Can better hydration of patients reduce exam time
YHA Tsang(1), LMF Tee(1), DYW Siu(1), MWT Lai(1), HY Cho(1)
(1)Department of Diagnostic and Interventional Radiology, Kwong Wah Hospital

Keywords:
CT urography
hydration
exam time

Introduction
CT urography (CTU) is a major modality in the evaluation of various urologic diseases. Physiological peristalsis of ureters may result in suboptimal distension of some parts of ureters during excretory delayed phase, which require supplementary prone scans, resulting in additional radiation dose and prolonged examination time. New departmental protocol implemented since September 2014, which aims to better distend the collecting system by oral hydration before exam and continuous saline infusion during exam. Earlier delay time to supine delay scan is used as better distension is expected.

Objectives
To evaluate whether our new CT urography protocol can shorten total exam time when compared to original protocol without performing more prone scans.

Methodology
All CTU studies performed during May to July 2014 during which the original protocol was used, and all CTU studies performed during October to December 2014 using the new examination protocol were reviewed via the Carestream Picture Archiving and Communication System (PACS). The total exam time, number of patients requiring supplementary prone scans and dose-length product (DLP) of the examinations were recorded. Number of prone scan served as an indicator of degree of distension in the first delayed scan in supine position, as supplementary prone scan was needed if distension was suboptimal.

Result
122 and 123 CTU studies were performed using the old and new protocols respectively during study period. There was a statistically significant reduction (14.6%, p<0.001) in average exam time, from 16.8 min to 14.4 min. There was a small
decrease, though statistically insignificant, (3.8%, p>0.05) in number of prone scans. There was a 4.8% reduction in radiation dose (p>0.05) from 16.8mSv to 16.0mSv, in the overall radiation dose using the new protocol. The statistically significant reduction in exam time was beneficial in terms of cost effectiveness as prior oral hydration and continuous IV infusion during exam add negligible cost to the exam, but it saved cost per unit time. We conclude new CTU protocol significantly reduced exam time while maintaining satisfactory distension of collecting systems without increasing number of prone scans nor radiation dose of exam.