Assessing the importance of arm Weakness as a symptom for urgency allocation and diagnosing TIA/Stroke in Out-of-Hours GP Services

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Internship period: Nov 18, 2024 – Feb 21st, 2025

Abstract

Background: Arm weakness is a common TIA/stroke symptom in the FAST mnemonic but can be difficult to recognise by patients. Rapid identification is crucial, as delayed treatment increases the risk of permanent brain damage. In the Netherlands, telephone triage with urgency allocation by nurses in the out-of-hours primary care (OHS-PC) setting is facilitated by the National Triage Standard (NTS).

Aim: To examine the relationship between arm weakness and (i) urgency allocation and (ii) eventual diagnosis of TIA/stroke in patients reporting neurological deficits symptoms during telephone triage at the OHS-PC.

Method: In the SAFETY-FIRST study, data which gathered retrospectively in patients who contacted between 2014 and 2017 one out of nine OHS-PC in the vicinity of Utrecht for neurological deficit symptoms. With univariable and multivariable logistic regression the relationship between arm weakness and (i) urgency allocation, and (ii) TIA/stroke diagnosis was assessed and crude and multivariate odds ratios (ORs) calculated.

Results:, Of the 1,381 patients with neurological deficit symptoms, 367 (26.6%) reported arm weakness. Of those 303 (82.6%) were classified as high urgency; crude OR 2.6 (95% CI 1.9-3.5). After adjustment for age, gender, other 'face, arm, speech time' items, and a history of TIA/stroke, the adjusted OR was 1.2 (95% CI 0.63-2.24). Ultimately, 258 (70.3%) were diagnosed with a TIA/stroke; crude OR 2.7 (95%CI 2.1-3.5), adjusted OR 1.7 (95% CI 0.93-3.24), with similar results for women and men.

Conclusion: Arm weakness as a single item results in a high urgency and has a high risk of TIA/stroke in patients with neurological deficit at the OHS-PC. However, after correction for age, gender, other FAST items, and a history of TIA, the relation was no longer significant.

Abbreviations

(BE)FAST	: (Balance-Eyes) Face-Arm-Speech-Test
CI	: Confidence Interval
FAST	: Face-Arm-Speech-Time
GP	: General Practitioner
ICPC	: International Classification of Primary Care
NTS	: Netherlands Triage Standard
OHS-PC	: Out-of-hours Service of Primary Care
OR	: Odds Ratio
TIA	: Transient Ischaemic Attack

Introduction

Unilateral weakness of the arm is a prominent clinical manifestation that may aid in the early recognition of an acute ischaemic stroke. In 2023, approximately 2,3 per 1000 people in The Netherlands were diagnosed with a stroke, highlighting the prevalence of this neurological event in the population[1]. Amongst the stroke cases, about 75% is ischaemic and can be attributed to an occlusion in one of the arteries supplying the brain, leading to a wide range of neurological deficit symptoms that occur abruptly, including weakness of the arm[2]. Studies indicate that arm weakness is a common feature in patients suspected of a stroke, with approximately 27-38% of such individuals presenting with this symptom[3-6]. Furthermore, a study by Fothergill et al[7]., observed that participants who experienced arm weakness were three times more likely to be diagnosed with an actual stroke compared to participants who did not. These findings underscore the importance of arm weakness as a critical clinical sign in the recognition and diagnosis of an acute ischaemic stroke and Transient Ischaemic Attack (TIA).

The carotid and the vertebrobasilar circulation are the two major arterial circuits that supply the brain with blood. The middle cerebral artery (MCA), a branch of the internal carotid artery, plays a critical role in the perfusion of the regions responsible for, but not limited to the primary motor cortex. When this artery is occluded it may cause inability to raise both arms symmetrically[2]. Another circulation of importance is the vertebrobasilar circuit, which accounts for around 20% of all strokes and TIA's. The vertebrobasilar is mainly responsible for the posterior side of the brain, and when occluded, patients can present with symptoms such as dizziness, ataxia, dysarthria, nystagmus, but also with unilateral limb weakness[8]. In everyday clinical practice, it is challenging to distinguish an occlusion in the vertebrobasilar from one in the carotid circulation, let alone differentiating a stroke from a mimic. Brain ischaemia caused by a flow obstruction in the carotid circulation may result in loss of cortical function with as symptoms aphasia, neglect, hemiplegia and hemianopia. Ischaemia in the vertebrobasilar circulation may result in cerebellar ischaemia and cranial nerve damage with symptoms of double vision, dysphagia, gait unsteadiness/balance disturbances and/or vertigo. [8, 9] By definition, a TIA is a temporary arterial brain occlusion. Symptoms either last no longer than 24 hours and/or there is no necrosis visible with CT or MRI of the brain[2].

