CT adrenal mass protocols v1.0
Society of Abdominal Radiology Disease Focused Panel on Adrenal Neoplasm

James T. Lee, Project Leader
Michael Corwin, Co-chair
Elaine Caoili, Co-Chair
Eric Remer
Dan Glazer
Nicola Schieda
Joanie Garrat
Jorge Abreu
Julie Song
Khaled Elsayes
Michael Blake
Myles Taffel
Olga Brook
Robert Petrocelli
Ryan Chung
William Mayo-Smith
Wendy Tu
Kedar Sharbidre

The below protocols represent recommendations from the Disease Focused Panel (DFP) on Adrenal Neoplasm which consists of 17 Abdominal Radiologists from 16 academic institutions. The recommended protocols were developed by reviewing and identifying common key elements in all of the members' institutional adrenal mass protocols, and by iterative consensus by the DFP members. The panel's collective expertise was utilized where evidence was not available.

Intravenous Contrast Material type, volume and injection rate:
Type: Low osmolar or iso-osmolar contrast material
Volume: 35-52.5-gram iodine equivalent (i.e., for contrast material that contains 350 mg of iodine/mL, the corresponding dose would be 100-125mL), or weight-based dosing
-Injection rate: 2-3mL/second.

A fixed 120 kVp should be utilized as most literature for the diagnosis of adenoma versus nonadenoma nodules specify 120 kVp. Varying kVp between phases or using dose reduction techniques to automatically choose kVP may alter HU measurements.

Protocol 1
Indication: Indeterminate adrenal nodule, known malignancy, suspected adrenal hyperfunctioning lesion (not pheo) or incidentaloma
Recommended scan series:

Pre-contrast: adrenals only, axial, 1.5-3.0 mm reconstruction section thickness.
*Preferred – have radiologist check images to see if contrast is needed. If there is no lesion or unenhanced imaging is sufficient to diagnose lipid rich adenoma do not proceed with contrast.
"**Early" Phase**: adrenals only, axial, 1.5-3.0 mm reconstruction section thickness, at 60-75 second delay
"**Delayed" Phase**: adrenals only, axial, 1.5-3.0 mm reconstruction section thickness, at **15-minute** delay.

Recommended additional reformats:
Coronal and sagittal of each post contrast scan series, 1.5- 3.0 mm reconstruction section thickness without overlap.
Comment: Dual-Energy or Spectral CT imaging maybe performed; however early studies show virtual non-contrast HU may have a higher cut-off thresholds then true non-contrast imaging of <10 HU for the diagnosis of adrenal adenoma.

Protocol 2
Indication: Suspected pheochromocytoma, no prior imaging
Recommended scan series:
"**Early" Phase**: Above diaphragm to aortic bifurcation, axial, 1.5-3.0 mm reconstruction section thickness, at 60-75 second delay.

Recommended additional reformats:
Coronal and sagittal of each post contrast scan series, 1.5-3 mm reconstruction section thickness without overlap.

Imaging example of a left adrenal adenoma with absolute washout of 72% with adrenal protocol 1.