Exposure to ionizing radiation due to the growing use of imaging procedures in the United States has been a recent concern of radiologists, medical physicists, other healthcare providers, and the public in general. Despite significant improvements in CT acquisition and dose reduction technologies, the ability to compare and monitor doses delivered from CT scans across facilities remains problematic.

The dose index registry pilot project collected and compared dose indices across ten facilities nationwide from three different CT scanner manufacturers. Each of the facilities in the pilot had at least one scanner with the ability to put CT Dose information into a DICOM SR (Structured Report) format. Custom software was used to anonymize the DICOM SR file and transmit the dose information to the American College of Radiology (ACR) Dose Index Registry (DIR). Over a period one and a half months, 6979 exams were collected. Study descriptions of exam type varied both within and across the 10 facilities; therefore, a mapping was made to a standard Radlex Playbook term. Five exam types were mapped: CT Head With IV Contrast; CT Head Without IV Contrast; CT Chest With IV Contrast; CT Chest Without IV Contrast; and CT Head Perfusion. A total of 1944 exams were mapped to one of these five categories. Significant differences ($p<.05$) in CTDIvol by facility were noted for all exam types except CT Head Perfusion for which data for only 20 exams from 2 sites was contributed.

This DIR pilot project demonstrated that a fully automated process of collecting, transmitting, storing and reporting dose information is possible, in spite of challenges related to scanner configuration, software installation, and study description standardization. Once this model is employed on a national level, it will provide unmatched data regarding radiation dose indices that will allow facilities to compare their results to national benchmarks and reference levels.

A national Dose Index Registry using standard methods of data collection and transmission has been successfully piloted and is now available.

The registry has the ability to monitor changes in dose indices due to technological advances and practice modifications and to establish benchmarks and national practice patterns.