Prompt intervention is essential for minimizing permanent brain damage following an ischaemic stroke. The primary treatment option is intravenous thrombolysis using Tissue Plasminogen

Activator (tPA). Current guidelines emphasize that the treatment has the highest likelihood of successful outcome when tPA is administered within 4.5 hours of symptom onset[10-11]. An alternative therapeutic option is endovascular thrombectomy which may be considered when intravenous thrombolysis is ineffective or when the patient presents with symptoms 6 to 24 hours after onset with decreasing effectiveness with longer duration. However this treatment is only possible when the occlusion is located in one of the bigger brain arteries, and more research on the effectiveness of this treatment in cases of vertebrobasilar circulation ischaemia are needed [11-13]. It is therefore crucial that strokes are quickly recognised because early interventions can improve the outcome and prognosis.

To aid rapid recognition of a stroke or TIA, the (BE)FAST mnemonic is widely utilized. This tool is designed to facilitate the identification of common stroke symptoms and encourages timely activation of emergency medical services, for both lay people and health care workers. It focuses on the typical symptoms of a stroke: Balance disturbances, Eyes (vision problems), Face dropping, Arm weakness, Speech impairment. Additionally, the T in (BE)FAST refers to the Time since symptom onset, which is a critical factor in determining the appropriate course of treatment[5-6, 12-15]. The majority of people admitted with a stroke/TIA experienced at least one of the (BE)FAST symptoms [3, 6, 15, 16]. Nevertheless, patients can also experience (BE)FAST symptoms and not suffer from a stroke but a condition that mimics the symptoms of a stroke/TIA. Bell's palsy, epileptic insult and migraine accompagnée are such mimics. The main difference between these mimics and stroke/TIA is the acute onset in the latter without prodromal syndromes while patients experiencing one of the mimics gradually develop symptoms and/or have so-called prodromal symptoms[17].

In the Netherlands, all citizens are registered with a General Practitioner (GP) who provides generalist care during regular weekday hours. Outside these hours, during the evenings, night and weekend, patients can access acute medical care through either the out-of-hours services in primary care (OHS-PC) or in evident critical medical situations the ambulance dispatch centre. At the OHS-PC a triage nurse will answer the phone call and utilize the Netherlands Triage System (NTS), a semi-automatic decision support tool, to assess the urgency of the situation. The NTS categorizes patients into urgency levels ranging from U0 (most urgent) to U5 (least urgent) (Table 1)[18-20]. Included in the NTS entrance complaint 'neurological deficit' are questions focused on symptoms commonly associated with stroke, e.g., arm weakness, as one of the variables of the (BE)FAST mnemonic. In everyday practice, the NTS allocates in 71% a

high urgency to those who eventually showed to have a stroke/TIA, while on the other hand, nearly 48% of the patients without a TIA/stroke or other neurological urgency received a high urgency[19]. A high urgency allocation (U1 or U2; patient seen within 1 hour) was considered correct in case of a stroke, and a (U1, U2 or U3; patient seen within 3 hours) when it was a TIA. Thus, the NTS decision support tool performs suboptimal regarding safety and efficiency when considering a final diagnosis of stroke or TIA. This underscores the need for improvement of the NTS for ‘neurological deficit’, one of the 56 entrance complaints of the NTS.
Andersson et al.[21] interviewed stroke patients on how they experienced and would describe their stroke symptoms when admitted in a Swedish hospital for stroke. Patients in this study described their arm symptoms in different ways, e.g., as ‘disloyal’, ‘unmanageable’, ‘dullness’ and ‘weakness’. Furthermore, patients in this study frequently mentioned that they found it hard to explain what they were experiencing and they were not directly aware of the symptoms or recognised these immediately [21-22]. The latter is also called neglect[9], which is due to inability of the body to receive stimuli from the contralaterally located side of the brain lesion[23]. Contralateral because the nerves from the brain to the body cross over to the other side at the beginning of the spine. Patients with neglect do not acknowledge unilateral weakness or loss of muscle function, thus, for ‘uncovering’ this symptom, observations of bystanders are needed.
It is evident that triage nurses face multiple challenges when interpreting symptoms of neurological deficit described by patients or bystanders.

