Population-based intervention to reduce pre-hospital delays in patients with stroke and TIA

Institute for Social Medicine, Epidemiology and Health Economics

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Background

- Worldwide ≈ 15 million patients with stroke / year
- Of these, 5 million patients die and another 5 million are left with permanent disability
- Thrombolytic therapy: reduces disability by one third
- But: only 3-4 % receive thrombolytic therapy
- Major barrier: time window of 3 hours
- Prehospital delays of particular importance

Interventions - Review

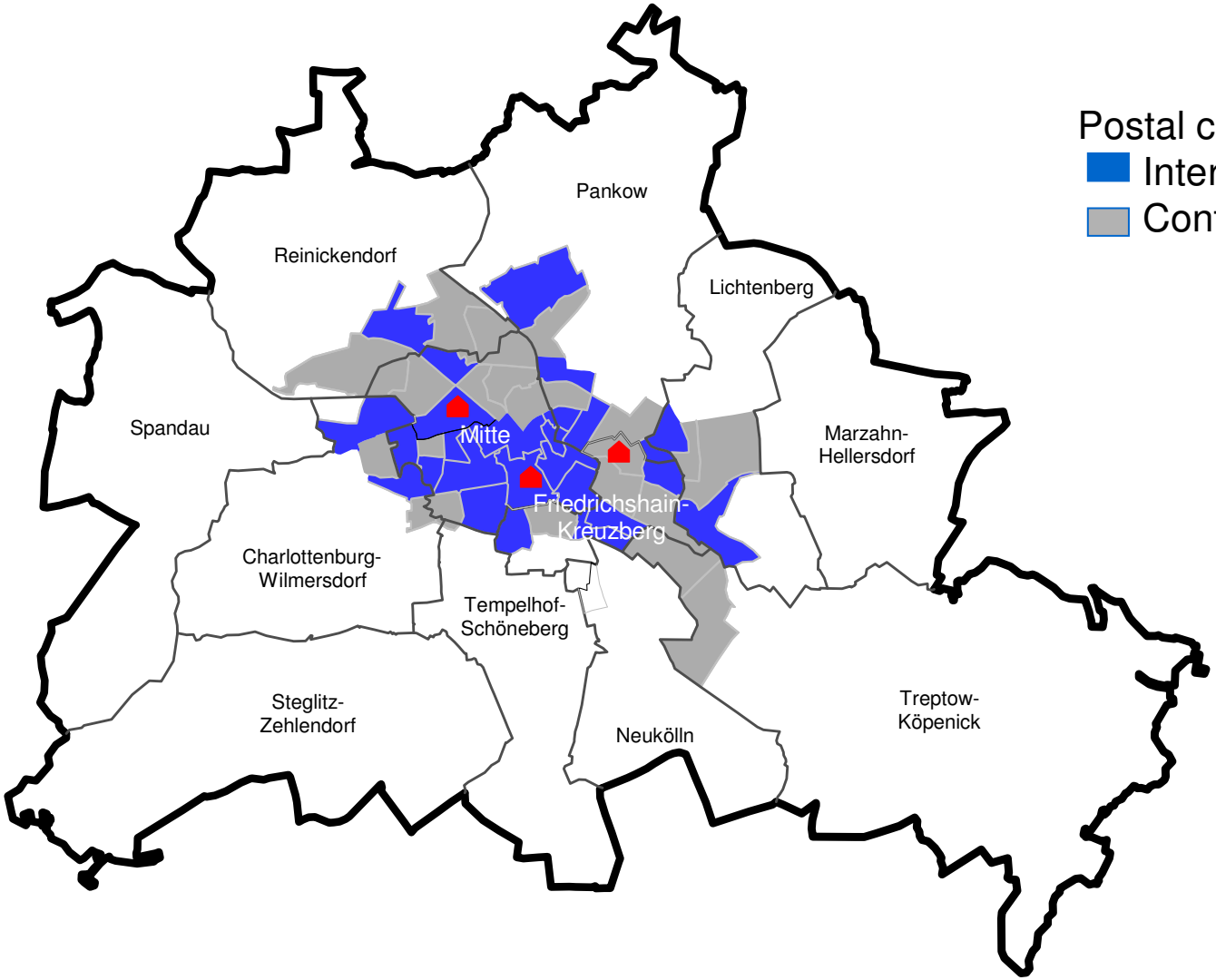
Variablen	Prehospital			Intrahospital	
	Education	Training Personnel	Helicopter	Training Personnel	Organisation Hospital
Alberts 1992	√		√	√	
Barsan 1994	√	√		√	
Behrens 2002		√		√	
Englander 1998					√
Gomez 1994					√
Harbison 1999		√			
Hill 2000	√	√		√	√
Morgenstern 2002	√			√	
Riopelle 2001		√		√	√
Silliman 2003		√	√		

