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Risk of Recurrent Stroke in the General Population – The Rotterdam Study

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Introduction: After an initial stroke, current clinical practice is aimed at preventing recurrent stroke. Thus far, population-based estimates on the risk of recurrent stroke remain scarce. Here we describe the risk of recurrent stroke in a population-based cohort study.

Methods: We included Rotterdam Study participants who developed a first-ever incident stroke during follow-up between 1990 until 2020. During further follow-up, these participants were monitored for the occurrence of a recurrent stroke. We determined stroke subtypes based on clinical and imaging information. We calculated ten-year overall and sex-specific cumulative incidences of first recurrent stroke. To reflect changing secondary preventive strategies employed in recent decades, we then calculated the risk of recurrent stroke within ten-year epochs based on first-ever stroke date (1990-2000, 2000-2010 and 2010-2020).

Results: In total, 1671 participants (mean age 80,3 years, 60,2% women) from 14165 community-living individuals suffered a first stroke between 1990 and 2020. Of these strokes, 1084 (64,9%) were ischemic, 138 (8,3%) hemorrhagic, and 449 (26,9%) unspecified. During 6494,5 person-years of follow-up, 331 (19,8%) suffered a recurrent stroke, of which 177 (53,5%) were ischemic, 34 (10,3%) hemorrhagic and 120 (36,3%) unspecified. Median time between first and recurrent stroke was 1,9 (interquartile range 0,5-4,7) years. Overall ten-year recurrence risk following first-ever stroke was 18,3% (95% CI 16,5%-20,2%), 19,8% (16,8%-22,9%) in men and 17,3% (15,0%-19,6%) in women. The risk of recurrent stroke declined over time, with a ten-year risk of 21,4% (17,9%-24,9%) between 1990 and 2000 and 11,5% (8,6%-14,4%) between 2010 and 2020.

Conclusion: In this population-based study, almost one in five people with first-ever stroke suffered a recurrence within ten years of the initial stroke. Furthermore, recurrence risk declined between 2010 and 2020, likely due to improvements in secondary prevention.

Conflicts of interest to disclose: We declare no competing interests