



## Service Priorities and Programmes Electronic Presentations

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### **Radiation Dose Reduction in CTU Examination through Multi-disciplinary Approach**

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#### **Introduction**

Computed Tomography Urogram (CTU) has become the modality of choice in imaging of urinary tract. CTU can offer a more comprehensive examination whereby the kidneys and upper collecting system, ureters, and urinary bladder can be evaluated in one setting. Despite of higher accuracy and efficiency of CTU examination, the radiation dose for CTU is usually higher than that for conventional Intravenous Urography (IVU). Therefore, review and modification of examination protocol is necessary to explore any radiation dose reduction strategy that can be implemented so as to reduce the total radiation dose delivered and any area where the image quality can be enhanced.

#### **Objectives**

To improve the imaging results in CTU examination through radiation dose reduction, image quality enhancement and patient comfort

#### **Methodology**

A multi-disciplinary approach including nurses, Radiographers and Radiologists is adopted in the improvement program. The improvement area starts from the preparation requirement of the patient; examination procedures and sequences; and choice of kVP for different patients according to their body weights. Patient is well hydrated before the examination. We divided the injection of contrast media into two phases and combine the nephrogenic phase and excretory (delay) phase scanning sequences into one single sequence after 7 mins of contrast injection. The images were reviewed by two Radiologists to assess the quality and results of the examinations.

#### **Result**

With patient hydration before the examination, both ureters can be well distended even without contrast injection. Patient comfort is enhanced by elimination of abdominal compression required in the old imaging protocol. The whole length of ureters can be visualized satisfactory in the combined scanning phase of the new imaging protocol. Radiation dose is reduced to one third to half as compared with the

old examination protocol. A radiation dose reduction technique is feasible in CTU examination without affecting the diagnostic quality of images. Multi-disciplinary approach is more effective in achieving good examination results.