Appendix. The Likelihood Ratio test for the difference in transition probabilities. It tests the change between time points (t) and (t+1) in a categorical variable X (r categories) between the study groups (g groups). The test statistic follows Chi-square distribution with

r· (r-1)·(g-1) degrees of freedom:

$$-2\cdot\log\lambda = -2\cdot\sum_{k=1}^{g}\sum_{i=1}^{r}\sum_{j=1}^{r} n_{ij}^{(k)}\left[\log_e \frac{\sum_{k=1}^{g} n_{ij}^{(k)}}{\sum_{k=1}^{g} n_{i}^{(k)}} - \log_e \frac{n_{ij}^{(k)}}{n_{i}^{(k)}}\right]$$

where $n_{ij}^{(k)}$ is the number of those subjects belonging to group k who were in category i of the variable X at time point (t) and in category j of the same variable at time point (t+1), and $n_{i}^{(k)}$ is the total number of subjects in group k who belong to category i of variable X at time point (t).

		Time (t+1)			
	X	x_1	. . .	x_r	∑
Time (t)	x_1	$n_{11}^{(k)}$	$n_{12}^{(k)}$	$n_{1r}^{(k)}$	$n_{1}^{(k)}$
	x_2 . .	$n_{21}^{(k)}$ . .	$n_{22}^{(k)}$	. . .	
	x_r	$n_{r1}^{(k)}$	. . .	$n_{rr}^{(k)}$	$n_{r}^{(k)}$