RENAL ARTERIES:

- Prep: Clear liquids and medications are okay.
- Basic Principles: Use appropriate transducer depending on body habitus. Evaluate both kidneys in grayscale, spectral and color Doppler of the intrarenal and extrarenal vessels. Renal arteries may be evaluated with the patient rolled slightly onto the left side.
- The examination should include the following:
    - Kidneys:
        - The kidneys should be imaged in longitudinal and transverse planes.
        - Measure renal length. Evaluate for overall size, cortex thickness and echogenicity. Look for masses, cysts, and anomalies.
    - Extrarenal artery:
        - Assess the entire extrarenal portion of the renal artery in the long axis with color and/or power Doppler.
        - Spectral Doppler waveforms should be sampled along accessible portions of the renal artery. Document velocities at the origin, proximal, mid, and distal portion.
            - Spectral Doppler should be performed at the lowest feasible angle of insonation and should not exceed 60 degrees.
- Aortic velocities should be recorded at the level of the renal arteries as well as proximal and distal to the renal arteries.
- Calculate renal/aortic ratio (RAR) at the origin, proximal, mid and distal
- Measure resistive index (RI) of segmental arteries at the upper, mid and lower poles.
- A search for accessory renal arteries should be performed by looking at both the aorta and the kidneys. When identified, accessory arteries should be evaluated in a manner similar to the evaluation of main renal arteries.
- Renal artery stent evaluations should include the peak systolic velocity measurements within the stent and in the unstented portion of the renal artery.