FACTORS FOR DELAYED CALL FOR EMERGENCY MEDICAL SERVICES IN ACUTE STROKE PATIENTS IN COMMUNITY HOSPITALS - DATA FROM POMERANIAN STROKE REGISTRY

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Objectives: Delayed call for emergency medical services commonly reduce the efficacy of acute stroke treatment in Polish stroke centers due to prolongation of onset to door time. Poor recognition of stroke symptoms is one of the most commmon, but not the only reson for pre-hospital delays. Thus, the determination of factors influencing delayed call for ambulance in routine practice may help both, patients education and EMS logistics.

Aim: To evaluate presence of delayed call for ambulance among acute stroke patients treated at the community-based Polish stroke centers and to determine logistic, social, epidemiological, and clinical factors responsible for delayed call for EMS.

Materials and methods: This study carried out an evaluation of the medical records of 8710 patients with stroke (90,25 %: 80,94 % ischemic and 9,30% hemorrhagic)and transient ischemic attack /TIA/(9,75 %) from Polish stroke centers that have been consecutively reporting to the Pomeranian Stroke Registry from 2010 to 2013.
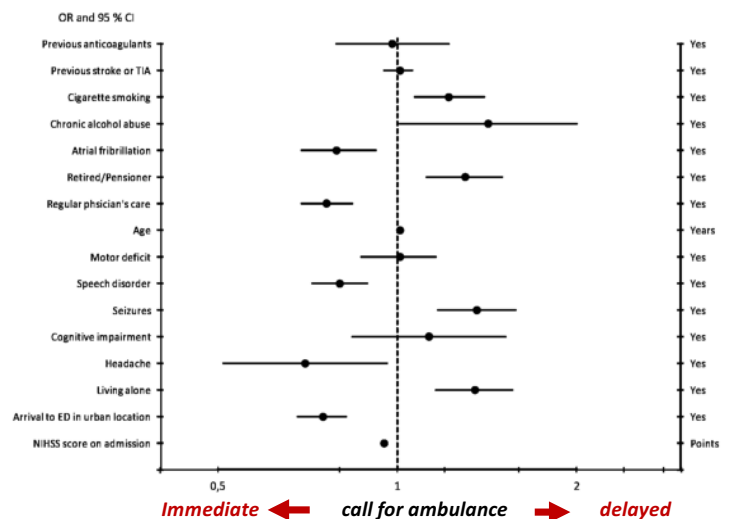
Table 1. Social, clinical and logistic factors in patients with immediate and daleyed call for ambulance.

	immediate (< 45 min) call for ambulance 36,67%	delayed (> 45 min) call for ambulance 63,32%	
	N(%)	N(%)	
Male gender	1787 (49,45)	3028(48,53)	0,38
Ischaemic stroke	2831(78,33)	5145(82,45)	<0,001
Haemorrhagic stroke	382(10,57)	430(6,89)	<0,001
SAH	59(1,63)	46(0,74)	<0,001
TIA	342(9,46)	619(9,92)	0,46
mRS 0-2	1912(59,58)	3923(66,59)	<0,001
Median age (IQR) [yrs]	73(62-81)	72(62-80)	0,03
Age over 80 years	889 (25,58)	1424 (23,81)	0,05
Regular physician's care prior stroke	2302(63,70)	3600(57,69)	<0,001
Retired/Pensioner	2850(78,86)	5081(81,43)	0,002
Primary education (not high)	2357(89,89)	4031(89,78)	0,87
Living alone N	408(11,29)	919(14,73)	<0,001
Hospital located in urban area (>100.000 inhabitants)	1376(38,07)	2144(34,36)	<0,001
Risk factors N (%)	----	----	----
Hypertension	2490(68,90)	4313(69,12)	0,82
Diabetes mellitus	814(22,52)	1481(23,73)	0,17
Coronary heart disease	1168(33,40)	1656(27,37)	<0,001
Dyslipidaemia	991(27,42)	1674(26,83)	0,52
Atrial fibrillation	863(24,00)	1057(17,02)	<0,001
Current smoker	552(17,52)	1182(21,55)	<0,001
Previous stroke or TIA	1039(29,68)	1641(27,30)	0,01
New alcohol	64(1,77)	159(2,55)	0,01
Pre-stroke anticoagulants	283(7,87)	352(5,67)	<0,001
Signs and symptoms of stroke	----	----	----
Headache	955(26,43)	958(15,35)	<0,001
Cognitive impairment	1054(29,16)	1154(18,49)	<0,001
Motor deficit/Paresis	2643(73,13)	4177(66,94)	<0,001
Dysphasia/Aphasia	1644(45,49)	2218(35,34)	<0,001
Sensory impairment	587(16,24)	981(15,72)	0,49
Visual disturbances	364(10,07)	582(9,33)	0,23
Seizures	386(10,68)	1118(17,92)	<0,001
Gait disturbances	97(2,68)	190(3,04)	0,30
Referral to the hospital by EMS	2736(75,71)	3415(54,73)	<0,001
Refferal from GP	229(6,34)	1725(27,64)	<0,001
Pre stroke mRS 0-2 pts	3181(88,02)	5562(89,13)	0,09
Median NIHSS score on admission (IQR) [pts]	8(4-15)	5(2-9)	<0,001
NIHSS 0-5 [pts]	1286(36,48)	3293(53,32)	<0,001
NIHSS 6-25 [pts]	2138(60,65)	2794(45,24)	<0,001
NIHSS>25 [pts]	101(2,87)	89(1,44)	<0,001
Received thrombolitic treatment	**436(12,06)**	**35(0,56)**	**<0,001**

Results: Delayed call for emergency medical services (>45 min from symptoms onset) was reported n **63.33%** of patients. Patients with delayed call for EMS were characterized by younger age (72 vs 73yrs; p=0,03), higher presence of ischemic etiology (82,4 vs 78,3%, p<0,001), retired (81,4 vs 78,8%; p=0,002) and living alone (14,7 vs 11,3%; p<0,001), smokers (21,5 vs 17,5%; p<0,001), chronic alcohol abusers (2,5 vs 1,8%; p=0,01) and with seizures at stroke onset (17,9 vs 10,7%; p<0,001). They were also characterized by lower NIHSS on admission (5 vs 8 pts, p<0,001) and lower presence of regular physician's care prior stroke (57,7 vs 63,7%; p<0,001), urban location (34,4 vs 38,1%, p<0,001), coronary heart disease (27,4 vs 33,4%; p<0,001), atrial fibrillation (17,0 vs 24,0%; p<0,001), pre-stroke anticoagulants (5,7 vs 7,9%; p<0,001), previous stroke or TIA (27,3 vs 29,9%; p=0,01), headache (15,3 vs 26,4%; p<0,001), motor impairment (66,9 vs 73,1%)(**Table 1**).

Multivariate analysis showed that age, living alone, smoking and tobacco use, seizures, headache and speech deficits, urban location, regular physician's care prior stroke and presence of atrial fibrillation contributed toward delayed call for EMS (**Figure 1**).

Figure 1. Multivariate analysis toward delayed call for EMS.

Conclusion: Delayed call for commonly exists among patients with stroke and transient ischemic attack due to numerous social, clinical and logistic factors. Educational campaign targeting high risk, living alone and rural located patients is necessary.