

# Mental healthcare consumption around stroke in the Netherlands: a record linkage study

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## Background

Stroke has a severe impact on society, in both medical and economic terms [1]. Approximately 3-4% of health care expenditures in developed countries are spent on stroke each year. Due to the expected greying of the population and increased hospital resource utilization by stroke patients it is very likely that health care expenditures of stroke patients will increase. Where extensive research examined the association between stroke and mental health disorders, little is known about patterns of mental healthcare over a prolonged period of time. This study tries to reveal these patterns by estimating healthcare consumption around stroke and trying to determine the economic impact of stroke.

## Aim

The aim of this study is to examine how the patterns of healthcare consumption associated with stroke change during 5 years after stroke compared to 5 years before stroke and what the economic impact is of these changes from a societal perspective.

## Methods

- The current study took place in Maastricht, a relatively small city in the far south of the Netherlands, and its surrounding area
- Three databases were linked in this study:
  - the Maastricht University Medical Center Medical Administration (MA)
  - the Maastricht University Medical Center Stroke Register (SR)
  - the Psychiatric Case Registry South-Limburg (PCR)
- Patients eligible if they suffered their first ever stroke between 2000 and 2005
- Mental healthcare consumption was estimated in a period between 1995 and 2010
- Patients were excluded if
  - they suffered from a subarachnoid hemorrhage or a minor stroke (TIA)
  - when they appeared to live outside the catchment area (based on area codes)
  - when death occurred within 24 hours after admission
- Cost prices derived from the Dutch Manual for Cost Analysis in Healthcare

## Linkage steps

- Linkage between the MA (all patients admitted to hospital with ICD-code 430-438 between 2000-2005) and SR (patients diagnosed with stroke at neurology department between 2000-2005)
- Check for MA patients who do not appear in the SR whether their ICD stroke code was justified, using SAP medical software
- Link completed SR database with PCR to identify mental healthcare usage between 1995 and 2010

## Results

- 1385 primary stroke patients were identified in the SR after linkage with the MA
- 26% (n=357) consumed one or more mental health service in the period between 1995 and 2010
- Figure 1 shows the distribution of mental healthcare usage before, after and before & after stroke

## References

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- Struijs, J.N., et al., *Future costs of stroke in the Netherlands: the impact of stroke services*. International journal of technology assessment in health care, 2006. 22(4): p. 518-24.

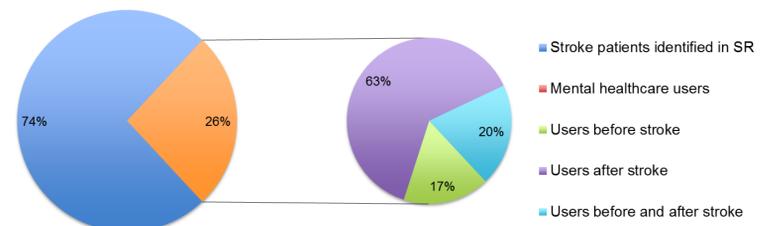


Figure 1. Mental healthcare usage of stroke patients identified in the SR and linked with PCR to estimate mental healthcare usage between 1995 and 2010

- Costs of mental healthcare usage were calculated 5 years before and 5 years after stroke
- Figure 2 shows the distribution of average costs (n=357) in 4 categories: assisted living, outpatient clinic, clinical setting and day treatment
- Figure 2 shows the increase of mental healthcare costs after stroke and that clinical admission accounts for the majority of costs in each year

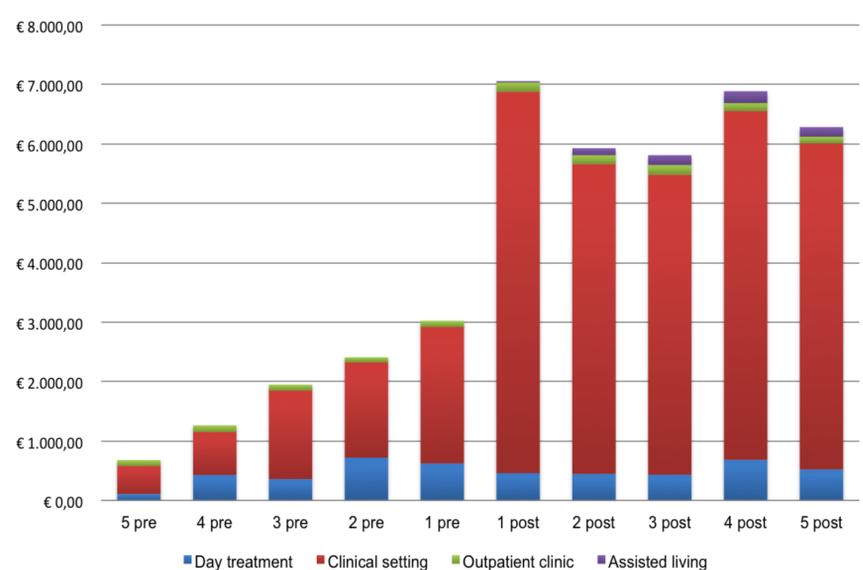


Figure 2: Average mental healthcare costs 5 years pre and 5 years post stroke (n=357)

## Preliminary conclusion

- This study shows that mental healthcare consumption accounts for a major part of post stroke costs
- Health care consumption in the clinical setting accounts for the majority of costs each year in our study, indicating severe dependence on medical services even up to five years post stroke
- It is striking to see that there is already an increase in mental healthcare consumption preceding the stroke
- This might be explained by the fact that patients may have suffered a less serious stroke or TIA before being hospitalized