Purpose: Not all clinical service sections within a large hospital system are incorporated into the main radiology information system (RIS) and picture archiving and communication system (PACS); attaining and analyzing dose data for a cardiology department at our institution is challenging. The aim is to implement a dose monitoring program in a cardiology department whose medical recording systems are independent of the institutional systems.

Methods: During a cardiac case the technologist documents the activities (catheterization, biometrics, biopsy, valve replacement, etc) performed by the medical staff. Physics worked with the cardiology staff to identify what standard notations would indicate the procedure type, and where to reliably enter cumulative air kerma (AK). This information was compiled into a report, and the data was manually classified into seven pertinent procedure types. For a particular procedure and quarter, 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. A list of flagged studies - cases exceeding the 95th percentile for a given data subset - was generated for the purpose of clinical review.

Result: Preliminary analysis shows that common low dose cardiac procedures such as heart biopsies, intra-arterial balloon pump insertions, and right heart catheterizations (RHC) exhibit stable median AK of approximately 200 mGy over the last two quarters. Higher dose procedures include left heart catheterizations (LHC), combination LHC/RHCs (both with median AK approximately 900 mGy), and the more complex interventional LHC (median AK approximately 3000 mGy). Cases exceeding the 95th percentile for a given procedure are currently being used to develop a follow-up process for potential deterministic effects.

Conclusions: A robust system of analyzing dose data from an RIS/PACS-independent cardiology system has been developed. The results are being used to improve physician training and fluoroscopic practice.