ADNI Biostatistics Conference Call
20 May 2008

Present on call: Danielle Harvey, Hao Zhang, John Kornak, David Shera, Mike Donohue

Danielle updated everyone on the plans for the ICAD presentation. There is great interest from ISAB to see comparisons across labs, across imaging modalities, and 1.5T vs 3T. Imaging labs are busy generating data for these comparisons and have been given a deadline of June 6 to submit data to ADCS. While labs are generating these data, we have been working on possible composite measures using test scores from the neuropsychological battery. Hao already constructed a global z-score (average of z-scores using baseline means and sds of normals of the ADAS-Cog, CDR Sum of Boxes, MMSE) and a memory z-score (average of z-scores using baseline means and sds of normals of the RAVLT Sum of 5 trials (AVTOT1+AVTOT2+AVTOT3+AVTOT4+AVTOT5), RAVLT Trial 6 total (AVTOT6), delayed recall (AVDEL30MIN) and delayed recognition (AVDELTOT-AVDELERR2)). He is now generating a more "global" global z-score which averages all available z-scores across all tests in the NEUROBAT table (again using baseline mean and sd in normals to generate individual z-scores). Our hope is to construct a better behaved cognitive measure that would serve as a better illustration of association between change in imaging measures and change in cognition. The more sophisticated methods (simultaneous models) we propose to use to assess correlation in change are not converging using existing neurocognitive test scores (could also be due to small samples, but we think the noisiness of the cognitive variables is also causing problems). Laurel has a call into Bob Wilson at Rush to talk with him about possible composite measures and we are also working with Ron Petersen and David Salmon on it.

David Shera pointed us to a reference that used factor analysis on a battery of neuropsychological tests and thought it might be a useful comparison for what we derive. The reference is the following:

John Harrison, C. Psychol, PhD; Sonia L. Minassian, DrPH; Lisa Jenkins, PhD; Ronald S. Black, MD; Martin Koller, MD, MPH; Michael Grundman, MD, MPH. A Neuropsychological Test Battery for Use in Alzheimer Disease Clinical Trials. Arch Neurol. 2007;64(9):1323-1329.

John Kornak mentioned that there is still discussion among the voxel-based groups about the training-test vs 10 fold cross validation approaches. Paul Thompson responded to the original email saying that his lab intended to do the training-test set but would try the 10-fold cross-validation if they had time. There is a PET call tomorrow and an MRI call on Friday, so we'll try to bring up the issue again on those calls. John's general impression is that given the tight time-line, labs will likely use the training-test set approach for the June 6 deadline.

Mike Donohue reported that ADCS is still working on a set of analyses focusing on the potential improvement in power using neuropsych as the outcome and an imaging variable at baseline as an independent variable. Danielle is still working on pulling together the list of analyses (and contact people) that she knows are being done with ADNI data. Once that list is complete with what she knows, she will circulate it to the group so individuals can add analyses they know about.

David also mentioned that ISAB had a meeting last week and there is more pressure to get analyses done in order to plan ADNI II (or decide whether there should be an ADNI II). He asked if we had received an email about the discussion, but Danielle did not know if Laurel had

received one. She will follow-up and determine if there is anything else that ISAB is hoping to see besides the comparisons listed at the beginning of the minutes.

Next call: June 3