






Quantitative Imaging Biomarkers Alliance  

# QIBA Goals, Progress, Current Status

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Quantitative Imaging Biomarkers Alliance  

## QIBA Goal





Clinical Value of QI Data

Data showing Clinical Value

Accurate, reproducible QI Data



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graph TD; A[Data showing Clinical Value] --> B[Clinical Value of QI Data]; B --> C[Accurate, reproducible QI Data]; C --> A;
```



## Current QIBA Structure


Steering Committee  
3 Modality Committees  
5 Task Groups




- Volumetric CT (oncology)
- CT density (COPD)
- FDG-PET (oncology)
- DCE-MRI (oncology)
- fMRI (seizure disorders)






## Current Status

- Phantom and reader data collected by volCT and DCE-MRI committees
- Draft Profiles in volCT, FDG-PET, DCE-MRI
- Groundwork activities in COPD, fMRI
- Projects funded by NIBIB.



  		
<b>QIBA CT Projects</b>		
Title	Budget	PI
Inter-scanner/inter-clinic comparison of reader nodule sizing in CT imaging of a phantom	\$35,000	C. Fenimore, NIST
Assessing Measurement Variability of Lung Lesions in Patient Data Sets	\$13,185	M. McNitt-Gray, UCLA
Validation of volumetric CT as biomarker for predicting patient survival	\$62,366	B. Zhao, Columbia NY
Study to tie meta-analysis of multiple phantom studies together.	\$3,000	M. Athelougou, Definiens
Development of assessment and predictive metrics for quantitative imaging in chest CT	\$40,000	S. Richard and E. Samei, Duke Univ
Quantifying variability in measurement of pulmonary nodule (solid, part-solid and ground glass) volume, longest diameter and CT attenuation resulting from differences in reconstruction thickness, reconstruction plane, and reconstruction algorithm.	\$42,070	K. Garg, D. Miller, A. Scherzinger, U of Colorado, Denver
<b>Total: (NIBIB: HHSN268201000050C)</b>	<b>\$195,621</b>	

  		
<b>QIBA MR Projects</b>		
Title	Budget	PI
DCE-MRI Phantom Fabrication, Data Acquisition and Analysis, and Data Distribution	\$60,347	E. Jackson, MDACC
Software Development for Analysis of QIBA DCE-MRI Phantom Data	\$29,975	E. Ashton, VirtualScopics
Digital Reference Object for DCE-MRI analysis software verification	\$46,210	D Barboriak, Duke Univ
Quantitative measures of fMRI reproducibility for pre-surgical planning	\$26,400	J. Voyvodic, Duke Univ
Quantitative measures of fMRI reproducibility for pre-surgical planning	\$14,874	E. DeYoe, Medical College of Wisc
<b>Total: (NIBIB: HHSN268201000050C)</b>	<b>\$177,806</b>	

Title	Budget	PI
Meta-analysis to analyze the robustness of FDG SUV changes as a response marker, post and during systemic and multimodality therapy, for various types of solid extracerebral tumors.	\$73,000	O. Hoekstra, University of the Netherlands
QIBA FDG-PET/CT Digital Reference Object Project	\$68,240	P. Kinahan, U Washington
