

[VExUS Score Step 1: IVC Assessment](#)

Acquiring the IVC view with Ultrasound:

Place the probe in the subxiphoid position and get the IVC in the long-axis view. Most people will know how to perform an IVC exam, but for a more in-depth tutorial on how to obtain the IVC view you can click [HERE](#).

Interpretation of IVC Measurements:

Evaluate the size and collapsibility of the IVC.

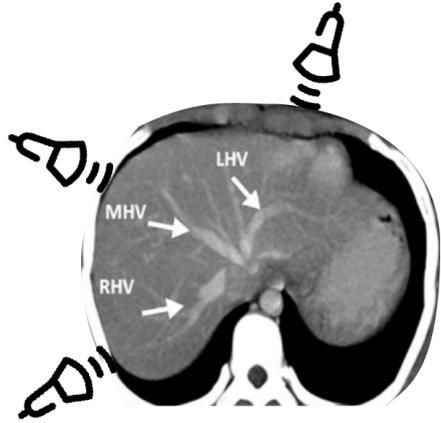
If the maximum IVC diameter is $<2\text{cm}$, then there is no significant venous congestion (at least cardiac related). You can stop the exam here and the **VExUS score is 0**.

If IVC is $\geq 2\text{cm}$ then proceed to the next steps.

[VExUS Score Step 2: HEPATIC Vein Doppler Assessment](#)

Acquiring the Hepatic Vein View with Ultrasound:

There are three hepatic veins: the right, middle, and left hepatic veins. You can use any of these veins to evaluate for hepatic vein Doppler patterns but the middle and right hepatic are usually the most accessible since the L hepatic vein view can be obscured by bowel/stomach gas. Below is a CT figure showing approximately where you should place your probe to target specific hepatic veins. Notice that it is NOT directly midline of the patient (I made this mistake when first trying to see the hepatic veins).



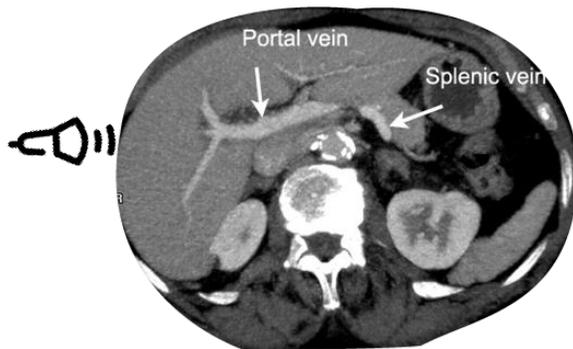
Here are the step to get the Hepatic Vein Doppler Tracings:

1. Get a 2-D image of the IVC and hepatic veins.
2. Place color flow Doppler over the hepatic veins as they enter the IVC. You should see BLUE flow (away from probe)
3. Place your pulse wave Doppler gate on a hepatic vein prior to it entering the IVC
4. Initiate Pulse wave Doppler

VExUS Score Step 3: PORTAL Vein Doppler Assessment

Acquiring the Portal Vein View with Ultrasound:

I find that the portal vein is probably the easiest vein to find (compared to the hepatic and intrarenal veins). This can be done by placing your probe in the *right midaxillary line*.



Here are the step to get the Hepatic Vein Doppler Tracings:

- Get a 2-D image of the Right Portal Vein
- Place color flow Doppler over the Right Portal Vein. You should see RED flow (towards the probe)
- Place your pulse wave Doppler gate on the Right Portal Vein
- Initiate Pulse wave Doppler

VExUS Score Step 4: Intrarenal Venous Doppler Assessment

Acquiring the Intrarenal Vein View with Ultrasound:

The intrarenal vein assessment is probably the most difficult assessment to do out of all of the vessels. This is because the intrarenal veins are fairly small and the patient's breathing patterns may limit your views. But don't be discouraged and keep trying your best to get these views. With practice, you will get better at acquiring them.

View the kidneys on either side at the posterior axillary line. Turn on the color Doppler and then look for the ***Interlobar vessels***. Place the pulse wave Doppler gate where you see the best color Doppler signal and activate pulse wave Doppler. **TIP:** You may need to adjust the color and pulse wave Doppler scale and gain to get optimal settings. I have found having the Color Doppler scale around 10-25 cm/s is ideal.

The vessels are so small that you will be able to detect BOTH the arterial and venous flow of the intrarenal vessels in the same view. For the VExUS exam, you will mainly be focusing on the venous component (the bottom portion of the Doppler tracing).