This study aimed to examine the relationship between arm weakness and (i) the urgency allocation and (ii) the eventual diagnosis of TIA/stroke in males and females who contacted the OHS-PC for neurological deficits symptoms.

Table 1: NTS levels of urgency

NTS Urgency level	Definition	Response time	Medical help
U0 - Resuscitation	Loss of vital functions	Immediately	Ambulance
U1 - Life threatening	Unstable vital functions	Within 15 min	Ambulance
U2 - Emergent	Vital functions in danger or organ damage	As soon as possible, within 1 h	Home visit by GP or appointment at OHS-PC
U3 - Urgent	Possible risk of damage, human	A few hours (<3 h)	Home visit by GP or appointment at

	reasons		OHS-PC
U4 - Non-urgent	Marginal risk of damage	24 h	Appointment at OHS-PC or telephone advice
U5 - Advice	No risk of damage	Advice, no time related	Telephone advice

GP: General practitioner, OHS-PC: Out-Of-Hours Services in Primary Care.

Methods

Study design and participants

The current study is a secondary analysis of the Safety-First study[24], which is a retrospective observational study of over 3000 telephone triage recordings from nine OHS-PC in the central part of the Netherlands, rural and urban areas, between 2014-2017. Calls from callers suspected of an acute coronary syndrome (ACS) or stroke/TIA were included to evaluate the accuracy of the telephone triage. This study was endorsed by the Medical Ethics Committee Utrecht, the Netherlands.

Data collection

Through a program called ‘Callmanager’, all telephone calls at the OHS-PC are recorded and archived. Calls are labelled with an ICPC (International Classification of Primary Care) code that refers to either specific symptoms or a (working) diagnosis. These codes are manually allocated by triage nurses and general practitioners (GPs). This study included all triage recordings between 2014-2016 with ICPC codes referring to symptoms suggestive of TIA/stroke. The included ICPC codes are enlisted in Table 2. Per ICPC-code a random sample was taken. From each recording data on the patient and call characteristics, medical history, symptom characteristics and triage information (e.g. urgency allocation) were gathered. Subsequently, the final diagnosis was retrieved from the patient's medical file at their GP, based on the discharge letter from a neurologist or emergency department and/or the GP medical record. Within 30 days after discharge the OHS-PC was contacted to obtain information about possible recurrent stroke or TIA’s. Further details can be found in the previously published protocol of the Safety-First study[24].

Table 2: Included ICPC codes

K89	Transient cerebral ischaemia/TIA
K90	- Subarachnoid haemorrhage - Intracerebral haemorrhage - Ischaemic stroke
N17	Vertigo/ dizziness - Vertigo - Light-headed
N18	Paralysis/ weakness
N19	Speech-/phonation disorder
N29	Other symptoms/complaints nervous system
N89	Migraine
N91	Facial Palsy/ Bell's Palsy

Inclusion and exclusion criteria

Calls were included in the Safety First[23] study based on ICPC-codes listed in Table 2, and a keyword selection (TIA, stroke, cerebral of brain bleeding or haemorrhage or infarction, neurological deficit, arm or leg weakness, face or mouth drooping, speech or visual problems or sensory disturbances). Calls were excluded when the conversation was not a triage conversation (e.g. peer consultation or questions about medication use), low quality of the recording, callers younger than 18 years, callers outside of the central part of the Netherlands, and callers of whom their GP refused to provide information on the final outcome.

Statistical analysis

The relation between arm weakness and urgency allocation and final diagnosis stroke/ TIA was calculated with univariable and multivariable logistic regressions resulting in crude and adjusted odds ratios (OR). With multivariable logistic regression, we corrected for age, gender, other FAST items and a medical history of stroke/TIA. Furthermore, we assessed whether there were differences between males and females. In cases in which arm weakness was either not discussed or was unknown, the assumption was made that arm weakness was not present and we included those in the group without arm weakness. We applied a sensitivity analysis among complete cases, that is, selectively in patients in whom it was known whether they had arm weakness or not. All analyses were conducted in IBM SPSS statistics version 29.

Results

Patient characteristics

A total of 1,381 triage recordings could be analysed, and 367 (26.6%) patients experienced arm weakness (See Table 3). The mean age was 69 years, and 56% were female. The majority of calls (68%) were initially made by proxy. Arm weakness was also often accompanied by the symptoms of leg weakness and ataxia. The characteristics of the included triage recordings are presented in Table 3.

