



Helping
Cardiovascular
Professionals
Learn.
Advance.
Heal.



Practitioners' View of Utilization Management in Cardiac Imaging:

Development, Implementation and Evaluation
of Appropriate Use Criteria

Janet Wright, MD, FACC

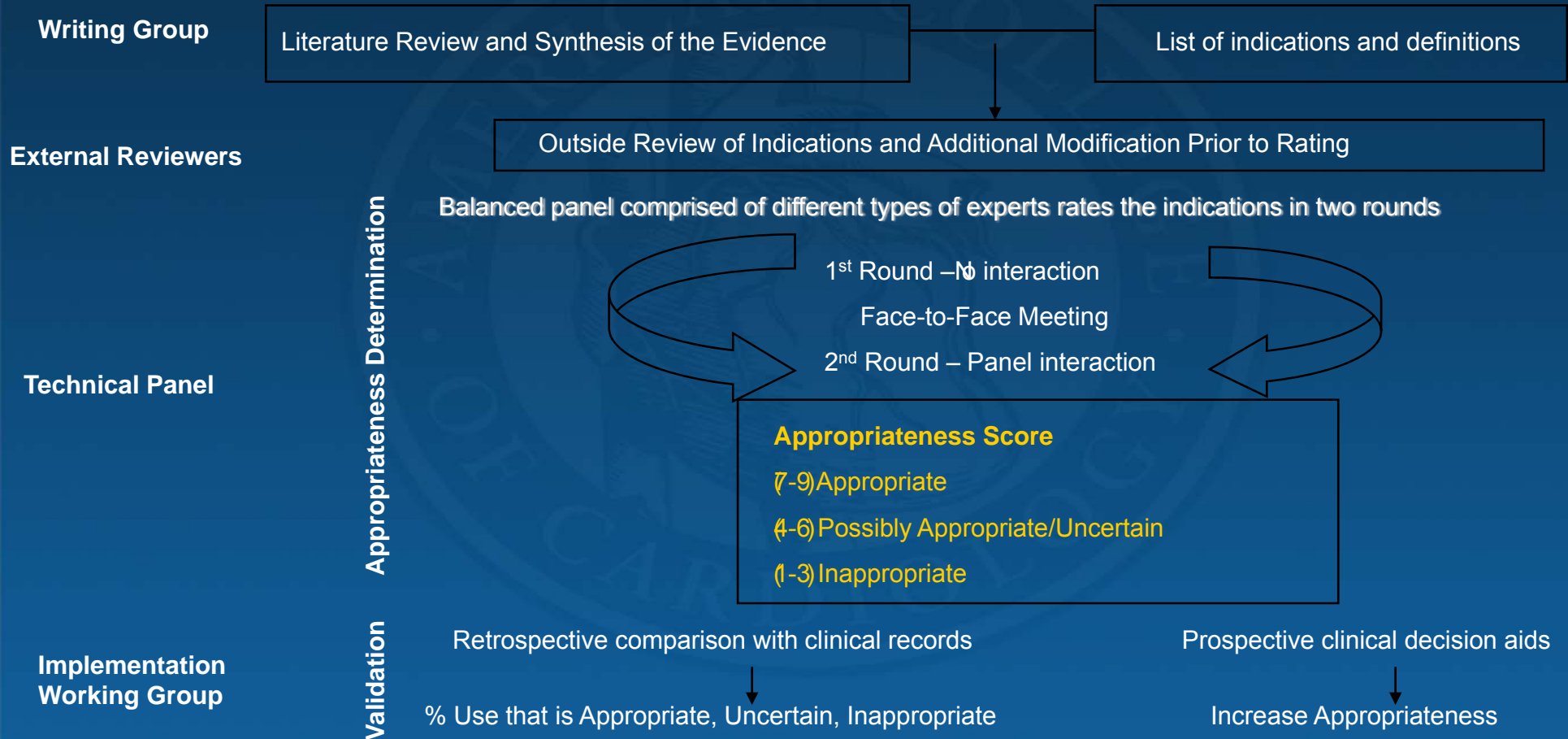
Challenge of Managing Imaging Growth

- Acknowledge growth in imaging – includes both *potential* overuse and underuse
- Current radiology benefit manager approach reviews individual cases
 - Non-transparent criteria
 - *Resource demanding*, time intensive
 - Little opportunity for understanding practice patterns
 - Interferes with physician/patient relationship (access)

Why ACCF Appropriate Use Criteria?

