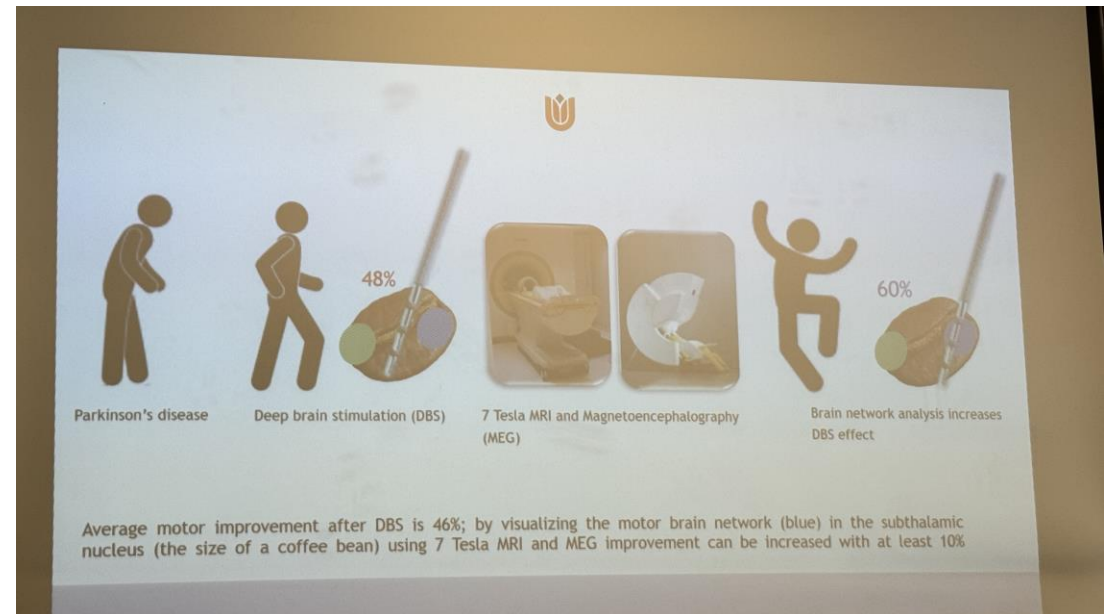
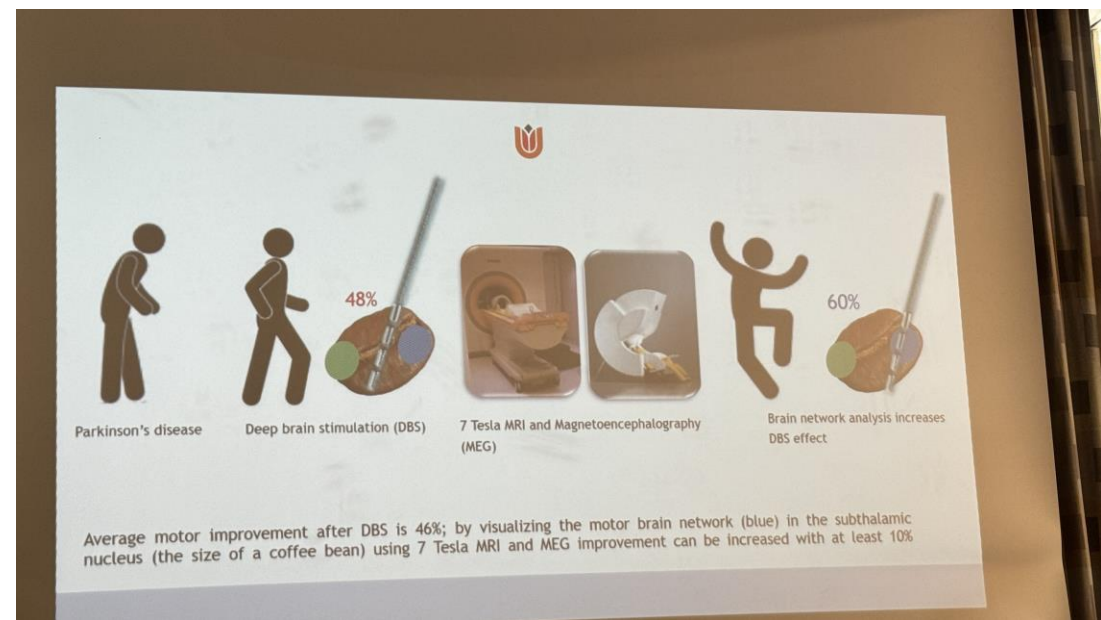
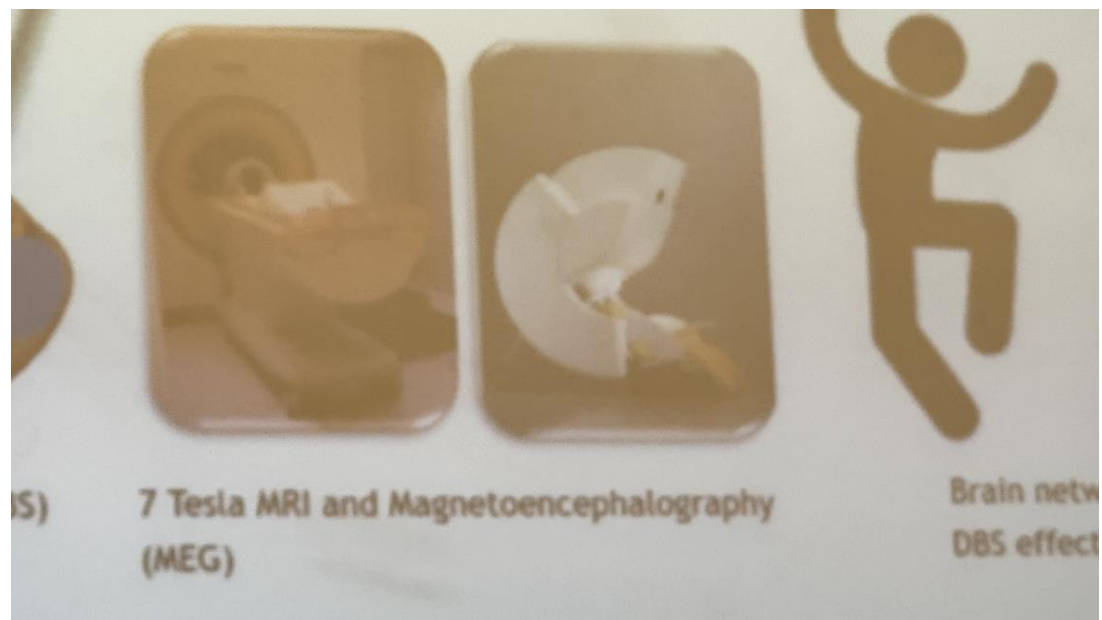
