

Factors Contributing to Awareness of the Necessity to Call 9-1-1 for Stroke Symptoms in Residents from Upstate, New York

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Stroke

- Primary cause of severe long-term disability
- Third leading cause of death and major cause of disability in NY¹
- Approximately 57,500 hospitalizations due to new and recurrent strokes in NYS in 2003 ²
- Patients treated within 90 minutes of onset of symptoms have the most improvement ³
 - Only 20% of stroke victims arrive within 3 hours ⁴

¹Rosamond et al (2007) Circulation 115(5):e69-171.

²NY State Department of Health (2007) www.health.state.ny.us/statistics/sparcs

³Hacke et al (2004) Lancet 363(9411):768-74

⁴Morris et al (2000) Stroke 31(11):2585-90.

Factors Contributing to Delay

- Not identifying or delay in identification of stroke symptoms
- Fail to recognize that symptoms require immediate emergency care
- Delay in or not calling 9-1-1
- Once call made, EMS response time is not a major contributor to delay

Purpose

- Examine factors that are associated with a respondent's intent to call or to not call 9-1-1 for signs and symptoms of stroke that occur in themselves or another person

Methods

- Telephone survey of adults in 4 New York State counties outside of NYC
 - Data are from the baseline evaluation of New York State Department of Health media campaign
 - A total of 37 questions were asked

Survey

- Demographics
- Health history
- Stroke knowledge
 - Speaking incorrectly
 - Vision problems
 - Face uneven (or asymmetric)
 - Sudden weakness in arm
- Included decoy symptoms

Sampling

- Random selection - RDD
 - Households
 - Adult age 30+ from household
 - Intervention counties sampled proportionate to population

- English speaking

Telephone Survey Administration

- Administered July 25 - September 17, 2006
- Response rate - 36% using AAPOR RR3
 - Includes an estimate of the number of cases of unknown eligibility which are actually eligible
 - Response rate comparable to BRFSS response rate
- Sample size: N=1789

Analysis

- Survey data weighted to population
 - Probability of being selected
 - Age
 - Gender
 - Race
- Used 2005 American Community Survey and 2000 Census (race)
- Multivariate analysis conducted to identify factors associated with intention to call 9-1-1

Sample Demographics (n=1789)

Variable		Percent of Sample
Race / Ethnicity	White	89%
	Non-White	11%
Educational Attainment	High school graduate or less	32%
	Some college	28%
	Bachelor's degree or more	40%
Age (years)	30 - 44	25%
	45 - 64	49%
	65 or older	26%

