-blocker or banding therapy alone.\(^3\) |
| Is there a role for statin therapy to prevent recurrent variceal bleeding? | - Simvastatin has been studied in the prevention of rebleeding in patients with a history of variceal bleeding.\(^1\),\(^3\)  
  - Simvastatin 40 mg orally once daily did not reduce rebleeding, but was associated with possible improved survival in patients receiving banding with beta-blocker therapy in patients with Child-Pugh Class A or B.\(^1\),\(^3\),\(^a\) It is unknown if other statins would show similar results.  
  - Until more evidence is available, avoid adding simvastatin to reduce mortality in patients with a history of variceal bleeding.\(^1\) |

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**a.** The Child-Pugh classification system is used to define the severity of liver disease and cirrhosis. It uses a point system considering the presence of encephalopathy and ascites, as well as bilirubin level, albumin level, and prothrombin time. Prognosis worsens from Class A to Class C. Class A is defined as a score of 5 to 6 points. Class B is defined as a score of 7 to 9 points. Class C is defined as a score of 10 to 15 points. An example calculator can be found at [https://www.merckmanuals.com/medical-calculators/ChildTurPuScore.htm](https://www.merckmanuals.com/medical-calculators/ChildTurPuScore.htm).\(^7\)

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*Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.*

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*More...*
Levels of Evidence

In accordance with our goal of providing Evidence-Based information, we are citing the LEVEL OF EVIDENCE for the clinical recommendations we publish.

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| A     | Good-quality patient-oriented evidence.* | 1. High-quality RCT  
2. SR/Meta-analysis of RCTs with consistent findings  
3. All-or-none study |
| B     | Inconsistent or limited-quality patient-oriented evidence.* | 1. Lower-quality RCT  
2. SR/Meta-analysis with low-quality clinical trials or of studies with inconsistent findings  
3. Cohort study  
4. Case control study |
| C     | Consensus; usual practice; expert opinion; disease-oriented evidence (e.g., physiologic or surrogate endpoints); case series for studies of diagnosis, treatment, prevention, or screening. | |

*Outcomes that matter to patients (e.g., morbidity, mortality, symptom improvement, quality of life).


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References
