

# **Quality Assurance and Verification Division**

## **Healthcare Audit Summary Report**

**Audit of compliance with the National Ambulance Service (NAS) procedure on appropriate hospital access for suspected stroke patients**

**Audit Reference Number: QAV001/2017**

<b>Title</b>	<b>Audit of compliance with the National Ambulance Service (NAS) procedure on appropriate hospital access for suspected stroke patients</b>	
<b>Number</b>	QAV001/2017	
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## ABBREVIATIONS

AMPD	Advanced Medical Priority Dispatch
CAD	Computer Aided Dispatch
CPG	Clinical Practice Guideline
HSE	Health Service Executive
NAS	National Ambulance Service
NEOC	National Emergency Operations Centre
PCR	Patient Care Report
PHECC	Pre-Hospital Emergency Care Council
QAVD	Quality Assurance and Verification Division

## **1. BACKGROUND AND RATIONALE**

The National Ambulance Service (NAS) procedure *Appropriate Hospital Access for Suspected Stroke Patients* (NASC010) (2011) recommends that staff transfer patients suspected of acute stroke to the closest hospital that provides thrombolysis<sup>1</sup> within a four hour timeframe<sup>2</sup> from the onset of symptoms. This procedure is supported by a clinical practice guideline (CPG) for suspected stroke (2014) developed by the Pre-Hospital Emergency Care Council (PHECC)<sup>3</sup>

The National Emergency Operations Centre (NEOC) manages all emergency calls received by the NAS. In 2015, the NAS introduced a new Computer Aided Dispatch (CAD) system in order to provide NEOC staff with accurate details of the location of the patient. The CAD is used in conjunction with the Advanced Medical Priority Dispatch (AMPD)<sup>4</sup> system which collects important patient information to ensure a speedy response to an emergency call. The NEOC staff are prompted to ask a series of pre-set questions to allow categorisation and coding of a patients' chief complaint, including suspected stroke. The NAS use the FAST<sup>5</sup> test as a tool to recognise the symptoms of a stroke<sup>6</sup>. Ambulance personnel perform the FAST test on the patient on arrival at the scene, and record the outcome on the Patient Care Report (PCR).

This audit was requested by the Medical Director of the NAS to provide assurance on the level of compliance with the procedure for Appropriate Hospital Access for Suspected Stroke Patients.

## **2. AIM AND OBJECTIVES**

The overall aim of this audit was to provide assurance that the NAS comprising South, West and North Leinster areas were compliant with the procedure for Appropriate Hospital Access for Suspected Stroke Patients.

The objective was to establish whether the procedure for initiating appropriate hospital access for a suspected stroke patient was adhered to and documented in relation to the following:

1. Assessment and documentation of FAST.
2. Documentation of the four hour timeframe between symptom onset and hospital destination for patients.
3. The appropriate hospital was documented and the destination was pre-alerted regarding patients with a positive FAST.

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<sup>1</sup>Thrombolysis is a treatment to dissolve dangerous clots in blood vessels in order to improve blood flow and prevent damage to tissues and organs. American Heart Association (AHA) Acute Stroke Guidelines (2013).

<sup>2</sup> The timeframe for treatment of stroke and avoidance of disabling long term effects. AHA Acute Stroke Guidelines (2013)

<sup>3</sup>PHECC is an independent statutory body that set the standards for education and training for emergency medical personnel.

<sup>4</sup>The AMPD is a medically approved software programme which is comprised of a set of standardised protocols to triage patients.

<sup>5</sup> FAST is an acronym used to help detect responsiveness to stroke. It stands for: Facial drooping; Arm weakness; Speech difficulties; and Time to transport now if positive fast.

<sup>6</sup> Stroke is generally defined as an interruption of the blood supply to any part of the brain.

### 3. METHODOLOGY

The audit was conducted through a desktop review of PCRs from NAS South, West and North Leinster. The team selected all PCRs coded as suspected stroke from the NAS database for a six month period (July-December 2016) covering the three NAS areas of North Leinster, South and West. The audit team identified 3647 PCRs that were coded as suspected stroke and 2472 of these PCRs were within the four hour timeframe of symptom onset. A random 10% sample was selected for audit, i.e., 253 PCRs.

The audit team developed an audit tool to gather the specific criteria for this audit (as outlined in the objectives). The tool was piloted on a number of PCRs prior to implementation and following this, modifications to the audit tool were made. Audit reports were prepared and issued to the each of the three areas.

A draft audit summary report was issued to NAS on 11 September 2017 for review of factual accuracy and management comment.

