Can we improve detection of Peritoneal Metastatic Disease?  
The use of Virtual Monochromatic Reconstruction on Dual Energy CT Scans

**Purpose**
Peritoneal metastases can be difficult to detect on conventional computed tomography (CT) scans. The purpose of this study is to evaluate the quantitative and qualitative benefits of virtual monoenergetic image (VMI) reconstruction in the detection of peritoneal deposits on abdominopelvic dual energy CT scans.

**Materials and Methods**
We aim to retrospectively enroll 50-70 consecutive patients with histopathologically or PET/CT proven metastatic peritoneal disease who have been scanned using a second generation 128-slice dual source, CT system (April 2014-Present). Images will be reconstructed at VMI energy levels from 40 to 110 keV in 10 keV increments and will be analysed quantitatively and qualitatively. Contrast to noise ratios (CNR) and signal to noise ratios (SNR) for the peritoneal deposits will be calculated for all VMI datasets and compared to standard conventional polychromatic imaging (PCI). Lesion conspicuity and image quality between these datasets will then be assessed by 3 blinded readers with abdominal imaging fellowships.

**Hypothesis**
We anticipate that lower keV values, which are closer to the k-edge of iodine, will have higher contrast-to-noise ratios and therefore increase the conspicuity of metastatic deposits. We also predict that these low keV images will still be of diagnostic quality and provide an additional tool for peritoneal deposits.