Kwan et al., Q J Med 2004;97:273-9.

Study objective and design

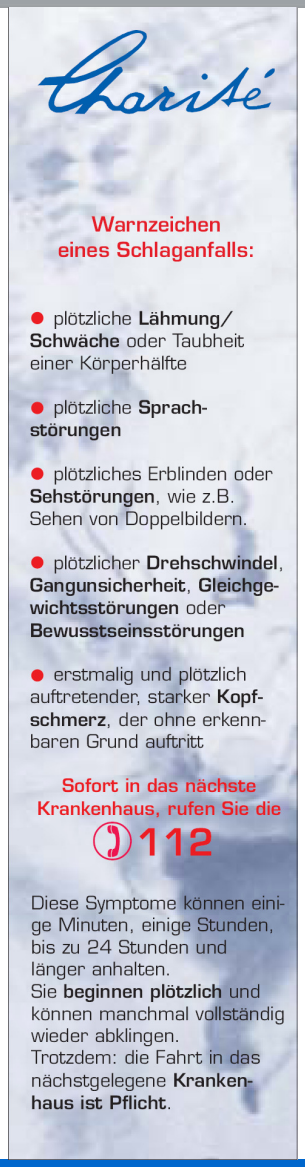
- To reduce prehospital delays in a population-based intervention
- Using a cluster-randomised study design based on postal code areas

Intervention area - Berlin



Postal code areas:
- Intervention (n=24)
- Control (n=24)

Intervention (n=75.000)



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Symptome eines Schlaganfalls:

Plötzliche Lähmung - Schwäche
Sprachstörungen - Sehstörungen
Gleichgewichtsstörungen

