

## QIBA PET Myocardial Blood Flow (MBF) Biomarker Committee (BC)

Monday, April 26, 2021 at 9 am CT

### Call Summary

#### In attendance

Robert deKemp, PhD (Co-Chair)

Jonathan B. Moody, PhD (Co-Chair)

Michael Boss, PhD

P. David Mozley, MD

Nancy Obuchowski, PhD

#### RSNA Staff

Joe Koudelik

Julie Lisiecki

**Moderator:** Dr. deKemp

#### Discussion

- The BC members are trying to get sufficient data for Dr. Obuchowski to conduct a metanalysis
- Dr. deKemp has reviewed the day-to-day variability data and is focusing on factors that might impact repeatability, including estimates of mean, median, and variation
  - If available, Dr. Obuchowski would like subject-level data
- With an estimate of wCV at the study level, there are only 12+ observations in that model, which is a small sample size
  - This does not allow for review of multiple factors, though each factor could be reviewed independently
  - Subject-level data are preferred as they would provide data for a larger sample size
  - Between 10-15 observations per each factor would be necessary for statistical analysis
  - This will help to determine how much the wCV increases as the length of scan time increases
    - Testing time as a continuous or binary would have similar effect on the model
    - Dr. deKemp would like to examine whether there are factors that affect repeatability though there has been some difficulty in identifying 12 factors
- Some of the factors under consideration include:
  - Publication year (would identify if scanner model was new or old)
  - Characteristics of tracer infusion and flow rate, i.e., power injector (based on flush or no flush after tracer injection details)
  - PET dimension – BGO (2D) or LSO (3D)
  - Dedicated PET and PET/CT
  - Kinetic model
  - Tracer
  - Stressor
  - Test-retest interval
  - Total LV (mean flow)
  - Regional data
  - Site ID
  - Single imaging session or coffee break
  - Multiple studies per subject
  - Multi-day study
  - Corrected for RPP
  - Subject type, e.g., ‘normal’ vs. ‘risk factors’ vs. ‘CAD’
- Dr. Moody is trying to narrow down the list to the two most important factors for study
  - The team will collapse the possibilities into a smaller list to identify factors based on the subject level data
- Types of subjects include: 1) true normal and 2) subjects  $\pm$  40 years old with risk factors
  - Dr. Moody can generate subject level data with the correct mean values
  - Stress flow and stress reserve are the most important values for constructing a claim
    - Rest flow will also be useful. Coronary flow capacity will require more data
- Dr. Obuchowski is considering conducting two metanalyses using the study-level data: 1) same day and 2) different day
  - She will try to define confidence levels for each and then put these data into a model
  - Same-day vs. different-day may then be treated as a binary variable, and may show the magnitude of difference in repeatability that is detectable
- Dr. Mozley suggested consideration of biological variability, which would be the physiological response to tracer injection

- This biological variance can affect total systems variance under zero-change conditions vs. time interval constraints
  - Subtraction of the system variance from time-elapsed variance would determine the overall system variance

**Next Call:** [May 10, 2021](#) at [9 am CT](#) (2<sup>nd</sup> and 4<sup>th</sup> Mondays) at 9 am CT

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