Table 3. Baseline characteristics of 1,381 patients with neurological deficit symptoms that contacted the OHS-PC, subdivided in those with and without arm weakness

	Arm weakness n= 367 (26.6%)	**No arm weakness** n= 1014 (73.4%)	**Total** n= 1381 (100%)	**P-value**[a]
Patient and call characteristics				
Mean age in years (SD)	73.1 (15.9)	67.3 (19.0)	68.9 (18.4)	<0.001[b]
Women (n,%)	218 (59.4)	563 (55.5)	781 (56.5)	0.199
Mean call duration in min:sec (SD)	07:28 (03:45)	07:52 (03:42)	07:64 (03:43)	0.079[b]
Caller by proxy (n,%) (n= 1010)	214 (77.0)	471 (64.3)	685 (67.8)	<0.001
Medical history (n,%)				
Prior stroke/TIA (n= 700)	113 (58.2)	265 (52.4)	378 (54.0)	0.163
Cardiovascular disease (n= 953)	192 (81.0)	539 (75.3)	731 (76.7)	0.070
- Atrial fibrillation (n= 273)	2 (3.3)	7 (3.3)	9 (3.3)	0.993
- Heart valve disease (n= 288)	5 (7.9)	20 (8.9)	25 (8.7)	0.812

Diabetes Mellitus (n= 459)	39 (37.5)	124 (34.9)	163 (35.5)	0.630
Hypertension (n= 465)	54 (51.4)	173 (48.1)	227 (48.8)	0.543
Hypercholesterolaemia (n= 428)	49 (47.6)	127 (39.1)	176 (41.1)	0.127
Epilepsia (n= 268)	7 (11.1)	24 (11.7)	31 (11.6)	0.897
Migraine (n= 107)	2 (11.8)	31 (34.4)	33 (30.8)	0.063
Cardiovascular medication (n,%)				
Antithrombotics (n= 1025)	141 (49.3)	334 (45.2)	475 (46.3)	0.237
Other symptoms mentioned during the call (n,%)				
Face drooping (n= 783)	108 (46.6)	269 (48.8)	377 (48.1)	0.562
Leg weakness (n= 721)	168 (75.3)	146 (29.3)	314 (43.6)	<0.001
Speech disturbances* (n= 845)	167 (72.6)	489 (79.6)	656 (77.6)	0.032
Vertigo/dizziness (n= 334)	56 (77.8)	224 (85.5)	280 (83.8)	0.115
Ataxia** (n= 256)	77 (97.5)	137 (77.4)	214 (83.6)	<0.001
Vision problems in general (n= 206)	21 (75.0)	143 (80.3)	164 (79.6)	0.515
Headache (n= 532)	52 (49.5)	250 (58.5)	302 (56.8)	0.094
Nausea/vomiting (n= 336)	30 (55.6)	156 (55.3)	186 (55.4)	0.974
Decreased or loss of consciousness (n= 1207)	18 (5.5)	58 (6.6)	76 (6.3)	0.510
Course of symptoms (n,%)				
Acute onset (within seconds or minutes) (n= 233)	20 (35.1)	52 (29.5)	72 (30.9)	0.431

Duration <4.5 hours (n= 1054)	186 (63.1)	447 (58.9)	633 (60.1)	0.216

SD: Standard deviation. TIA: Transient ischaemic Attack. The n in the first column describes the number of patients from which the information for the variable is known.
[a] Pearson Chi-Square test for binary variables, [b] Independent T-test for continuous variables.
**Dysarthria and aphasia*
*** Neurological coordination disorders, including an unsteady gait (ataxic gait), hand function coordination problems, and swallowing difficulties.*

Relation between arm weakness and urgency allocation

Of the 367 calls in which arm weakness was reported, 303 (82.6%) were classified as high urgency (see Table 4). The crude odds ratio (OR) for high urgency of patients with arm weakness compared to those without was 2.57 (95% CI 1.91–3.47) (see Table 5). After adjusting for the other components of the FAST assessment, the mOR was 1.15 (95% CI 0.61–2.16). The mOR after adjustment for a medical history of TIA/stroke was 2.56 (95% CI 1.90-3.45). After adjustment for age, gender, other FAST items, and a medical history of TIA/stroke, the OR was 1.18 (95% CI 0.63–2.24). There were no differences in ORs between males and females.