- Improve utilization of resource-intensive tests and procedures
 - Developed by physicians/providers
 - Literature-based (when possible) approach
 - Initial focus on advanced diagnostic cardiac imaging
 - Expansion to revascularization, potential for other procedures
- Focused reduction of procedures based on clinical value and practice patterns, not indiscriminant volume reduction
- Facilitates continuous quality improvement through education and feedback
- Preserves patient/provider relationship
- Provides for continued patient access

Appropriate Use Criteria Methodology



Publications

- ✓ Nuclear cardiology (SPECT MPI)
October 2005
- ✓ Cardiac CT/MR
September 2006
- ✓ Echocardiography (Transthoracic/Transesophageal)
June 2007
- ✓ Echocardiography (Stress)
December 2007
- Revascularization (PCI and CABG)
December 2008 (In Press)
- Revised SPECT Criteria (in preparation)
- CV imaging cross modality (efficiency) evaluation

Implementation and Evaluation

- Development of methodology and publication of Criteria is not enough to ensure change in clinical practice
- Formation of AUCIE (Appropriate Use Criteria Implementation and Evaluation) Working Group, with leadership teams
 - Education/Communication (Kim Williams)
 - Implementation Tools (electronic)(Michael Mirro)
 - Databases and Registries (James Min)
 - CMS Demonstration Pilot Proposal (Eric Peterson)
 - Performance Measurement Development (Robert Hende)
- ACCF/United Healthcare SPECT Appropriateness Pilot
- MIPPA mandate for Appropriateness Criteria Demo

Evaluation of Appropriateness

	Appropriate	Uncertain	Inappropriate
Hendel, 2006	83%	6%	11%
Williams, 2006	78%	5%	8%
Ayyad, 2007	85%	5%	10%
Druz, 2007	57%	33%	10%
Gaztanega, 2007	55%	28%	17%
Al-Mallah, 2007	75%	12%	13%
Gibbons, 2008	64%	11%	14%

ACCF/ASNC & United Healthcare Partnership Pilot Project Goals


- Quality Improvement
 - Effective patient care
 - Efficient care
- Assess Validity of Appropriateness Criteria
 - Provide data for revisions/updates
 - Determine threshold levels of performance
- Assess Practice Patterns
 - Feedback to practice & individual physician
 - Identify areas for improvement
- Analysis of Decision Making
 - Correlation of level of appropriateness and image findings/patient outcome
- Alternative to Prior Notification/Prior Authorization


Pilot Project Methodology

- Sites
 - 7 participating sites
 - Cross-country geographic representation from Oregon to Florida
- Data Collection
 - Collected at imaging facility and feedback on practice patterns sent by sites to referring physicians
 - ALL SPECT MPI patients at participating practices
 - Collected on paper form and entered online at practice site
 - Collect data to evaluate appropriate use and test result
- Education and Feedback
 - Practice pattern reports
 - Change behavior at point of order with education and tools

Data Collection Form

- Front page
 - Patient demographics
 - History & risk factors
 - Prior procedures & tests
- Back page
 - Current study
 - Reference section
- Designed to be completed in one minute or less

