Purpose: The varied dose reporting capabilities of fluoroscopic equipment combined with the difficulty in compiling and correlating data to specific procedures represents a challenge. The aim is to establish a method of collecting and analyzing cumulative dose from a collection of fluoroscopic equipment in a radiology department.

Methods: Preliminary work was performed on each fluoroscopic system, including verification of dose display availability (software modification/upgrade) and accuracy and documentation of current dose metric capabilities and units. For a given procedure, the technologist manually entered the cumulative air kerma (AK) into the radiology information system (RIS). A quarterly report was generated containing AK values and procedure information for every fluoroscopy case performed. Data was separated by equipment classification (customized based on clinical application) and procedure type. For each data subset, cases exceeding a \( z \)-score of 5 (indicating \( >5 \) SD above mean) were excluded and catalogued. Basic statistics (mean/SD/median/percentiles/min/max) were calculated for the purpose of observing longitudinal trends. Finally, a list of flagged studies - cases exceeding the 95th percentile for a given data subset - was generated for the purpose of clinical review.

Results: Presentation of longitudinal data as a box-and-whisker plot highlights shifts in median AK and in the population distributions. For gastrointestinal (GI) studies using a remote digital unit, we observed median AK ranging from 25 mGy for a video esophagram up to 165 mGy for an upper GI with KUB. For mobile c-arms, median AK values ranged from 0.1 mGy to 402 mGy, depending on procedure.

Conclusions: We have developed a robust method of collecting and analyzing dose data from fluoroscopic equipment. By reviewing identified high dose cases, we hope to improve training and clinical practice. To better discern explicit procedure types, modification of the RIS procedure codes is necessary for certain equipment classifications.