Table 4. High or low urgency allocation based on absence or presence of arm weakness among patients with neurological deficits at the OHC-PC triage

	Arm weakness n= 367	**No arm weakness** n= 1014	**Odds ratio (95% CI)**	**P-value**
High urgency allocation (U1-U2) n= 960 (69.5%)	303 (82.6%)	657 (64.8%)	2.57 (1.91-3.47)	<0.001
Low urgency allocation (U3-U5) n= 421 (30.5%)	64 (17.4%)	357 (35.2%)		

Table 5. Crude and multivariable Odds ratios for urgency allocation when reporting arm weakness, also for men and women separately.

Variable	**Odds ratio (95% CI)**	**P-value**
Arm weakness	2.57 (1.91-3.47)	<0.001
Arm weakness after correction for age and gender	2.43 (1.80-3.28)	<0.001

Relation between arm weakness and TIA/stroke

Of the 367 patients presenting with arm weakness, 258 (70.3%) were ultimately diagnosed with a TIA/stroke, while this was 474 (46.7%) of the 1014 patients without arm weakness received a final diagnosis of TIA/stroke, p=<0.001(see Table 6). The crude OR for TIA/stroke was 2.70 (95% CI 2.09–3.48), p-value of <0.001 for arm weakness. After adjusting for age, gender, other FAST items and medical history of TIA/stroke the mOR was 1.65 (95%CI 0.64-4.24), p-value <0.001. A similar decrease in OR is seen when correcting for other FAST items, though this number was not statistically significant. There was no significant difference in crude or adjusted ORs between men and women.

Table 6. Final diagnosis of TIA/stroke based on absence or presence of arm weakness among patients with neurological deficits at the OHC-PC triage

	Arm weakness n= 367	**No arm weakness**	**Odds ratio (95% CI)**	**P-value**

		n= 1014		
Stroke or TIA n= 732 (53.0%)	258 (70.3%)	474 (46.7%)	2.70 (2.09-3.48)	<0.001
No Stroke or TIA n= 649 (47.0%)	109 (29.7%)	540 (53.3%)		

Table 7. Crude and multivariable Odds ratios for final diagnosis of TIA/stroke when reporting arm weakness, also for men and women separately.

Variable	**Odds ratio (95% CI)**	**P-value**
Arm weakness	2.70 (2.09-3.48)	<0.001
Arm weakness after correction for age and gender	2.40 (1.82-3.15)	<0.001
Arm weakness after correction for FAST items*	1.74 (0.96-3.15)	0.067
Arm weakness after correction for medical history**	2.25 (1.58-3.23)	<0.001
Arm weakness after correction for age, gender, FAST items* and medical history**	1.73 (0.93-3.24)	0.085
Male		
Arm weakness	2.42 (1.63-3.60)	<0.001
Arm weakness after correction for age	2.22 (1.47-3.36)	<0.001
Arm weakness after correction for age, FAST items* and medical history**	1.16 (0.47-2.85)	0.754
Female		
Arm weakness	2.95 (2.11-4.12)	<0.001
Arm weakness after correction for age	2.54 (1.76-3.56)	<0.001
Arm weakness after correction for age, FAST items* and medical history**	2.49 (1.04-6.00)	0.042

CI: Confidence Interval
**Face drooping, Leg weakness and Speech disturbances (dysarthria and aphasia)*
***TIA/stroke.*

Sensitivity analyses

To assess the effect of considering those ‘not discussed’ or ‘unknown with arm weakness’ as ‘no arm weakness' we performed a sensitivity analysis in those in whom it was known whether they had arm symptoms or not (see attachment 1). The crude OR for stroke/TIA was 2.35 (95% CI 1.69-3.26), and the mOR 2.27 (95% CI 1.16-4.43).

Discussion

This study Investigated the relation between the occurrence of arm weakness and (i) the urgency allocation and (ii) the final diagnosis of TIA/stroke. With univariable analyses the crude OR was 2.57 (95%CI 1.91-3.47) and 2.70 (95%CI 2.09-3.48), respectively. However, after correction for age, gender, other FAST items and prior stroke/TIA, the positive relation was no longer present, suggesting that most of the information is already available in the variables for which we corrected. The predictive value of arm symptoms was primarily explained by other FAST items, suggesting that arm weakness rarely occurs as an isolated symptom. Instead, it is frequently accompanied by other FAST criteria, often presenting as hemiplegia. We could not detect significant differences between males and females for either urgency allocation or final diagnosis TIA/stroke.