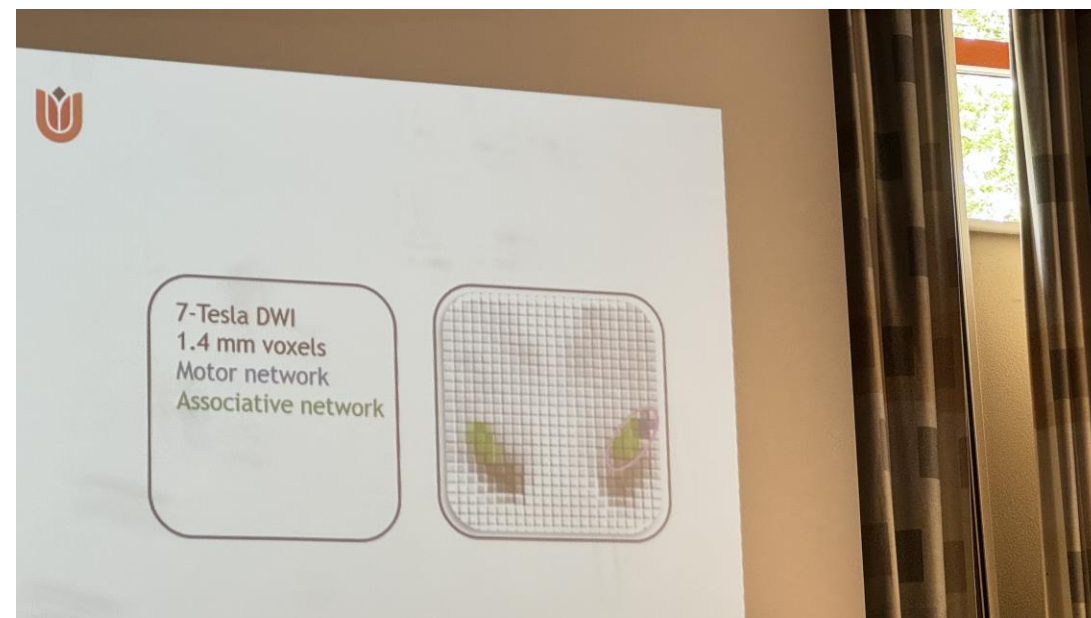
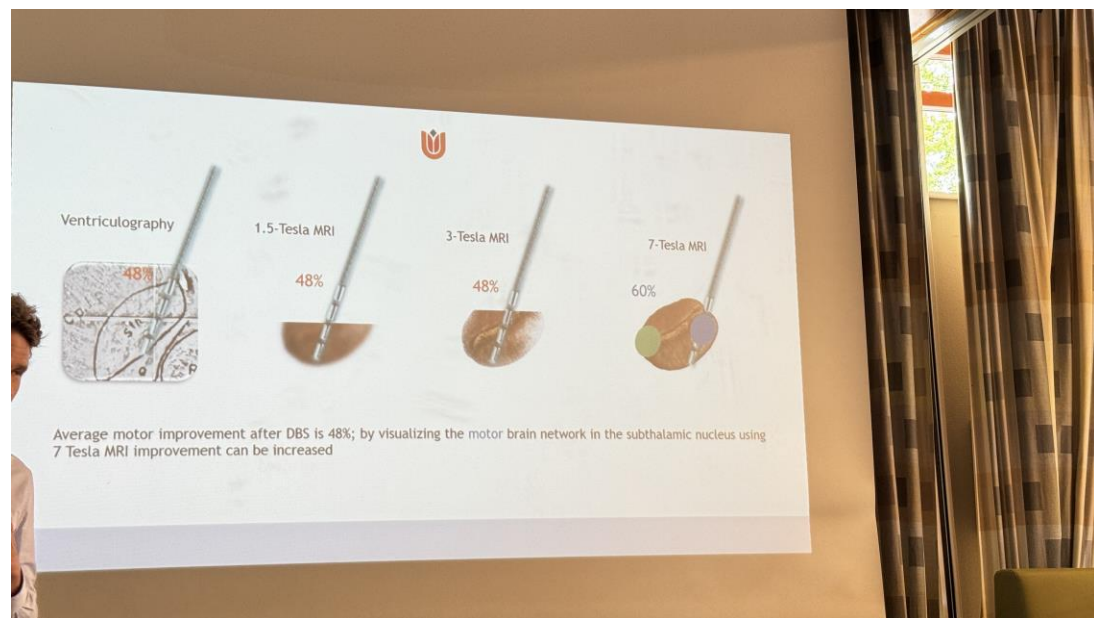


