

**QIBA Volumetric CT Group 1C Update WebEx
Cross-Platform / Inter-Clinical Study**

**April 15, 2009
2:00 PM CST**

Call Summary

In attendance:

Charles Fenimore, PhD (Moderator)
Andrew Buckler, MS
John Lu, PhD
Michael McNitt-Gray, PhD
Kevin O'Donnell
Nicholas Petrick, PhD

RSNA staff
Fiona Miller
Susan Anderson
Joe Koudelik

General Discussion

- Goal 2: Measuring image noise and other image quality factors and determine their impact on the measurement of volume
- Two branches possible:
 1. Use protocols from NLST or ACRIN 6678 (scanning parameters to be specified)
 2. Use phantoms (water and ACR) to characterize resolution and noise
- Which protocol is most sensible? Which corresponds best to our current profile?
- Nine attributes/parameters listed under ACRIN 6678; VolCT parameter lists 18+; we are Profiling in more detail which is positive in minimizing variance
 - ACRIN 6678 is favored for high resolution imaging; is this realistic for clinical trial use?
- Values for attributes/parameters needed; *ideal/target/acceptable* levels
- Guidance with interpreting “reasonable” values needed
- Structure to communicate proposed values needed – to help gain acceptance
 - Slice thickness issues; should Study Branch 1 & 2 both use wider slices?
 - Algorithms perform better on thin slice reconstructions while clinical practice relies on thicker slices
 - E.g. recon slice widths proposed:
 - <1mm (*ideal*)
 - 1-1.25mm (*target*)
 - \geq 5mm (*acceptable*)
 - Recon kernel and mAs values also need specifying
- Attribute/parameter nomenclature not consistent between manufactures
 - E.g. mAs may have different meaning across manufacturers – may be interpreted differently at each site
 - A table of values may not translate well across scanners
- User interface may not contain same parameters
- Data normalization needed for data consistency - DICOM currently addressing
- Scanners may import protocol files (past user interface) and export protocols in efforts to validate the process
- Accessing output quality of protocols
 - Branch 1 to refer to ACRIN 6678 or other appropriate well-defined protocol, e.g. a QIBA-defined clinical trial imaging protocol
 - Branch 2 to refer to specification of performance levels – resolution, noise, and other measurable imagery attributes. For example, specify the resolution and the image noise of the CT system; to be determined using

a phantom (between 5 and 8 line pairs per mm as measured with the ACRIN resolution phantom) water phantom (C/N of no more than 10 HU) and a ACRIN resolution

- Input dependent on scanner; to maintain output normalization
- Engage medical physicists for advice – in context of their clinical experience
 - Not to be turned over to techs at this exploratory stage
- Dr Petrick to provide contact info for Dr Ian Cunningham (3-D imaging techniques-Canada) to Dr McNitt-Gray?
- Protocol specifications shouldn't be too arduous for sites to abide by.
- Dr Fenimore will engage Kevin O'Donnell for format input
 - A recognizable reference protocol is needed
 - Protocol is a concept piece that still required details to be filled-in
 - How to document protocols; table format would be useful for comparison with recommended values; group will supply content
 - Columns to be added for all branch investigations
 - Disqualifying factors may change in the future between columns
 - Speculation on details is acceptable, not on claims; "what I think" claims are difficult to make

Next Steps

- Dr Petrick to provide contact information for Dr Ian Cunningham (3-D imaging techniques-Canada) to Dr McNitt-Gray
- Dr Fenimore will engage Kevin O'Donnell for development of tables to document protocols