Comparison with existing literature:

In a hospital population, the FAST mnemonic identified approximately 60-88% of patients with TIA/stroke[3, 6,15, 16]. A key distinction between the present study and most published research is that the patients in our cohort contacted the OHS-PC, whereas the majority of previous studies analysed patients who contacted the emergency department. Moreover, our study investigates the likelihood of a high urgency classification and a final diagnosis of TIA or stroke in patients presenting with arm weakness. In contrast, the majority of previously published studies focused on the proportion of patients with a confirmed TIA or stroke who reported experiencing arm weakness. Consequently, comparisons between our findings and existing literature must account for these differences. Multiple previous studies also did not find significant sex differences in the presentation of arm weakness in patients with a diagnosis TIA/stroke[4, 6, 16]. However, these studies included patients with a confirmed history of transient ischemic attack (TIA) or stroke. Consequently, direct comparison with our research is limited. Another study comparing stroke patients to those with alternative diagnosis reported that 55% of individuals with a stroke experienced arm weakness, whereas only 20% of patients in the non-stroke group exhibited this symptom[5]. In this study, patients were included if they contacted the emergency department with stroke-like symptoms. Our study suggested that 35% of the patients with a diagnosis of TIA/stroke mentioned arm weakness during their call compared to 17% in the group without a diagnosis of TIA/ stroke. Similarly, another previous study examined differences between patients with a final diagnosis of stroke versus an alternative diagnosis found that 15% of stroke patients mentioned limb weakness as an initial symptom, compared to 5% in the non-stroke group [25]. Here, patients were also included based on their call to the emergency department, after which a nurse reviewed their final diagnosis in the medical records.

Currently there are no studies available who research the same variables in a OHS-PC setting who included patients by call characteristics instead of final diagnosis. Therefore comparison with current literature offers challenges.

Strengths and limitations

This study has several strengths. First, we used “real life” data and had many variables because initial calls could be analysed. Secondly, we included OHS-PC sites from both rural and urban areas which makes our results more generalizable. Lastly, researchers who listened to the calls were blinded to the callers’ clinical outcomes.

Limitations to be considered is first of all that misclassification of symptoms, including arm weakness may have occurred because it may be difficult to assess, notably if there is only sensory loss. Secondly, symptoms are difficult to assess by telephone, that is, without seeing the patient. Thirdly, the majority of calls were made by proxy, which may also have introduced misclassification because they do not experience the symptoms themselves. Fourth, we had missing data on multiple variables, a problem well known in observational studies. Fifth, we considered those in whom it was unknown whether they had arm weakness as ‘no arm weakness. This may have introduced bias and may have weakened the relations we found. However, with sensitivity analysis selectively among those in whom it was known whether they had arm weakness or not provided the similar results for both the crude and multivariable ORs.

Future recommendations

As a continuation of this study, I propose further investigation into the onset-to-treatment time, as time is a critical factor in the effectiveness of treatment responses. Specifically, it would be valuable to examine the duration between the initial onset of symptoms and the patient’s contact with the OHS-PC, as well as the interval from the OHS-PC call to the administration of treatment. This research could identify potential areas for improvement in the timely management of patients with TIA or stroke, ultimately enhancing the speed and efficacy of interventions.

Conclusion

Arm weakness as a single item results in a high urgency and has a high risk of TIA/stroke in patients with neurological deficit at the OHS-PC. However, after correction for age, gender, other FAST items, and a history of TIA, the relation was no longer significant.

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Attachment 1: Sensitivity analyses

Table 8: Sensitivity analyses selectively among patients in whom it was known whether they had arm weakness or not. Both crude and multivariable odds ratios for urgency allocation were calculated

Variable	Odds ratio (95% CI)	P-value
Arm weakness	2.36 (1.77-3.14)	<0.001
Arm weakness corrected for age, gender, FAST items* and medical history**	1.53 (0.77-3.03)	0.226

CI: Confidence Interval
**Face drooping, Leg weakness and Speech disturbance (dysarthria and aphasia)*
***TIA/stroke*

Table 9: Sensitivity analyses with crude and multivariable Odds ratios for final diagnosis of TIA/stroke when reporting arm weakness. Both crude and multivariable odds ratios for final diagnosis TIA/stroke were calculated

Variable	Odds ratio (95% CI)	P-value
Arm weakness	2.35 (1.69-3.26)	<0.001
Arm weakness after correction for age, gender, FAST items* and medical history**	2.27 (1.16-4.43)	0.016

CI: Confidence Interval
**Face drooping, Leg weakness and Speech disturbance (dysarthria and aphasia)*
***TIA/stroke*