 Single-Photon Emission Computed Tomography Myocardial Perfusion Imaging (SPECT MPI) American College of Cardiology Foundation - Appropriateness Criteria Pilot	
A. PATIENT DEMOGRAPHICS	
Last Name ²⁰⁰⁰ : _____	First Name ²⁰¹⁰ : _____ Middle Name ²⁰²⁰ : _____
Test Date ²⁰⁵⁰ : ____/____/____	Age ²⁰⁶⁰ : _____ Sex ²⁰⁷⁰ : <input type="radio"/> Male <input type="radio"/> Female
Medical Record # ²⁰³⁰ : _____	ACC Patient ID ²⁰⁴⁰ : _____
Referring Physician ¹⁰⁸⁰ : _____	Specialty ¹¹⁵⁰ : <input type="radio"/> Primary Care <input type="radio"/> Cardiologist <input type="radio"/> Hospitalist <input type="radio"/> Other
Interpreting Physician ¹⁰⁹⁰ : _____	Specialty ¹¹⁵⁰ : <input type="radio"/> Cardiologist <input type="radio"/> Radiologist <input type="radio"/> Other NPI ¹¹⁶⁰ : _____
Primary Payer ²⁰⁸⁰ : <input type="radio"/> Aetna <input type="radio"/> BCBS <input type="radio"/> CIGNA <input type="radio"/> Kaiser <input type="radio"/> Medicaid <input type="radio"/> Medicare <input type="radio"/> United Healthcare <input type="radio"/> None/Self-pay <input type="radio"/> Other	
Reason for Test ²⁰⁹⁰ : (choose primary)	
<input type="radio"/> Detection of CAD/Risk Stratification – Symptomatic	<input type="radio"/> Risk Assessment – Prior Test Results
<input type="radio"/> Detection of CAD/Risk Stratification – Asymptomatic	<input type="radio"/> Risk Assessment – Preoperative Evaluation
<input type="radio"/> Risk Assessment – Post Revascularization	<input type="radio"/> Risk Assessment – Following ACS
<input type="radio"/> Assessment of Viability/Function	
B. HISTORY & RISK FACTORS	
Total Cholesterol (mg/dL) ³⁰⁰⁰ : _____ HDL ³⁰¹⁰ : _____ LDL ³⁰²⁰ : _____	Use of Lipid-Lowering Medication ³⁰⁷⁰ : <input type="radio"/> No <input type="radio"/> Yes
Blood Pressure (resting) ^{3030,3040} : _____ / _____ (mmHg)	Use of Anti-hypertensive Medication ³⁰⁸⁰ : <input type="radio"/> No <input type="radio"/> Yes
Current Smoker (w/in 1 month) ³⁰⁵⁰ : <input type="radio"/> No <input type="radio"/> Yes	HF or LV Systolic Dysfunction (new onset) ³⁰⁹⁰ : <input type="radio"/> No <input type="radio"/> Yes
Diabetes Mellitus ³⁰⁶⁰ : <input type="radio"/> No <input type="radio"/> Yes	Atrial Fibrillation (new onset) ³¹⁰⁰ : <input type="radio"/> No <input type="radio"/> Yes
Symptoms ³¹¹⁰ : <input type="radio"/> Asymptomatic <input type="radio"/> Stable chest pain <input type="radio"/> Worsening chest pain <input type="radio"/> Dyspnea/shortness of breath	
→ If Asymptomatic, Estimated CHD Risk (Framingham) ³¹²⁰ : <input type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High (See References)	
Chest Pain Type (Angina) ³¹³⁰ : Typical (3 below); Atypical (2 below); Non-anginal (1 or none) (check any that apply)	
<input type="checkbox"/> Substernal chest pain or discomfort	
<input type="checkbox"/> Provoked by exertion or emotional distress	
<input type="checkbox"/> Relieved by rest and/or nitroglycerin	
Estimated Pre-test Probability of CAD ³¹⁴⁰ : <input type="radio"/> Very Low <input type="radio"/> Low <input type="radio"/> Intermediate <input type="radio"/> High (See References)	
Exercise Tolerance ³¹⁵⁰ : _____	
Ability to Achieve Max F ³¹⁶⁰ : _____	
Acute Coronary Syndro ³¹⁷⁰ : _____	
Surgery Risk Level ³¹⁸⁰ : _____ (Preoperative evaluation only)	
Pre-op Patient Risk Lev ³¹⁹⁰ : _____ (Preoperative evaluation only)	
C. PRIOR PROCEDURES &	
Non-Imaging Stress Tes ⁴⁰³⁰ : _____	
SPECT MPI ⁴⁰³⁰ : _____	
Stress Echo ⁴⁰⁶⁰ : _____	
Coronary CT Angiogram ⁴⁰⁷⁰ : _____	
Calcium Score ⁴¹²⁰ : _____	
Cardiac MR ⁴¹⁴⁰ : _____	
Cardiac Catheterization ⁴¹⁵⁰ : _____	
Cath Planned w/in 1 mo ⁴¹⁶⁰ : _____	
PCI ⁴²¹⁰ : _____	
CABG ⁴²⁴⁰ : _____	

