Purpose: The phrase "routine" is often used to describe CT exams, for example, a "routine enhanced chest CT". To assess the consistency of a routine exam, we compare the scan parameters and corresponding dose-length product (DLP)-based dose estimates for an enhanced, single-phase chest CT acquired on six different CT scanners.

Methods: Scan parameters and dose estimates for 3,184 enhanced chest CT exams performed in 2010 are extracted from image-based dose sheets using RADIANCE. RADIANCE is an open-source automated pipeline for extracting CT-related dose parameters. X-ray tube voltage kV, tube current mA, reference mA used for tube current modulation and DLP-based estimated effective dose (ED) were compared for the following scanners: 16-slice (2), 40-slice (1), 64-slice dual source (2) and 64-slice single source (1).

Results: Nearly all studies were performed at 120 kV, and when a reference mA was prescribed, it was predominantly either 180 or 200 mA. However, the actual mA ranged from less than 100 mA to more than 600 mA. ED estimates for the two dual source 64-slice scanners were similar, approximately 8 +/- 2 mSv. However, the ED estimates on the two 16-slice scanners, 6.96 +/- 1.78 mSv and 7.91 +/- 3.04 mSv, did not coincide. Furthermore, no correlation was observed between detector size and estimated ED. However, for all six scanners, the ED estimate increased linearly with increasing mA. Since the kV was nearly constant at 120, this likely represents the effect of the variable mA.

Conclusions: Despite being a "routine" exam, an enhanced chest CT varies significantly in terms of scan parameters and dose estimates across six scanners within the same department. This necessitates not only the standardization and optimization of protocols at a departmental level, but also a means for regular review and optimization of departmental protocols.