**Heterogeneity of Patients and the Natural History of Depression after Stroke**

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**Abstract**

Background: To test the hypothesis that there are heterogeneous patterns of depression development (trajectories) after stroke.

Methods: Data from the South London Stroke Register (1998-2013) were used. Patients were assessed on socio-demographics, stroke severity, and medical history at stroke onset, and were followed up at 3 months after stroke, then annually. Patients were screened for depression using the Hospital Anxiety and Depression scale (HADs) at each follow up. A Latent Class Growth Analysis (LCGA) method based on the Tobit model was used to describe trajectories of depression over time.

Results: The HAD was completed by 957 (76.4%) of 1247 eligible patients at 3 months after stroke, and by (80%-87%) at subsequent assessments. Of patients who survived at least 5 years after stroke (n=794), four trajectories of depression were identified (Group I- IV), respectively comprising 16%, 48.5%, 29.1% and 6.4%, Group I, has no symptoms of depression, mean 1.12 (se 0.37); Group II, and III have mild and moderate symptoms, mean 3.81(se: 0.29), and 7.5(se:0.34) respectively, and these symptoms increase over time, Group IV has severe symptoms, mean 13.13 (se:0.30) that persist over time. The 4 groups differ in many characteristics and Group I, has male majority (64.6%). Patients with severe physical limitations comprised 18.1%; 25.7%, 33.3% and 35.3% of group (I-IV) respectively. Similar groups were identified for longer terms up to 10 years after stroke.

Conclusions: The LCGA has shown that the development of depression is not the same for all patients. Four distinctive patterns of progression were identified providing further insight into the natural history of depression after stroke.