AbstractID: 13441 Title: Automated Extraction and Reporting of Dose Information from Computed Tomography Examinations

PURPOSE: Exposure to radiation as a result of medical imaging is currently in the spotlight, receiving attention from Congress as well as the lay press.  While scanner manufacturers are moving towards including effective dose information in the DICOM headers of imaging studies, there is a vast repository of retrospective CT data at every imaging center which stores dose information in a patient protocol image. As such, it is difficult for imaging centers to participate in the American College of Radiology (ACR) Dose Registry.  METHOD AND MATERIALS: We have designed an automated extraction system to query our PACS archive and parse our CT examinations to extract dose information stored in each patient protocol image. First, an open-source optical character recognition (OCR) program processes each protocol image and converts the information to ASCII text.  We parse each ASCII file and extract radiation dose information, which is stored in a database and queried using an existing pathology and radiology enterprise search tool at our institution. We conducted a validation study to compare the extracted text information with the original patient protocol image.  2108 CT examinations performed at our institution between 2003 and 2010 were randomly selected and processed.  Two board-certified radiologists reviewed the extracted radiation dose information and compared it with the patient protocol image of each study.  RESULTS: The pipeline extracts and calculates total DLP with an accuracy of 100%. CONCLUSION: Using this automated extraction pipeline, we are able to perform dose analysis on the more than 869,000 CT examinations in our PACS archive, and generate dose report cards for every patient scanned at our institution. The automated extraction pipeline allows us to be compliant with the ACR reporting guidelines and be more cognizant of radiation dose to our patients, thus resulting in improved patient care and management. CONFLICT OF INTEREST: None.