### 4. FINDINGS

#### General findings from the PCRs

Arising from the review of the **253** PCRs the audit team found the following:

- Each PCR was allocated a unique incident number on the NAS database however 11% (27/253) of these records could not be found. One record was documented as a cardiac arrest and outside the scope of the audit. Therefore the audit reviewed 225 PCRs.
- Duplicate PCRs were found in 6% (15/253) of the records and the duplicate was often in respect of another NAS area.
- Phone calls to the NAS are prioritised using the AMPD system and this priority response was not documented in 48% (107/225) of the PCRs reviewed.
- A new PCR commenced nationally in April 2016 and this new form had additional fields to record the time the FAST assessment was performed and the time that the designated hospital was alerted. Obsolete forms were found for 8% (19/225) of the PCRs reviewed and therefore the aforementioned times were not recorded
- In some instances, the audit team found the documents were not fully scanned and were of poor quality and therefore difficult to read at times.

The audit team acknowledge that the quality of the scanned PCRs was unrelated to the audit objectives, however the audit team was of the opinion that NAS management should be made aware of this finding. The HSE Standards and Recommended Practices for Healthcare Records Management (v3) outline the importance of active management of patient information to promote the provision of a high quality, safe service (ref 1.5).

**Objective 1:** To establish from the PCR data that the assessment and documentation of FAST was performed and recorded for suspected stroke patients.

Overall, 75% of PCRs had evidence of the FAST assessment either fully or partially completed. There was no evidence of a FAST assessment in 25% of the PCRs.

In 49% of the PCRs the FAST assessment was found to be FAST positive and 49% were FAST negative. The outcome of the FAST assessment could not be determined in the remaining 2% of records as both fields were marked.

The audit team found a disparity in the FAST times recorded on the PCRs because in some instances the time recorded corresponded with the time of onset of symptoms, and in a small number of cases the time recorded reflected the time the ambulance crew performed the FAST assessment at the scene.

The FAST assessment section on the PCR requires four indicators to be completed and include facial drooping, arm weakness, speech difficulties and a record of the time the assessment was performed. Overall 75% (170/225) of PCRs had evidence of the FAST assessment either fully or partially completed. There was no evidence of a fast assessment in 25% (55/225) of the PCRs.

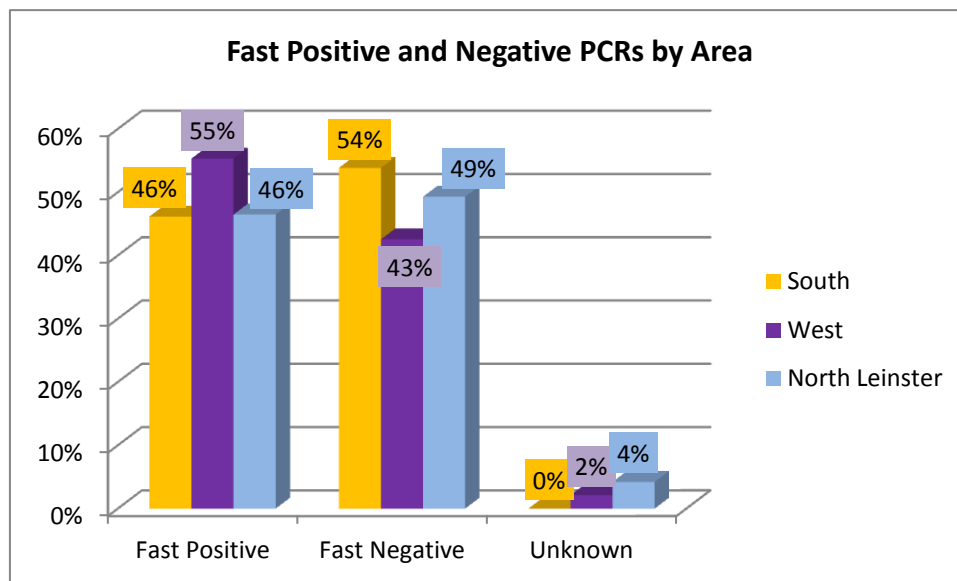
Documentation of the FAST assessment in the South, West and North Leinster areas are outlined in Table 1 below. Full completion of the FAST assessment was found on 27% of the PCRs in the West, 40% in North Leinster and 46% in the South. Partially completed PCRs were found on 33% of the PCRs in North Leinster, 34% in the South, and 48% in the West and this was due to the non-recording of the time the assessment was performed.