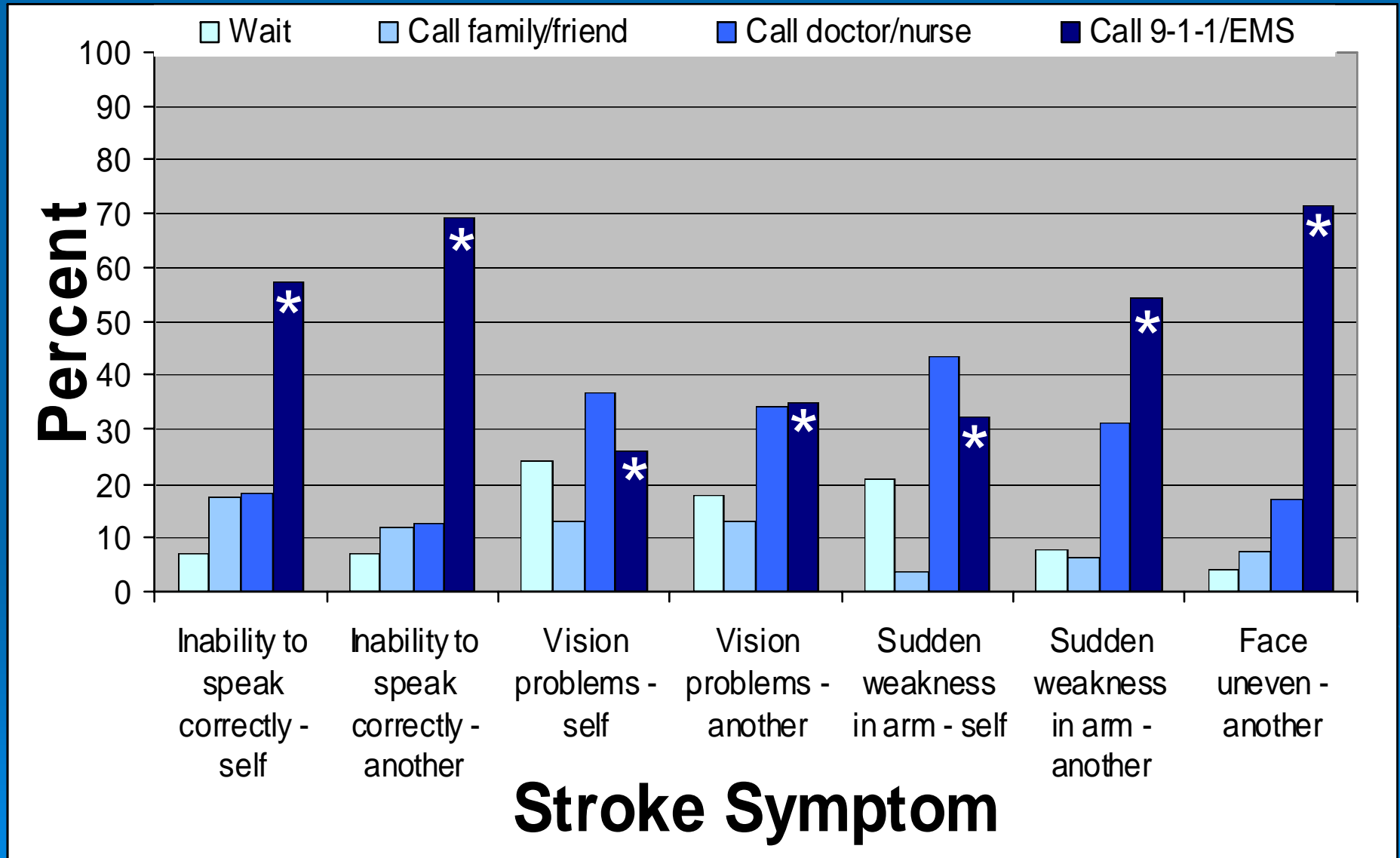
Sample Demographics (n=1789)

Variable	Percent of sample
Gender - Female	65%
Have insurance	96%
Called 9-1-1 in past year	11%
Delayed seeking care in past year	32%
Live with another adult	37%

Health History (n=1789)

Variable	Percent of sample	
	Respondent	Family member
Stroke	3%	16%
Coronary heart disease	10%	34%
Hypertension or high blood pressure	36%	48%

Stroke Symptom Knowledge



* appropriate response

Factors Associated with Calling 9-1-1

	Self	Another
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Speaking incorrectly		
Live with another adult	1.28 (1.00, 1.64)	1.36 (1.06, 1.74)
History of hypertension	1.49 (1.14, 1.96)	ns
Called 9-1-1 in past year	1.88 (1.25, 2.81)	ns
Vision Problems		
Delayed seeking care in past year	0.73 (0.54, 0.98)	0.68 (0.51, 0.90)

Factors Associated with Calling 9-1-1

	Self	Another
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Arm Weakness		
65 years or older	ns	0.57 (0.39, 0.83)
Delayed seeking care in past year	0.70 (0.53, 0.93)	ns
History of coronary heart disease	1.92 (1.23, 2.98)	1.73 (1.13, 2.65)
High school graduate or less	ns	1.68 (1.06, 2.66)
Some college	ns	0.76 (0.59, 0.99)
Face Uneven		
Age 65 years or older	did not ask	0.59 (0.41, 0.86)

Conclusions

Intention to Call 9-1-1

- Decreased if delayed seeking care in past year
- Decreased among older age group
- Increased if called 9-1-1 in past year
- Few differences based on health history
- No difference based on race/ethnicity

Limitations

➤ Generalizability

- Study sample was highly educated, most had health insurance, were primarily white and female

➤ Phone Survey

➤ Methodology does not allow measurement of actual behavior

Strengths

- Large sample size
- Response rate comparable to response rates for most national telephone surveys
- Sampling strategies
 - Standardized (used by BRFSS)
- Used non-leading intention questions

Implications

- Interventions to increase intention (behavior) to call 9-1-1 should target
 - Those who previously delayed seeking care
 - Older adults (> 65 years)
 - Live alone (no other adults in household)
 - Increased risk of stroke, i.e., hypertension
- Need to evaluate impact of interventions