A simplified approach to stress-first nuclear myocardial perfusion imaging: implementation of ASNC Choosing Wisely recommendations

David E. Winchester, MD MS
david.winchester@va.gov
Background

- Stress only imaging has similar outcomes to rest/stress imaging
- ALARA and stress first imaging is recommended by professional societies
- Only 16% of labs in North America routinely perform stress only MPI

Chang J Am Coll Cardiol 2010;55:221
Cerqueira J Nucl Cardiol 2010;17:709
Einstein Eur Heart J 2015;36:1689
Use methods to reduce radiation exposure in cardiac imaging, whenever possible, including not performing such tests when limited benefits are likely.
Methods

• Stress first/only protocol
• All patients eligible
  – Regadenoson 0.4 mg
  – 9-13 mCi Tc-99m*-tetrofosmin
  – SPECT with 16 slice CT-AC and prone
  – Immediate review by physician
    • If abnormal, proceed with rest imaging
Methods

• Primary Outcome
  – Estimated effective radiation dose

• Secondary Outcomes
  – Rate of abnormal SPECT
  – Cardiac Catheterization
  – Percutaneous Coronary Intervention
Results

• 1,140 patients
• Control n=424 (July 16-Nov 16)
• Stress first n=716 (Nov 16-May 17)
Effective Dose (median)

- Effective Dose
  - Control
  - Stress First

• P<0.0001
Rate of Abnormal SPECT

- p=0.54
- OR 0.92
- 95% CI 0.69-1.21
Angiography/Intervention

• Control cohort
  – Coronary angiography: 1.0% (n=3)
  – Coronary intervention: 0.7% (n=2)

• Stress first
  – Coronary angiography: 1.1% (n=8)
  – Coronary intervention: 0.3% (n=2)
Discussion

• How can this be implemented elsewhere?

• Theoretical Domains Framework (Imp Sci)
  – Not barriers: Knowledge, Skills, Professional Norms
  – Possible barriers: Empowerment, Decision-making, Prioritization, Practice Change
  – Barriers: Compensation, Resources, Organizational Culture

Atkins Imp Sci 2017;12:77
Discussion

• How can this be implemented elsewhere?
  – Technologist/Computer assist with stress first
Discussion

• How can this change the field of nuclear cardiology?
  – If stress first was ~30%, would avoid 14 mil mSv
• Simplified, expanded approach to stress first
  – If stress first was ~60%, would avoid 31 mil mSv
• Improving efficiency
  – Greater DCBN
  – Less outpatient/staff time
Thank you

- Gainesville VA Team
  - Randy Jeffrey MD
  - David E. Winchester MD
  - David C. Wymer MD
  - Vicente Taasan MD
  - Anita Wokhlu MD