**Table 1: Summary of completed FAST assessments**

Areas	PCRs reviewed	All fields completed	Partially completed	Not completed
South	65	30 (46%)	22 (34%)	13 (20%)
West	63	17 (27%)	30 (48%)	16 (25%)
North Leinster	97	39 (40%)	32 (33%)	26 (27%)
<b>Total</b>	<b>225</b>	<b>86 (38%)</b>	<b>84 (37%)</b>	<b>55 (25%)</b>

Ambulance personnel are required to form a clinical impression at the scene and perform a FAST assessment when necessary. In total 49% (83/170) of the FAST assessments were documented as FAST positive and 49% (83/170) were FAST negative. Findings for the three areas are demonstrated below (see Figure 1). The outcome of the FAST test could not be determined in 2% (4/170) as both positive and negative fields were marked on the PCR.

**Figure 1: Analysis of FAST Positive and Negative PCRs by Area.**



A code of suspected stroke was initially assigned by NEOC staff. The audit sample consisted of 225 PCRs which were coded as suspected stroke. On arrival at the scene ambulance personnel were required to assess the patient and document their chief complaint on the PCR. Six percent (13/225) did not have a chief complaint recorded on the PCRs. Of the 94% (212/225) of the PCRs that had a chief complaint recorded, 51% (109/212) were stroke related complaints. In the remaining 49% (103/212), the chief complaints documented included confusion, abdominal pain, and in one case a fractured hip had been coded as suspected stroke.

The fourth indicator in the FAST assessment section on the PCR requires a time to be recorded. In total, 60% (50/83) of the FAST positive PCRs had a FAST time recorded and 40% (33/83) did not have a FAST time recorded.

The PHECC CPG for suspected stroke indicates that the time that should be recorded is the “time to transport now if FAST positive”. In 72% (36/50) of PCRs, the FAST times documented by ambulance staff corresponded with the time of onset of symptoms initially identified to the call centre personnel. In 28% (14/50) of PCRs, the time recorded reflected the time the ambulance crew performed the FAST assessment at the scene. Findings for the three areas suggest that North Leinster and West predominately recorded the time of symptom onset as the time the FAST assessment was completed as demonstrated below (see Table 2). While the South only recorded the FAST time in 50% of the PCRs, the time recorded mainly reflected the time the test was performed by the ambulance personnel.



**Table 2: FAST times compared with Time of Onset of Symptoms**

Areas	FAST positive PCRs	FAST time not recorded	Fast time recorded	Fast time equal to time of onset of symptoms	FAST time equal to time FAST performed
South	24	12 (50%)	12 (50%)	3 (25%)	9 (75%)
West	26	11 (42%)	15 (58%)	12 (80%)	3 (20%)
North Leinster	33	10 (30%)	23 (70%)	21 (91%)	2 (9%)
<b>Total</b>	<b>83</b>	<b>33 (40%)</b>	<b>50 (60%)</b>	<b>36(72%)</b>	<b>14 (28%)</b>

**Recommendation:**

1. The senior most accountable person in the NAS must establish the causal factors for the lack of clarity in the accurate recording of the time of the FAST assessment on the PCR and put in place measures to achieve compliance with the NAS procedure.

**Objective 2:** To establish from the PCR data that the four hour timeframe between symptom onset and hospital destination was met and recorded for suspected stroke patients.

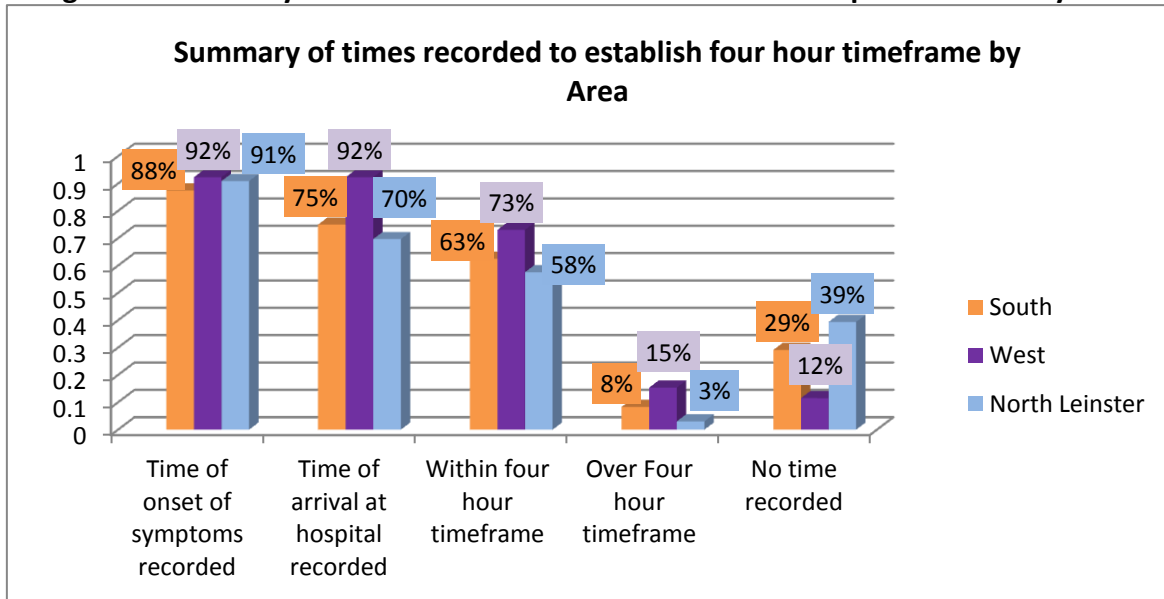
The audit team found that in the PCRs with a FAST positive assessment that 64% reached the hospital destination within the four hour timeframe and 8% was greater than four hours. Non recording of the time of symptom onset and/or time of arrival at the hospital destination was absent in 28% of the PCRs reviewed hence it could not be determined if these were within the four hour timeframe.