Rufen Sie sofort die

112 Ihre Charité

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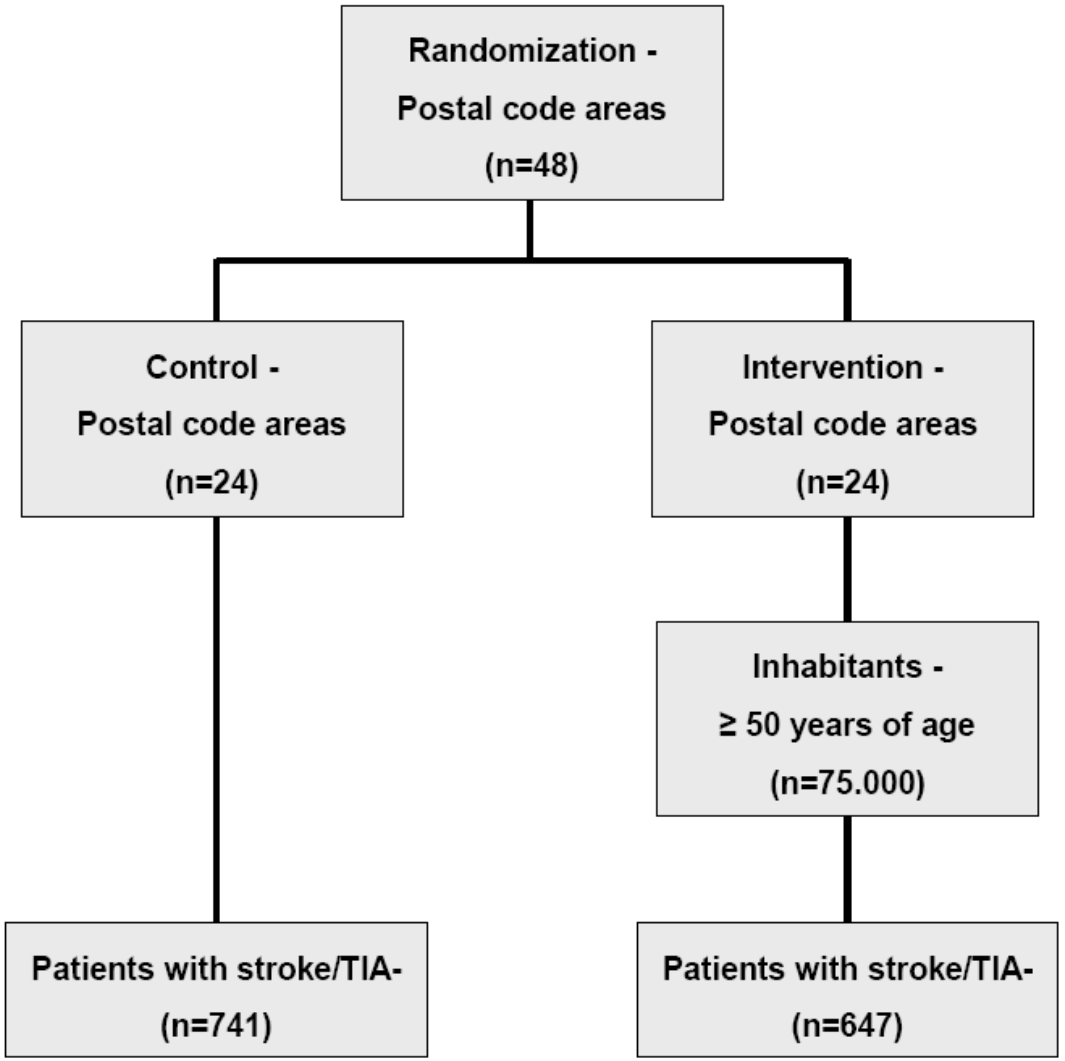
Questionnaire

