AbstractID: 2567 Title: Basic System Design and Application

The use of real-time or rapid sequence x-ray imaging has been increasing. Not only are the GI and cardiology applications to diagnostic procedures of continuing interest, but new image guided interventional procedures are being developed which rely on the combination of high spatial and temporal resolution x-ray imaging. In particular, rotational angiographic sequences combined with cone-beam computed tomography have enabled advances in minimally invasive endovascular interventional procedures to often replace invasive surgical procedures. In this symposium, after a review of some of the clinical applications of dynamic x-ray imaging including fluoroscopy and angiography, we will discuss some of the unique problems associated with image quality evaluation for such total x-ray imaging systems, as well as review some of the new developments in detector design with a comparison of flat panel and image intensifier-based systems. Also we will discuss developments in cone-beam computed tomography with specific application to angiography and ultimately to the potential for changing the treatment paradigm for vascular disease through the combination of computerized blood flow analysis and angiographic image guided interventions.

Educational Objectives
1. To appreciate the widening clinical application of dynamic x-ray imaging to diagnostic and interventions.
2. To indicate the quality evaluation issues in total x-ray imaging systems as well as the new developments of digital detectors and cone-beam computed tomography.

(Partial support: NIH Grants R01EB002873 and R01NS43924, Toshiba Medical Systems Corp., UB Foundation, UB-STOR, Guidant Corp.)