

MINUTES 2017-09-11

Attendance:

P. Carson, B. Fowlkes, J. Jago, O. Kripfgans, M. Lockhart, R. Managuli, A. Milkowski, K. Minton, S. Pinter, J. Rubin, M. Robbin, J. Zagzebski

I. Initial data review

- Presentation on QIBA data, constant and pulsatile flow, precursors of the QIBA poster for the annual RSNA-QIBA presentation.
- Data is provided while hiding the origin of the data, i.e. which system the data was acquired on.
- We are mostly within $\pm 10\%$ for flow dependence. For data points where we are reading low we will investigate why. Question is, could it be aliasing? How does aliasing manifest in this case, where the flow rate linearly increases?
- Reminder that some of the tested parameters are supposed to show system 'failure'. It was the intend to test the limits of the employed systems.
- James Jago is asking what will be done with the recorded data: Data will be provided to each manufacturer identifying their own data and at which sites their own data was taken. Manufacturer will not be provided data from other manufacturers, only by means of the anticipated journal paper publication.

For constant flow:

- Flow dependence shows $\pm 10\%$ for two systems and under estimates for a one system, all of different manufacturers.
- Depth dependence for volume flow shows $\pm 10\%$ error for two systems for 2.5 to 5 cm depth. After 5 cm, flow estimation diverges to low and high values.
- Gain dependence for volume flow shows consistent response for tested systems. Low gain removes color pixels, medium to high gain presents color pixels and partial volume correction processing yields converging volumetric flow as a function of gain.
- Flow post the stenosis is mostly $\pm 10\%$ of true flow.

For pulsatile flow (60 bpm, semi sinusoidal):

- Flow dependence shows an increasing spread around the mean of approximately $\pm 25\%$. The pulsatile nature makes this situation more difficult. If diastolic flow is significant and the wall fails to assess that flow, then we would be underestimating. Overestimation is not as straightforward.
- James Jago asked what the difference between sites and between systems is. Since the study is not finished yet we do not have such information yet.
- Depth dependence exhibits a similar behavior for pulsatile flow as for constant flow. Best response is for shallower depth. Except for a one system outlier at 4.5 cm depth, pulsatile flow is better behaving than constant flow.
- A general discussion was centered on the use of partial volume statistics of all volumes for processing individual volumes. Otherwise low flow will result in poor partial volume correction.

- Gain dependence also shows a similar behavior to that of constant flow. Variation between systems drops at settings above 40% total gain.
- Post stenosis volume flow also follows a similar behavior to the one for constant flow.