- Knowledge about risk factors
- Prevalence of stroke

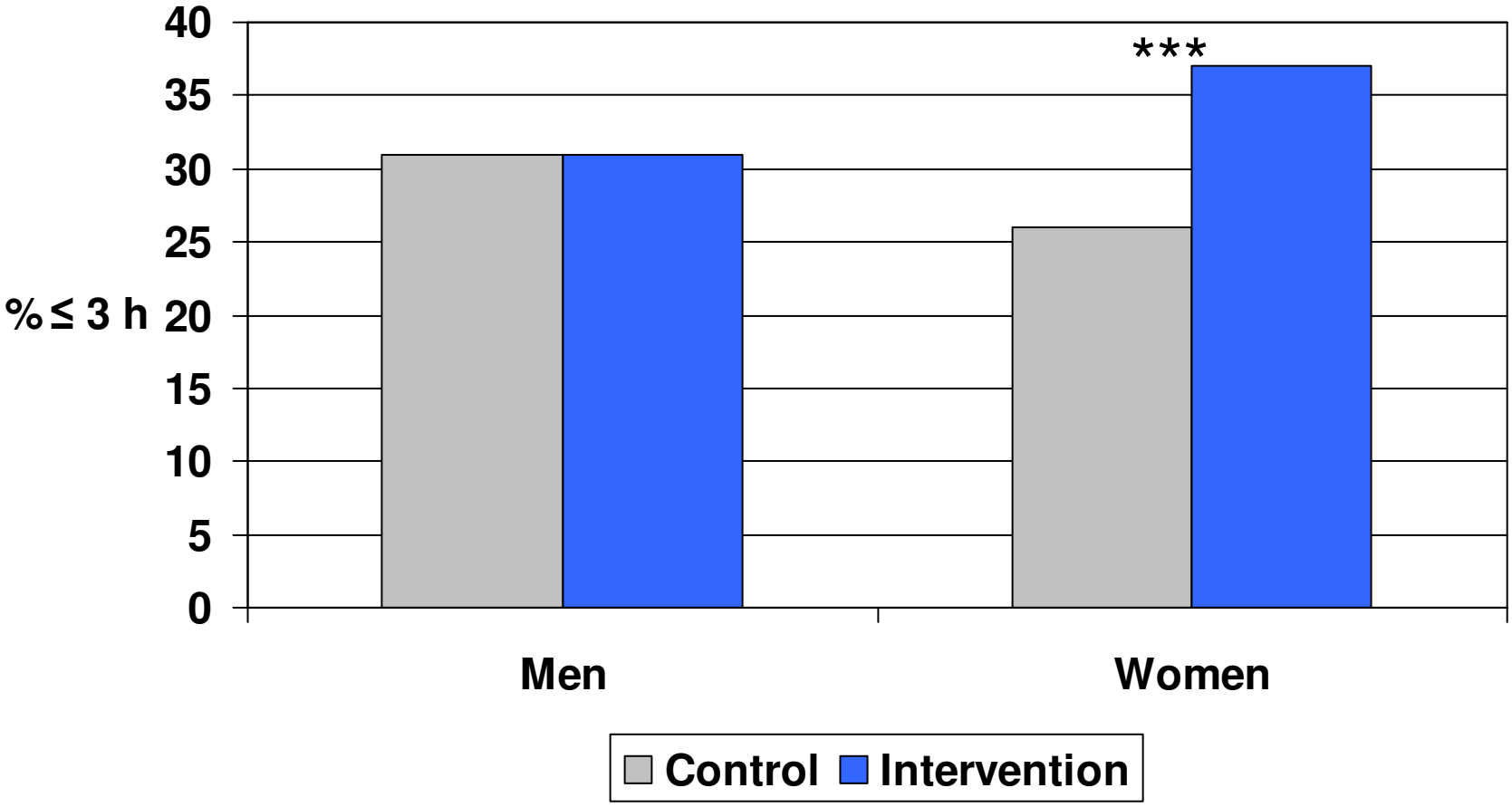
Study flow chart



Patient characteristics

Variables	Control (n=741)	Intervention (n=647)
	Mean ± SD	Mean ± SD
Age (years)	68 ± 15	69 ± 14
	%	%
Women	51	49
Smoking	25	23
Hypertension	67	66
Diabetes	25	26
Atrial fibrillation	22	23
History of stroke	18	19
Coronary heart disease	17	18

Prehospital time ≤ 3 h



***P<0,001

Lognormal model with shared frailty (postal code areas)

Variables	Acceleration factor*	95% CI	P-value
Women intervention vs. women control	0.73	0.58; 0.94	0.01
Overweight / obesity	0.90	0.72; 1.13	0.36
Smoking	1.23	1.01; 1.50	0.04
Region (random effect)	Theta: 0.19%		0.37
Interaction gender*intervention			0.02

*change by each increase in the respective covariable

Discussion/Summary

- Significant reduction in prehospital delays in women but not in men
- Women may be more susceptible to health care messages
- Gender-specific interventions needed?
- Limitations:
  - no information on patients transferred to other hospitals
  - no cultural / language adaption

Further research

- Transferability to other settings?
- Sustainability of the intervention?
- Effect on long-term outcomes?

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Kompetenznetz Schlaganfall

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