Purpose:
To investigate the application of different CT dose modulation techniques on image quality for general and critical ill patients in the hospital setting.

Methods:
Automatic current selection (or dose modulation) has been a major dose reduction technique which becomes standard feature available from all major CT scanner vendors. However, each vendor approaches the issue differently, and the effect of this technique for patients with different clinical indications varies dramatically. Abdominal studies present the most challenging situation because the level of contrast detectability required for diagnostic quality of CT images of this region. Tube currents for each image slice have been manually recorded and plotted against the scout images for both angular and longitudinal modulation cases.

Results:
For most chest/abdomen/pelvis studies, the tube current experiences a minimum below the diaphragm, as the computer system adjust the tube current in real time lacks the anatomy. This poses a risk for oncology patients that are under routine follow up for small metastasis in the liver and/or other upper GI organs. It will be more beneficial not using these techniques for these patients. Outpatient management has been changed to provide better image quality and lower radiation dose for the patients.

Conclusions:
Specific continued education for operators and quality control is very important for the optimum application of new techniques developed for clinical uses.