



## AIUM/QIBA Ultrasound Volume Blood Flow Biomarker

### Summary 05-April-2021

Attendees: Brian Fowlkes, Kourosh Mahmoud-Kalayeh, Andy Milkowski, Stephen Pinter, Ted Lynch, Cristel Baiu, CY Lee, Jim Zagzebski, Jing Gao, Jim Jago, Jon Runin, Michelle Robbin, Nicole Lafatta, Patrick Ploc, Paul Carson, Rimon Tadross, Mark Lockhart  
AIUM staff – Therese Cooper

1. Review of Previous Call Summary – 01-Mar-2021
2. Action Items
  - 2.1. Discussion of 2D spectral Doppler in QIBA Phantom
    - 2.1.1. Still being examined. Considerable discussion of these data at last meeting with concerns about the acquisition methodology for the 2D spectra. **Need to examine conditions in the acquisition to determine if data is useful.** Stephen mentioned it being on his hit list but has nothing else to add at this time. Also tests being performed in conjunction with project at Baylor.
  - 2.2. Abstracts for Ground Work Studies. Brian suggested flow phantom modeling as a potential ground work study. **Again, if you have an idea for an abstract let Brian know.**
  - 2.3. Michelle described the changes made to normal flow in the brachial artery in the arm and a decision to not include retrograde component in the measurement. Paul made comments. All agreed that language will stay.
  - 2.4. **Brian sent email to Zonneveld or the senior author who published on volume flow measurements in clinical study but still has not heard back. Looking for useful data – intra and inter-observer variability in the context of dialysis access.**
    - 2.4.1. Michelle had suggested Jan Tordoir as a contact as the senior author and to perhaps mention Michael Alon's name. She is planning to make contact as well. Nancy the statistician is a great resource on how to get the data the right way.
  - 2.5. KDOQI language corrected. Felt the reference was appropriate for AVF maturity.
3. Review of Flow Phantom Modeling
  - 3.1. Brian reviews background
    - 3.1.1. Discussion of Dean Number (Dean vortices – circulation of flow inside the vessels. Main flow is straight through the cross sections)

3.1.2. Cristel was potentially going to make a phantom to get that type of flow. Cristel shared some materials from an appendix to their flow phantom manuals with the group.

3.1.2.1. Initial Modeling by Kourosh.

3.1.2.1.1. Kourosh described the flow simulation - Model Parameter - incompressible and laminar flow; Velocity Magnitude on xz-Plane; the Pressure on xz-plane; described the Reynolds number; Velocity Magnitude vs x at  $z = y = 0$  and vs z at  $x = y = 0$ ; In-plane Velocity Magnitude; Out-of-plane Velocity Magnitude

3.1.2.1.2. Discussed the flow pattern and orientation

3.1.2.1.3. Discussed making a phantom that had tubes on the diagonal so that the tubes do not lay on top of each other.

4. Update on VBF Profile Discussions

4.1. Review of current draft and updates from Profile Task Group

4.1.1. Quite a few updates. Please add any comments especially in the later sections (3.9). Would like to finalize this profile so that it can be moved status.

5. Matters Arising

Next meeting May 3, 2021