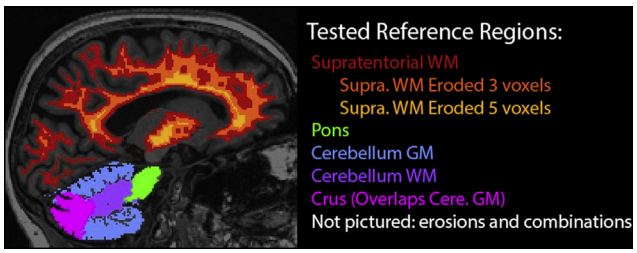
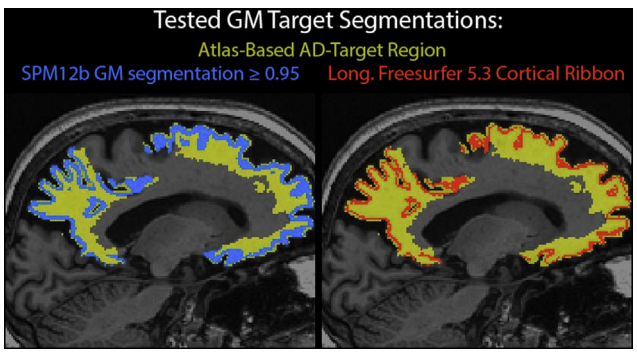
criteria; differences between the best performing methods were not significant. In general, sharply-segmented GM segmentations outperformed broader ones. SPM vs Freesurfer had mixed tradeoffs. Reference regions using supratentorial WM were highly reliable but performed poorly on plausibility criteria. Cerebellar GM was outperformed by cerebellar WM, whole cerebellum, crus, and pons, which were all roughly equivalent. Methods with PVC were each better or not significantly worse than those without. **Conclusions:** Our results support the use of PVC, narrow GM-segmentation targets, and whole-cerebellum, cerebellum-WM, crus, or pons reference regions for SUVR calculations.





P4-093 PET AMYLOID IMAGING: IMPLICATIONS FOR ESTIMATING RISK OF PROGRESSION TO ALZHEIMER'S DISEASE IN INDIVIDUALS WITH MILD COGNITIVE IMPAIRMENT

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Background: In both clinical and research settings, there is an emerging need to provide evidence-based information about the risk of progressing to Alzheimer's disease (AD) based on PET amyloid imaging results. Findings from meta-analyses can be difficult to translate into information that is relevant to patients because standard effect size indices (e.g., odds ratios) fail to account for varying length of follow-up among studies. The purpose of this analysis was to compute unambiguous AD risk estimates for use in pre-test counseling with persons affected by mild cognitive impairment (MCI) who are considering amyloid imaging. **Methods:** We conducted a systematic literature review by searching for "mild cognitive impairment" and variations of "amyloid imaging," "Pittsburgh Compound-B," "florbetapir," and "flutemetamol." To account for differing follow-up length across studies, we calculated two-year person-time incidence rates for amyloid-negative and -positive MCI participants. **Results:** Our search yielded 13 independent investigations following a total of 464 MCI participants for an average of 1.94 years (range: 0.68-2.68) after amyloid imaging. The meta-sample included various MCI subtypes and the proportion of APOE ε4 carriers ranged from 36.2%-66.7% across studies. Samples included both genders with study means ranging from 63.3-73.4 years for age, 11.8-17.2 years for education, and 25.1-28.2 for MMSE scores. Of the total 279 amyloid positive cases, 62% (n=172) converted to AD during follow-up, as to compared with 15% (n=28) of 191 amyloid negative cases. The overall person-time incidence rates were 0.297 (95%CI: 0.251-0.343)and 0.034 (95%CI: 0.015-0.054) per year for the amyloid positive and negative groups, respectively, suggesting that within 2 years, an estimated 59.4% of amyloid positive MCI cases and 6.8% of amyloid negative MCI cases progressed to AD. **Conclusions:** Our synthesis of the available evidence suggests that, relative to a negative scan, a positive amyloid scan confers a high short-term risk of converting to AD. Given these striking prognostic implications, pre- and post-test counseling and the opportunities for reflection that they afford may be especially useful to persons with MCI who are considering PET amyloid imaging. The need to identify pertinent modifiers of clinical course that should be considered when tailoring risk information to individual cases remains.

P4-094 PREDICTORS OF COGNITIVE RESPONSE TO CHOLINERGIC TREATMENT IN PATIENTS WITH ALZHEIMER'S DISEASE DEMENTIA

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Background: Regional brain volumes related to memory and executive function, such as hippocampus and cholinergic basal forebrain, may be potential surrogate markers for cholinergic treatment outcome in Alzheimer's disease (AD). **Methods:** We selected 131 cases from the ADNI1 database with psychometric follow up and cholinesterase inhibitor treatment over 0.5 to 3 years. We determined baseline volumes of left and right hippocampus as well as cholinergic basal forebrain nuclei. Using linear mixed effects models, we assessed the main effect of baseline volumes as well as their interaction with time, controlling for demographic variables. Endpoints were composite scores for memory and executive function, respectively, as previously defined [1,2]. **Results:** We found a significant main effect of basal forebrain volume on baseline executive function and memory, whereas hippocampus volume was significantly associated only with memory, but not with executive function. Volumes of basal forebrain were not significantly associated with the individual variation in decline of memory or executive function. In contrast, hippocampus volume reached a trend level effect on trajectories of memory dysfunction ($p = 0.093$), indicating larger rates of decline with higher hippocampus volumes. This effect was replicated in a voxel based analysis, where trajectories of memory decline were almost exclusively associated with hippocampus volumes of both sides ($p < 0.001$, uncorrected for multiple comparisons; Figure 1). Individual trajectories of decline in executive function did not show significant associations