The NAS procedure NASCG010 (2011) defines the four hour timeframe as the time from symptom onset to the time of arrival at the appropriate hospital and this should not be greater than four hours. The audit team found that of the 49% (83/170) of PCRs that were FAST positive, 64% (53/83) reached the appropriate hospital destination within the four hour timeframe and 8% (7/83) had times recorded greater than four hours due to delay in noting symptom onset by patient, next of kin, or carer.

The four hour timeframe could not be established in 28% (23/83) of PCRs as the time of symptom onset or time of arrival at the hospital destination, or both in some instances, was not recorded. The audit team found that this represented 12% in the West, 29% in the South and 39% in North Leinster.

Documentation of the four hour timeframe in the South, West and North Leinster areas are outlined below (see Figure 2). The audit team found that the four hour timeframe was met in 58% of PCRs in North Leinster, 63% in the South and 73% in the West area.

**Figure 2: Summary of four hour timeframe recorded in FAST positive PCRs by Area**



**Recommendation:**

2. The senior most accountable person in the NAS must establish the causal factors for the lack of compliance with documenting the key times on the PCRs and put in place measures to ensure times are recorded as per the NAS procedure.

**Objective 3:** To establish from the PCR data that the appropriate hospital was documented and the destination was pre-alerted of the suspected stroke patient with a FAST positive assessment.

The audit team established that the hospital destination was documented on 95% of the PCRs and was the appropriate hospital to deliver acute stroke care. The pre-alert time was documented on 13% (11/83) of the PCRs that had recorded a FAST positive test. The abbreviation used for the hospitals was not up to date and in some instances the locality name was entered as the hospital destination.

The NASCG010 outlines the requirement of a multidisciplinary approach to the delivery of acute stroke care and appropriate hospital access which may not be delivered at the nearest hospital. The audit team was provided with a list of 24 hospitals that deliver acute stroke care nationally. Overall the hospital destination was documented on 95% (214/225) of the PCRs and was the appropriate hospital to deliver acute stroke care.

The audit team found that the hospital abbreviations in use were outdated and did not reflect the most recent HSE hospital name, e.g., Sligo University Hospital (SUH) was still described as Sligo General Hospital (SGH). In addition, hospital names were sometimes documented as the general locality and not the specific hospital name, e.g., Cavan, Mullingar and Tullamore.

It was unclear to the audit team if pre-alerting the emergency department of the appropriate hospital occurred at all times as it was found that the pre-alert time was only documented on 13% (11/83) of the PCRs that had a FAST positive test recorded. Recording

of the pre-alert time, a requirement of the NAS procedure, ranged from 11% in West, 12% in North Leinster and 17% in the south.

**Recommendation:**

3. The senior most accountable person in the NAS must establish the causal factors for the lack of compliance with the documentation of the pre-alert time and put in place measures to ensure this is recorded as per the NAS procedure.
4. The senior most accountable person in the NAS must establish the causal factors for the lack of compliance with the use of the current standard hospital abbreviations and put in place measures to address this.

**5. CONCLUSION**

Based on the PCRs reviewed, the audit team cannot provide reasonable assurance that NAS was compliant with the NAS procedure (NASC010).

