QIBA US COORDINATING COMMITTEE UPDATE
Wednesday, May 6, 2015

MODALITY STRUCTURE

Ultrasound Coordinating Committee
Core: Hall, Garra, Carson, Milkowski, Obuchowski
Voting Members: About 12 others to be selected approx. half physicians and half physics and engineering

US SWS Biomarker Committee
Timothy Hall, PhD; Brian Garra, MD; Andy Milkowski, MS
• Systems Dependencies/Phantom Testing Task Force
  Mark Palmeri, MD, PhD; Keith Wear, PhD
• Clinical Applications Task Force
  Anthony Samir, MD, MPH; Claude Cohen-Bacrie, MS; David Cosgrove, MD
Current Status: Profile Development

Profile in Progress

• US Estimation of SWS for grading of liver fibrosis.
• Status – Clinical Testing
  • Literature Search Performed – identified major confounders
  • Clinical studies to evaluate confounders- complete
  • Clinical Study to evaluate acquisition parameters -underway
• Status – Instrumentation Variability
  • Phantom Studies: Elastic complete; Viscoelastic results being evaluated
  • Developing Sim Data For Mfr Processing To Find Methods To Remove System Bias Differences & Reducing Variance
• Status – Profile Writing
  • Profile Draft One Complete – need references, appendices, repeatability and reproducibility & clinical stats for claim
• Conformance – Work Just Beginning

ROUND 4 PROJECTS UNDERWAY
START DATE 10-1-14

Validation Of Simulations And Phantoms Mimicking Viscoelastic Properties Of Liver
– Validated Simulation Accuracy For Two Commercial Implementations Of Finite Element Solvers In Elastic Media (Ls-dyna & Abacus)
  • Source Code & Configuration Files Available:
    – git@github.com:RSNA-QIBA-US-SWS/QIBA-DigitalPhantoms.git
    – git@github.com:RSNA-QIBA-US-SWS/fem.git
  • FEA data will be uploaded to QIDW
– Viscoelastic Simulations Now Underway
– Expected Completion 10-1-15
ROUND 4 PROJECTS UNDERWAY II
START DATE 10-1-14

• Sources Of Measurement Variability In Shear Wave Elastography
  – A Study of measurement Variation vs.
    • ROI Depth in Liver
    • Beam Propagation Normal to Liver Capsule
    • Transducer–Patient Contact Force
  – 40 Subjects
  – Issues
    • IRB approval Delay
    • Delayed Delivery of Imaging Systems
  – Study Now Underway
  – On Time Completion Still Expected

Challenges/Next Steps/Future Plans

• Evaluate Phase II Viscoelastic Phantom Data
• Use Standardized Simulated Data to Develop Strategies for Obtaining Similar SWS From Different Systems and Lower Variance
• Clinical Study to Verify Improved SWS Results
• Compare US Results With MRE
  – LIAISON : MARK PALMERI
• Correlate Improved SWS Estimates With Biopsy Results to Develop Biomarker Performance Claims
• Develop Conformance Criteria and Tests
• Complete Profile
THE FUTURE
NEW ULTRASOUND BIOMARKERS

• Additional Biomarkers Discussions Mid 2014
• Two Scientific Sessions and a Special Meeting to Identify and Start Selection of New Biomarkers at AIUM –March 2015
• AIUM Technical Standards Voted to Collaborate with QIBA on New Biomarker(s) – Now Formal Collaboration Between AIUM and RSNA
• Potential Biomarker Technologies
  – Spatial Measurements, Contrast Ultrasound
  – 3D Volume Flow, Portal Venous Pressure

NEW ULTRASOUND BIOMARKERS

EVALUATION CRITERIA
• Clinical Significance
• Technical Feasibility
• New Volunteers With Interest and Availability!

SELECTION OF ONE OR TWO NEW BIOMARKERS IN THE NEXT FEW WEEKS