***CHILDREN’S NATIONAL MEDICAL CENTER***

***DEPARTMENT OF RADIOLOGY***

***ULTRASOUND PROTOCOL***

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**Issue Date: 01/9/2014 Policy: RENAL ARTERY DOPPLER**

**Last Revision Date: 01/9/2015 Approved by: DBulas**

1. **Indications for a pediatric renal artery Doppler include but are not limited to:**

Evaluation of suspected vascular abnormality; Patients with uncontrolled hypertension decreased renal function, renal stenosis; Evaluation of renal insufficiency, discrepant renal size;

Post-op evaluation for patients with stent placement, interventional procedures involving the renal artery; Evaluation of the renal arteries after trauma.

1. **Patient Prep:**

NPO useful to decrease amount of overlying gas.

1. **Protocol:**

* Perform renal ultrasound protocol

For Doppler application, angle-adjusted measurements of the peak systolic velocity should be made proximally, centrally, and distally in the extrarenal portion of the main renal arteries when possible.

Spectral Doppler evaluation of the intrarenal arteries may be of value as indirect evidence of proximal stenosis in the main renal artery.

Additional Doppler images include:

* Evaluation of the intra and extra renal vessels of the kidney is performed utilizing Grayscale, Spectral and Color Doppler.
* Angle corrected spectral waveform including PSV from the renal arteries to the Aorta proximally, centrally and distally when possible.
* Intrarenal arteries; spectral waveforms of the segmental arteries from the upper, mid and lower poles of each kidney for resistive indices.
* Areas of increased velocity or aliasing should be documented along with the area distal to the stenosis.
* Peak systolic velocity of the adjacent aorta should also be documented for calculating the ratio of renal to aortic peak systolic velocity.
* Renal artery stents should include a peak systolic velocity in the proximal artery, mid, region of the stent and the portion of the artery distal to the stent.
* For vascular examinations of the transplanted kidney(s), Doppler evaluation should be used to document vascular patency and blood flow characteristics. The structures to be examined include the main renal artery and vein, arterial and venous anastomoses, the iliac artery and vein, and the intrarenal arteries

1. References:

Hagen-Ansert SL. Introduction to abdominal scanning techniques and protocols. In: Hagen-Ansert SL, ed. Textbook of Diagnostic Ultrasonography. 7th ed. Philadelphia, Pa: Elsevier-Mosby; 2011

American College of Radiology, Society for Pediatric Radiology, AIUM. (2013). *Aium practice guideline for the performance of*. Retrieved from http://www.aium.org/resources/guidelines/renalArtery.pdf