The primary areas of non-compliance were found in relation to the following:

- Lack of clarity as to what time should be recorded on the FAST assessment section of the PCR, which resulted in a lack of consistency in the documentation with respect to times recorded by the ambulance personnel.
- In one third of PCRs reviewed, non-recording of the times of the onset of symptoms and the hospital destination time prevented the audit team from establishing the four hour timeframe.
- The pre-alert time was not documented in the majority of the PCRs that had a FAST positive test recorded.

Overall, 75% of PCRs had evidence of the FAST assessment either fully or partially completed. The audit team found that half of the documented FAST assessments were FAST positive.

The audit team found no records for some PCRs and the presence of duplicates for others and while unrelated to the audit, the team are of the opinion that the NAS management should be made aware of this finding.

Recommendations made in this report, identify actions that the NAS must implement in order to increase compliance with the NAS procedure Appropriate Hospital Access for Suspected Stroke Patients.



**6. RECOMMENDATIONS**

The senior most accountable person in the NAS must establish the causal factors for non-compliance with the NAS010 and put in place measures to ensure the following is adhered to:

1. Clarification of the time of the FAST assessment to be recorded and its documentation on the PCR
2. Documentation of the key times to determine the four hour timeframe on the PCRs
3. Documentation of the pre-alert time on the PCRs
4. Documentation of the current standard abbreviations for hospitals on the PCRs.

**Acknowledgements:**

The audit team wish to acknowledge the co-operation and goodwill afforded to them by the NAS staff during the audit.

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Signature	
Date	28 September 2017
<b>Assistant National Director Healthcare Audit QAVD</b>	Ms. Cora Mc Caughan
Signature	
Date	28 September 2017

**7. MANAGEMENT RESPONSE TO RECOMMENDATIONS**

*Management response should be completed by the senior most accountable person with the authority to effect the actions outlined by the recommendations listed.*

	Recommendation	Management response	Agreed implementation date	Person responsible
1	The senior most accountable person in the NAS must establish the causal factors for lack of clarity in the accurate recording of the time of the FAST assessment on the PCR and put in place measures to achieve compliance with the NAS procedure.			
2	The senior most accountable person in the NAS must establish the causal factors for the lack of compliance with documenting the key times on the PCRs and put in place measures to ensure times are recorded as per the NAS procedure.			
3	The senior most accountable person in the NAS must establish the causal factors for the lack of compliance with the documentation of the pre-alert time and put in place measures to ensure this is recorded as per the NAS procedure			
4	The senior most accountable person in the NAS must establish the causal factors for the lack of compliance with the use of the current standard hospital abbreviations and put in place measures to address documentation on the PCR.			

## 8. APPENDIX A: SITE SPECIFIC RECOMMENDATIONS

The senior most accountable person on each site must:

<p>NAS West</p>	<ol style="list-style-type: none"> <li>1. Convey to all relevant staff that this audit identified that errors were occurring in recording the time related to FAST on PCRs and put in place measures to ensure compliance with the accurate recording of the time of the FAST assessment as per the NAS procedure.</li> <li>2. Establish the causal factors for the lack of compliance with documenting the key times on the PCRs and put in place measures to ensure times are recorded as per the NAS procedure.</li> <li>3. Ensure compliance with documenting the pre-alert time on the PCRs as per the NAS procedure.</li> <li>4. Ensure use of the most recent hospital abbreviations as the hospital destination on the PCR.</li> </ol>
<p>NAS South</p>	<ol style="list-style-type: none"> <li>1. Convey to all relevant staff that this audit identified that errors were occurring in recording the time related to FAST on PCRs and put in place measures to ensure compliance with the accurate recording of the time of the FAST assessment as per the NAS procedure.</li> <li>2. Establish the causal factors for the lack of compliance with documenting the key times on the PCRs and put in place measures to ensure times are recorded as per the NAS procedure.</li> <li>3. Ensure compliance with documenting the pre-alert time on the PCRs as per the NAS procedure.</li> <li>4. Ensure use of the most recent hospital abbreviations as the hospital destination on the PCR.</li> </ol>
<p>NAS North Leinster</p>	<ol style="list-style-type: none"> <li>1. Convey to all relevant staff that this audit identified that errors were occurring in recording the time related to FAST on PCRs and put in place measures to ensure compliance with the accurate recording of the time of the FAST assessment as per the NAS procedure.</li> <li>2. Establish the causal factors for the lack of compliance with documenting the key times on the PCRs and put in place measures to ensure times are recorded as per the NAS procedure.</li> <li>3. Ensure compliance with documenting the pre-alert time on the PCRs as per the NAS procedure.</li> <li>4. Ensure use of the most recent hospital abbreviations as the hospital destination on the PCR.</li> </ol>