<table>
<tr><th>Study</th><th>Study Population</th><th>Treatment/ intervention</th><th>Results</th><th>Validity /Conclusion</th></tr>
<tr>
<td>Grundman et al, 2013.

Study type
Prospective.

Aim:
To determine the impact of amyloid imaging with ^{18}F-florbetapir PET on the physician's diagnostic thinking and intended management of patients with progressive cognitive decline undergoing evaluation for suspected AD.

Primary endpoint
Proportion of subjects for whom a change in diagnosis and intended management was proposed after a negative florbetapir PET scan.

Secondary endpoint:
Change of diagnosis and/or management after a positive scan.

N of patients:
229.</td>
<td>Inclusion criteria:
Documented history of cognitive decline, and some uncertainty of the diagnosis of AD (<85% certainty of the clinical diagnosis according to the physician's judgment. There was no requirement that the patient meets a specific level of cognitive decline.

Exclusion criteria:
Physician's access to the results of a previous amyloid imaging, or patient participation in a clinical trial of an amyloid targeting therapeutic agent.

Patient characteristics:
mean age 74 years, 95% white, 50% men, 36% had dementia, and 64% had cognitive impairment not at the level of dementia.</td>
<td>After history review and clinical assessment, and before florbetapir-PET imaging, the physicians provided and recorded the diagnosis as current diagnosis (group A completed clinical evaluation) or working diagnosis (group B: clinical evaluation in progress) for each patient. The treating physician was asked to document a diagnostic testing and management plan before imaging. The florbetapir scan was performed within 30 days of completion of the baseline screening visit. The results were sent to the physician who recorded a revised clinical diagnosis and proposed clinical plan.

^{18}F- florbetapir was not FDA approved at the start of the study, thus the diagnostic decisions and management choices were only hypothetical.
The diagnosis and intended management at baseline was compared to those after receiving the scan results.</td>
<td>
Change in diagnosis from before to after scan for each diagnostic category
<table>
<tr><th>Subjects</th><th>Pre-scan diagnosis</th><th>Post-scan diagnosis
Due to AD</th><th>Indeterminate</th><th>Not due to AD</th><th>Change in diagnosis</th></tr>
<tr><td>All subjects n=229</td><td>Due to AD n=86
Indeterminate n=122
Not due to AD n=21</td><td>54 (62.8%)
47 (38.5%)
12 (57.1%)</td><td>22 (25.6%)
42 (34.450
1 (4.85)</td><td>10 (11.6%)
33 (27.0%)
8 (38.1%)</td><td>32 (37.2%)
80 (65.6%)
13 (61.9%)</td></tr>
<tr><td>Amyloid –ve N=116 (50.7% of all subjects)</td><td>Due to AD n=33
Indeterminate n=74
Not due to AD n=9</td><td>1 (3.0%)
0 (0.0%)
0 (0.0%)</td><td>22 (66.7%)
41 (55.4%)*
1 (11.1%)</td><td>10 (30.3%)
33 (44.6%)
8 (88.9%)</td><td>32 (97.0%)
33 (44.6%)
1 (11.1%)</td></tr>
<tr><td>Amyloid +ve N=113 (49.3% of all subjects)</td><td>Due to AD n=53
Indeterminate n=48
Not due to AD n=12</td><td>53 (100%)
47 (97.9%)
12 (100%)</td><td>0 (0.0%)
1 (2.1%)
0 (0.0%)</td><td>0 (0.0%)
0 (0.0%)
0 (0.0%)</td><td>0 (0.0%)
47 (97.9%)
12 (100%)</td></tr>
</table>
Florbetapir -PET scan had an impact on diagnostic thinking in 125 cases (54%, 95% CI 48.1-60.9%).
*55% of the subjects were classified with an indeterminate diagnosis after a negative scan rather than a non-AD diagnosis which reflects lack of confidence in the scan results.

Change in intended management
<table>
<tr><th>Subjects</th><th>Medication plan</th><th>Added or removed</th><th>Included in plan before scan</th><th>Included in plan after scan</th></tr>
<tr><td>All subjects N=229</td><td>AD medication
Psychiatric meds.
Refer to clinical trial</td><td>71 (31.0%)
17 (7.4%)
37 (16.2%)</td><td>126 (55.0%)
15 (6.6%)
18 (7.9%)</td><td>119 (52.0%)
16 (7.0%)
23 (10.0%)</td></tr>
<tr><td>Amyloid –ve N=116</td><td>AD medication
Psychiatric medication.
Refer to clinical trial</td><td>35 (30.2%)
13 (11.2%)
12 (10.3%)</td><td>57 (49.1%)
11 (9.5%)
12 (10.3%)</td><td>30 (25.9%)*
14 (12.1%)
0 (0.0%)</td></tr>
<tr><td>Amyloid +ve N=113</td><td>AD medication
Psychiatric medication.
Refer to clinical trial</td><td>36 (31.9%)
4 (3.5%)
25 (22.1%)</td><td>69 (61.1%)
4 (3.5%)
6 (5.3%)</td><td>89 (78.8%)**
2 (1.8%)
23 (20.4%)</td></tr>
</table>
*Planned AD medication was reduced in 27 (2.33%) subjects after a negative scan , P<0.001
** Planned AD medication was increased in 20 subjects after a positive scan ,p=0.0009
Total change in AD plan medication based on the scan was made for of 47 /229 subjects (20.5%)
<u>Plans for diagnostic testing in group B changed based on results of scan</u>:
Structural imaging decreased by 24.4% (95% CI 17.5-32.8%)
Neuropsychological testing decreased by 32.8% (95% CI 25.0-41.6%)
Lumbar puncture, FDG scan and Apo E genotyping were reduced by 94%, 91%, and 50% respectively.
Little change was made in group A who had already undergone a complete workup.
</td>
<td>Advantages/ limitations:
The study prospectively examined the impact of amyloid imaging with ^{18}F-florbetapir PET on the physician's diagnostic thinking and intended management of patients with progressive cognitive decline undergoing evaluation for suspected AD. The physicians were asked whether they would change their management plan, but the actual patient management over time was not observed. The authors did not discuss whether the readers of the scan were blinded to the pre-test clinical diagnosis. The study included patients with progressive cognitive decline and diagnostic uncertainty. It was conducted in a clinical trial setting with memory disorder experts experienced in the diagnosis and treatment of AD, and the scans were over-read by expert nuclear medicine specialists, thus the results may not be generalizable to the overall population evaluated for cognitive complaints.</td>
</tr>
</table>