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## Impact of myocardial perfusion imaging with PET and (82)Rb on downstream invasive procedure utilization, costs, and outcomes in coronary disease management.

Merhige ME, Breen WJ, Shelton V, Houston T, D'Arcy BJ, Perna AF.

Departments of Cardiology, Internal Medicine, and Nuclear Medicine, State University of New York at Buffalo, Buffalo, New York 14302, USA. merhige@buffalo.edu

### Abstract

We hypothesized that PET myocardial perfusion imaging with (82)Rb (PET MPI), would reduce downstream utilization of diagnostic arteriography, compared with SPECT, in patients matched for pretest likelihood of coronary disease (pCAD). PET MPI is more accurate for assessment of impaired coronary flow reserve compared with SPECT MPI, potentially reducing the demand for subsequent arteriography, percutaneous trans-coronary intervention, and coronary artery bypass grafting (CABG), with attendant cost savings, while avoiding a negative impact on coronary events.

**METHODS:** The frequency of diagnostic arteriography, revascularization, costs, and 1-y clinical outcomes in 2,159 patients studied with PET MPI was compared with 2 control groups studied with SPECT MPI matched to the PET group by pCAD: an internal control group of 102 patients and an external SPECT control group of 5,826 patients. CAD management costs were approximated with realistic global fee estimates.

**RESULTS:** Arteriography rates were 0.34 and 0.31 for the external and internal control SPECT groups and 0.13 for the patients studied with PET ( $P < 0.0001$ ). pCAD averaged 0.39 in patients studied with PET MPI, and in the external SPECT control group, and 0.37 in the internal SPECT controls. Revascularization rates were 0.13 and 0.11 for external and internal SPECT patients and 0.06 for the PET group ( $P < 0.0001$ ;  $P < 0.01$ ), with a cost savings of 30% noted for PET patients, with no significant difference in cardiac death or myocardial infarction at 1-y follow-up.

**CONCLUSION:** PET MPI in patients with intermediate pCAD results in a >50% reduction in invasive coronary arteriography and CABG, a 30% cost savings, and excellent clinical outcomes at 1 y compared with SPECT.

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