

AbstractID:9763 Title : Advances in CT applications and their impact on clinical practice

Physicians from nearly every medical specialty rely on CT for its ability to rapidly and reliably define anatomic morphology. The tremendous advances in CT technology over the past decade have allowed many new techniques to move into mainstream clinical use. Cardiac CT, CT angiography, CT enterography and CT colonography have, in many cases, become accepted replacements for invasive alternatives such as catheter angiography or endoscopy. The use of 3- or 4-Dimagedisplay allows a more intuitive demonstration of findings to the referring physician and the patient, resulting in more than 100% growth in the numbers of exams using the set techniques. The use of 4DCT joint kinematics may allow for the assessment of orthopedic motion abnormalities, just as 4D cardiac imaging allows for the assessment of cardiac motion abnormalities. New interventional CT procedures allow for outpatient spine fracture stabilization, tumor ablation, and complicated biopsies. CT perfusion exams in oncology patients may allow assessment of the therapeutic effect of anti-angiogenic drugs. And, material composition information is becoming available with the introduction of dual-energy CT. Dual energy CT has been shown to provide >93% accuracy for the identification of uric acid kidney stones; to be able to differentiate gout from calcium pyrophosphate dihydrate deposits; to facilitate rapid bone removal from CT angiography datasets; and to be able to remove iodine from contrast-enhanced datasets. Clinical adoption of the second dual-energy application is anticipated to increase as more commercial dual-energy CT products are brought to the marketplace. In spite of these and other advances in CT capabilities, the pressure to keep patient dose as low as possible (consistent with the imaging task) remains. Dose management strategies are thus a necessary consideration for the development and clinical implementation of any new CT imaging capability. The participant will learn about these and other new CT clinical applications.