

**Stroke service:  
A reduction in the length of  
hospital stay for nonmedical  
reasons?**

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**Aim of a Stroke Service**

The best care  
at the best time  
at the best place

**Why a Stroke Service?**

**Stroke care is complex**

- Most disabling of chronic illnesses
- Often physical, psychological, and social disorders
- Number of disciplines involved is often high
- Number of institutions involved is often high

**Problem**

- Disorganized, inefficient care
- Transition from hospital to long-term care facilities is often problematic
- Relatively long hospital stay

**Aim of study**

To evaluate whether stroke services are able to  
reduce the length of hospital stay for  
nonmedical reasons

**Stroke Service region of Nijmegen**

- Two hospitals, one rehab clinic, two nursing homes
- After-care outpatient clinic in both hospitals
- Ambulant care of patients with neuro-psychological problems
- Stroke units in both nursing homes
- Specialist stroke community nurses

**Stroke Service region of Delft**

- One hospital, one rehab clinic, one nursing homes
- Stroke unit in the hospital
- Stroke unit in a nursing home
- Stroke transfer nurse (case manager)
- Specialist stroke community nurses
- Continuous monitoring of patient careers on a regional level

## Stroke Service region of Haarlem

- Two hospitals, one rehab clinic, one nursing homes
- Stroke unit in a nursing home
- Temporary admission unit in a home for the elderly
- Specialist multi-disciplinary rehabilitation team in the home situation

## Study population

### Stroke service regions      Control regions

- |                         |                   |
|-------------------------|-------------------|
| Stroke Service Nijmegen | 3 control regions |
| • 149 patients          | • 187 patients    |
| Stroke service Delft    |                   |
| • 151 patients          |                   |
| Stroke Service Haarlem  |                   |
| • 111 patients          |                   |

## Data collection

### General

- Medical and nursing records
- Trained research assistants with a paramedical or nursing background

### Reasons for hospital stay

- Medical and nursing records
- 10% of consultant neurologists were interviewed
- Scores by neurologists and research assistants corresponded adequately (weighted Kappa=0.76)

## Measurement of reasons for hospital stay

- List compiled by Van Straten et al. (Stroke 1997;28:137-140)
- 15 possible reasons arranged into three categories

### 'Hard' medical reasons

- If diagnostic or therapeutic procedures are provided that could only have taken place in a hospital

### 'Soft' medical reasons

- If diagnostic or therapeutic procedures could have been done outside the hospital provided that care is organized differently

### Non-medical reasons

- If the patient merely waited for discharge placement

## Comparison of baseline characteristics

	Nijmegen (n=149)	Delft (n=151)	Haarlem (n=111)	Control regions (n=187)	P-value
Median age	70	74	74	75	0.05
Female	50%	50%	59%	58%	0.24
=> primary school	37%	25%	18%	18%	< 0.001
Living alone	31%	20%	38%	33%	0.37
Prior stroke	32%	30%	25%	28%	0.75
↓ consciousness	13%	14%	14%	14%	0.99
Hemorrhagic stroke	15%	14%	14%	14%	0.99
CV comorbidity	68%	60%	63%	63%	0.46
NCV Comorbidity	48%	45%	50%	47%	0.51
Disability upon admission	7.2	8.5	5.9	7.4	0.08

## Length of hospital stay

	Nijmegen (n=149)	Delft (n=151)	Haarlem (n=111)	Control regions (n=187)	P-value
Mean (SD)	32 (37)	13 (9)	32 (41)	28 (35)	<0.001
Median	21	11	21	21	
Min-max	0-183	1-86	0-183	0-183	

## Reasons for hospital stay

	Nijmegen (n=149)	Delft (n=151)	Haarlem (n=111)	Control regions (n=187)	P-value
Total number of hospital days	4789	1952	3577	5261	<0.001
'Hard' medical reasons	46%	82%	43%	49%	<0.001
'Soft' medical reasons	16%	13%	17%	13%	0.06
Non- medical reasons	38%	5%	40%	38%	<0.001

## Conclusion

**One of three Stroke Services (Delft) was able to reduce the length of hospital stay for nonmedical reasons**

## Stroke Service region of Delft

- **One hospital, one rehab clinic, one nursing homes**
- **Stroke unit in the hospital**
- **Stroke unit in a nursing home**
- **Stroke transfer nurse (case manager)**
- **Specialist stroke community nurses**
- **Continuous monitoring of patient careers on a regional level**

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