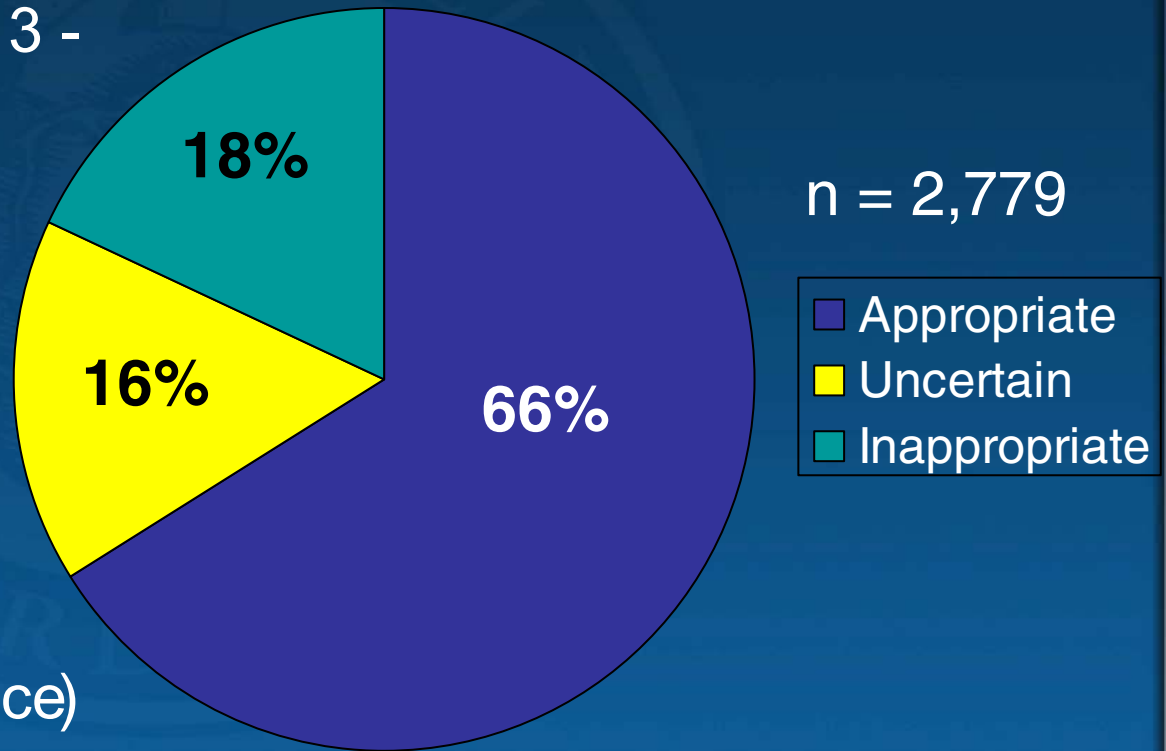
 Single-Photon Emission Computed Tomography Myocardial Perfusion Imaging (SPECT MPI) American College of Cardiology Foundation - Appropriateness Criteria Pilot	
D. CURRENT STUDY	
Resting ECG Interpretable ⁵⁰⁰⁰ : <input type="radio"/> No <input type="radio"/> Yes	
Test Result ⁵⁰¹⁰ : <input type="radio"/> Normal <input type="radio"/> Abnormal	
→ If Abnormal, Extent of Ischemia ⁵⁰²⁰ : <input type="radio"/> None <input type="radio"/> Small <input type="radio"/> Moderate <input type="radio"/> Large	
→ If Abnormal, Extent of Scar/Infarction ⁵⁰³⁰ : <input type="radio"/> None <input type="radio"/> Small <input type="radio"/> Moderate <input type="radio"/> Large	
LVEF ⁵⁰⁴⁰ : _____ %	
Stress Test Type ⁵⁰⁵⁰ : <input type="radio"/> Exercise <input type="radio"/> Pharmacological <input type="radio"/> Pharmacologic w/Exercise	
→ If Pharmacological or Pharm/Exercise, Drug Administered ⁵⁰⁶⁰ : <input type="radio"/> Adenosine <input type="radio"/> Atropine <input type="radio"/> Dipyridamole <input type="radio"/> Dobutamine	
→ If Exercise or Pharm/Exercise, Functional Capacity ⁵⁰⁷⁰ : <input type="radio"/> Reduced <input type="radio"/> Average <input type="radio"/> Superior	
→ If Exercise or Pharm/Exercise, Duration (If Bruce Protocol) ⁵⁰⁸⁰ : _____ mins	
Ischemic ST Changes During Test ⁵⁰⁹⁰ : <input type="radio"/> No <input type="radio"/> Yes	
Angina During Test ⁵¹⁰⁰ : <input type="radio"/> Typical <input type="radio"/> Atypical <input type="radio"/> Non-Anginal/None	

