AbstractID: 14232 Title: A Process to Streamline Patient Skin Dose Estimation—What We Have and What We Do Not Yet Have

Identifying at-risk patients for adverse bioeffects including cutaneous radiation injury following high-dose fluoroscopically-guided interventional procedures was an FDA recommendation in 1994. The Joint Commission's 15-Gy fluoroscopic peak skin dose sentinel event caused many facilities to consider potentially-high patient doses proactively.
Purpose: We present our strategy for evaluating interventional procedures to identify patients with high doses and our multilevel support for these patients. We describe problems encountered associated with assessments for patients examined on new equipment (i.e., with FDA-required air kerma meters) and vintage units. We report planned changes in patient tracking, to improve accuracy, timeliness and efficiency.
Methods and Materials: We have 3 levels for dose tracking in our department policy, modified from the procedures reported by Mahesh in 2008. We track data sheets from interventional procedures to identify patients with potentially high doses, and we evaluate prior exams for Level 2 and Level 3 patients. Level 2 patients receive cursory initial dose estimates that depend on the unit. Level 3 patients require detailed dose assessments to determine whether the sentinel event threshold is crossed. Vintage units require measurements and study-reported data to reconstruct doses. We modified annual and acceptance testing to streamline dosimetry for common high-dose procedures. New units with in-line dosimetry need fewer measurements and required assumptions, but some necessary information is lacking. Adding estimated doses for multiple exams present special unit-dependent challenges, related to the beam entrance location.
Results: Examples are presented for improving accuracy and timeliness in identifying patients with high levels, preparing cursory estimates to improve timeliness, and modifying annual physics protocols to collect data for dose estimation in advance of specific patient needs. We include a sample dose report.
Conclusion: Following patient dose histories for monitoring potential CRI is time-consuming. We identify our processes for improving accuracy and timeliness and show what is lacking.