Analysis of SARC 11 Trial PET Data by PERCIST with Linkage to Clinical Outcomes	\$57,500	R. Wahl, Johns Hopkins
<b>Total: (NIBIB: HHSN268201000050C)</b>	<b>\$198,740</b>	

Quantitative Imaging Biomarkers Alliance

RSNA  
Radiological Society of North America

## Corporate Visits

**“Saying that the patient must be imaged on the exact same instrumentation pre- and post-therapy is the symptom of poor performance which will not require medical training to diagnose.”**

R. Frank, 2011.

## Reader Variability Issue

- January , 2011: FDA expressed concerns about an Alzheimer's brain imaging PET scan that detects amyloid plaques in the brain.
- FDA staff found "high variability" in reading the scans where imaging readers didn't always produce the same interpretation for each image.

WSJ BLOGS

## The Numbers Guy

Carl Blakk examines the way numbers are used, and abused.

MAY 20, 2011, 7:03 PM ET

### Mind the Median













By Carl Blakk

My [print column](#) this week examines a controversy over the use of the statistical concepts median and correlation to make the case for the approval by the U.S. Food and Drug Administration of a pharmaceutical to be used as part of a test for Alzheimer's.

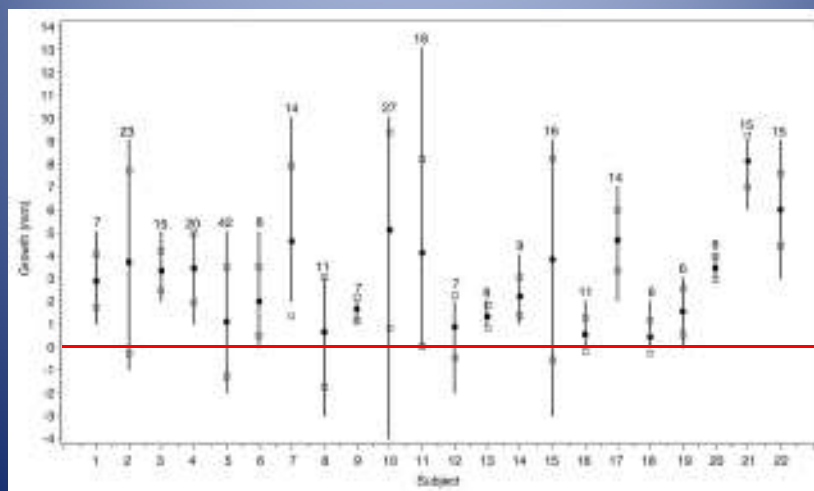
The controversy hinges not on whether the pharmaceutical, called florbetapir F 18, or Amyvid, successfully marks amyloids — a protein buildup that, when found in the brain, is often a sign of Alzheimer's but is difficult to detect while a patient is alive. At issue is whether doctors who read PET scans of patients who have been given the pharmaceutical can arrive at consistent, reliable diagnoses. The maker of the drug, Eli Lilly and Co. subsidiary Avid Radiopharmaceuticals Inc., demonstrated the test's success by taking the middle score of three, each assigned by one of



MEDICAL FINANCIAL SERVICES

CHOOSE WHAT FITS

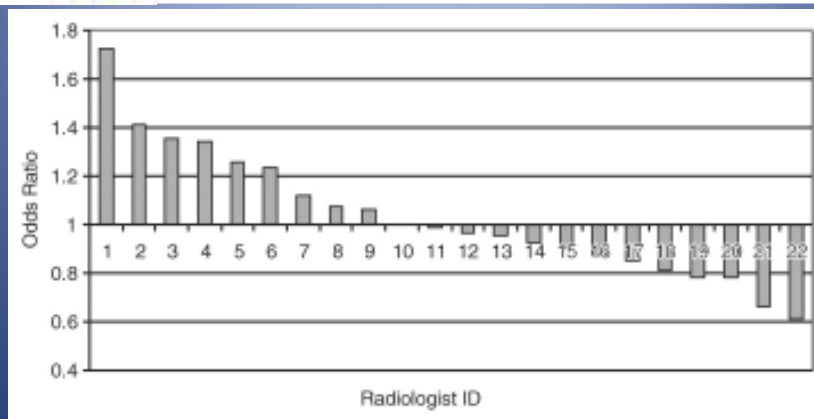
**NLST Reader Variability: Reader estimates for 22 nodules judged to have grown by most readers.**



Singh S et al. Radiology Jan, 2011





**Recommendation, by each radiologist, for follow-up of pancreatic lesions**



Unadjusted recommendation rates varied significantly from 10.5% to 76.9% among radiologists ( $P = .002$ ).



Ip et al. Radiology 2011;259:136-141



## Editorial Comment:

- “Individual patients, referring physicians, and society as a whole cannot possibly accept this degree of variability.”
- “...variation in reporting can lead to confusing recommendations to referring physicians on the same patient, eroding referrer confidence and jeopardizing referrals.
- ...further expose radiology as a root cause of unnecessary increases in health care costs.”

Macari & Megibow, Radiol, Apr 2011



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