Purpose: The aim of this work is to implement vendor mandated alert value (AV) and notification value (NV) Dose-Check metrics into neuro radiology CT exams without adversely affecting clinical workflow and to evaluate these tools as a method of active dose monitoring.

Methods: The NV represents an expected 'reasonable' CTDIvol (or DLP) value, and is assigned at the group level of the protocol prescription; projected surpassing of the NV displays a simple warning message. Preliminary NV implementation included neurological exams, which normally utilize manual (rather than modulated) tube current. Appropriate NV levels were established using internal population DLP metrics, ACR Dose Index Registry results, AAPM recommendations, and projected CTDIvol values. When an NV alert is issued, the technologist attains and documents radiologist approval and then proceeds with the exam. The AV is as a threshold that is compared to the maximum cumulative CTDIvol at any scan location for a given examination. If the forthcoming scan is projected to surpass the AV, login credentials are required to proceed with the scan. Our institution collectively established an AV of 1000 mGy to allow for expected high doses commonly observed for cerebral perfusion exams.

Results: Effective implementation requires a balance of appropriate alerting and reasonable clinical interruption. After three months, we have received 6 NV alerts (2 T-spine, 2 C-spine, 2 Neck). Alerts came about from manual modification of the standard protocol by the technologist. On average, the projected CTDIvol exceeded the NV by 8.4% for spine and 18.5% for neck. No adverse effects on clinical workflow have been experienced.

Conclusions: Active monitoring using AV and NV is a useful, non-invasive tool in minimizing the likelihood of gross overdose (AV) and of abnormal incremental overdose (NV). Future work will involve implementing the NV values for the abdomen exams that use tube current modulation.