Preliminary Findings

- Vast majority of patients able to be classified as to level of appropriateness
- Findings consistent with other studies
 - Wide practice variation
 - Few indications account for majority of inappropriate studies
 - Greater frequency of inappropriate tests from outside of lab
- Collection of test results
 - Validate criteria
 - Potential to be used to track downstream utilization – value of test (separate project - planning cohort study for CCTA)

Preliminary Data

- Data collection from March 3 - July 31, 2008
- 6/7 sites entering data
- 3,035 studies
- 256 excluded
 - 173 for insufficient data (64% from single practice)
 - 82 for conflicting scores



Pilot Site Specific Results

Site	N	Appropriate	Uncertain	Inappropriate	Not classified
#1	157	55%	15%	22%	5%
#2	811	54%	8%	22%	14%
#3	728	60%	17%	17%	2%
#4	861	60%	21%	13%	3%
#5	291	79%	6%	11%	2%
#6	187	59%	19%	18%	2%

Most Common “Inappropriate” Indications

INDICATION	FREQUENCY	PERCENT
Detection of CAD Asymptomatic, low CHD risk	262	9%
Asymptomatic, post-revascularization < 2 years after PCI, symptoms before PCI	91	3%
Evaluation of chest pain, low probability pt Interpretable ECG and able to exercise	82	3%
Pre-operative assessment Low risk surgery	21	1%
Asymptomatic or stable symptoms < 1 year after cath or abnormal prior SPECT	16	<1%

Quality Improvement and Educational Initiatives

- *De-identified* feedback to *individual* practitioners regarding their practice patterns in reference to benchmarks
- Development and dissemination of list of top inappropriate indications
- Internal education within cardiology practice regarding key inappropriate indications and ordering patterns
- Support of joint attribution by a “non-threatening” letter to referring practitioners about inappropriate use and key targets
- Decision support tools, via PDA, Internet, order-entry

Not only Overuse, Potential Underuse

- Ischemia only documented 44% of time by stress testing prior to PCI (Lin, JAMA, 2008)
- COURAGE results would indicate that documentation of ischemia important prior to decision to proceed to elective PCI
- *Appropriate use criteria for revascularization (in press) emphasize need for objective evidence of ischemia before performing revascularization*

Conclusions

- Appropriate use evaluation tool
 - Rapid, easy to use, and provides feedback
- Transparent methods accepted by physicians and payer
- Potentially superior method to RBMs' indiscriminant volume reduction and "expensive" approach
- Potential to understand the value of imaging test results and their impact on downstream utilization
- Important collaboration between physicians/ medical societies and health plans for ongoing quality improvement for cardiovascular imaging

Contact Information

- Janet Wright, MD, FACC, SVP, Science and Quality
jwright@acc.org, 202.375.6430
- Karen Caruth, SPECT MPI Project Manager
kcaruth@acc.org, 202.375.670
- Joseph Allen, Director, Translating Research Into Practice
jallen@acc.org, 202.375.6463