Foto's Presentatie dr. Maarten Bot AMC over de ontwikkeling van de DBS methodiek







Conventional

Brain network guided deep brain stimulation

7-Tesla T2-weighted MRI of the deeply situated nuclei, with standard deep brain stimulation two-dimensional target lines for identifying the subthalamic nucleus

Whole brain 7-Tesla T2-weighted MRI is used, and the subthalamic nucleus is delineated; creating a three-dimensional mask

7-Tesla diffusion weighted MRI is added for brain network visualization, coloring indicating the various directions of white matter fibers

The mask of the subthalamic nucleus is added and directly used to visualize its widespread cortical projections

The motor projections are selected and visualized on the T2-weighted MRI

Brain-electrode placement, visualized by computed tomography, is directed at the motor subdivision of the subthalamic nucleus

Brain-electrode location inside the motor subdivision, enabling selective network modulation

Individualized and network guided DBS-electrode placement in the subthalamic motor network

Patients

6 months FU
60

DBS placement
180

Average total UPDRS

60%

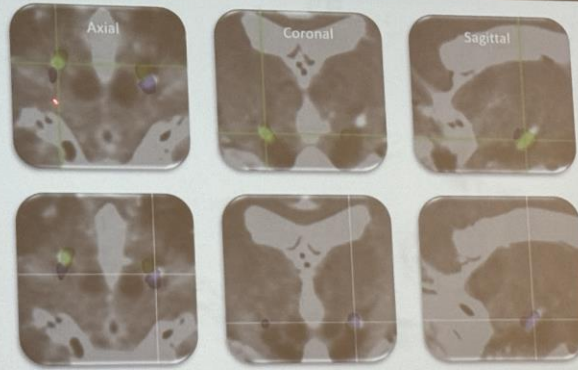
Range
45%-83%

Response rate 100%

Average non motor

PDQ-39 improvement
52% (20%)

Apathy occurrence
20% (35%)



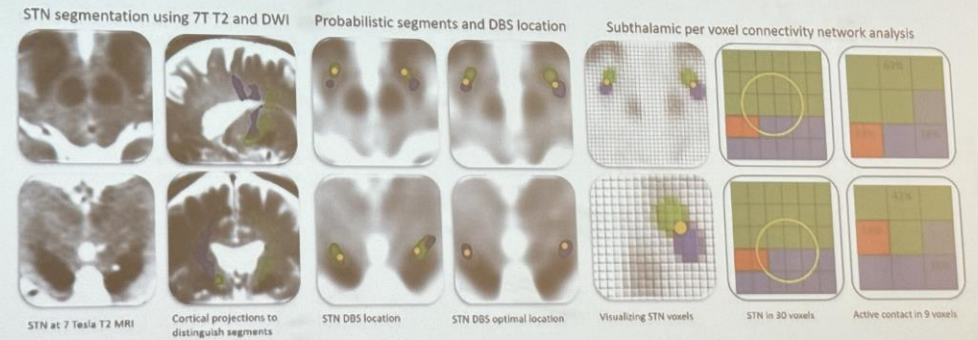
Motor and associative subdivisions of the subthalamic nucleus visualized with 7-Tesla MRI brain network analysis

Upper three panels show right brain-electrode at crosshairs; located anterior to motor subdivision and yielded 38% hemi-body improvement

Lower three panels show left brain-electrode at crosshairs; located inside motor subdivision and yielded 56% hemi-body improvement



DBS network guided programming



Percentage connectivity per STN (30 voxels)

The active DBS contact (9 voxels)

- Higher percentage of motor projections results in more UPDRS improvement
- Higher percentage of associative projections results in less UPDRS improvement and more apathy

