

## **Integrated Report Generation for Myocardial Perfusion SPECT: Efficiency Reporting Normal and Abnormal Patients.**

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**Objectives:** The purpose of this study was to evaluate in normal and abnormal patients the efficiency of integrated report generation (IRG) compared to conventional report dictation (CRD).

**Methods:** A semi-automatic report generator was integrated into cardiac SPECT quantification software (4D-MSPECT). The IRG was designed to automatically import quantitative and semi-quantitative results from the analyses of gated and ungated myocardial perfusion SPECT. Reports are generated from imported quantitative and visual data using a structured reporting dialogue and user definable report templates that may include study indications, imaging protocol, radiotracer doses, stress test and EKG results, scan finding, selected images, physician interpretation and clinical significance. Time requirements for both IRG and CRD were evaluated. Consecutive patients (n=44) referred for myocardial perfusion imaging were reported using both methods. Time for reporting using IRG includes entry of radiotracer dosages, stress EKG, hemodynamic data and image interpretation. Time for CRD includes preliminary report writing, dictation of scan and stress test, resident and attending physician proofing and signing of transcribed reports.

**Results:** Total report generation time (sec) using IRG compared to CRD was  $191.3 \pm 52.3$  vs.  $449.1 \pm 103.3$  ( $p < 0.001$ ). Radiotracer doses maybe pre-entered by nuclear technologists and clinical study indications and results of stress testing entered by exercise physiologist or nurse. The total physician time for IRG, formulation of final impressions and scan significance, was  $43.2 \pm 34.2$  ( $p < 0.001$ ). Assuming attending physicians only dictate scan results and sign reports without proofing or resident/fellow involvement, time savings are still substantial:  $43.2 \pm 34.2$  vs.  $271.0 \pm 69.3$  ( $p < 0.01$ ). Physician reporting times were significantly faster both in patients with normal or near normal scans (n=25) were  $17.4 \pm 14.9$  vs.  $231.8 \pm 41.8$  ( $p < 0.001$ ) and in those with significant scan abnormalities (n=19)  $62.7 \pm 31.7$  vs.  $300.8 \pm 71.7$  ( $p < 0.01$ ), respectively. Automatic importation of stress test results will further improve overall reporting efficiency.

**Conclusion:** Reporting of SPECT myocardial perfusion studies using IRG within SPECT quantification software results in significant time saving compared to conventional dictated reports both in patients with normal and those with abnormal scan findings.