



Ultra-rapid thrombolysis in 19 minutes: Breaking conventional door-to-needle benchmarks

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Abstract

Background: Acute ischemic stroke requires immediate reperfusion therapy to prevent irreversible neuronal injury. Door-To-Needle (DNT) is a key determinant of patient outcome. We report the management of a 73-year-old male who presented within the therapeutic window with right-side weakness and slurred speech. Rapid BEFAST screening and NIHSS assessment triggered institutional code stroke activation. Non-contrast CT excluded intracranial haemorrhage, and intravenous Inj. Tenecteplase was administered. A Door-to-CT time of 6 minutes and Door-To-Needle time of 19 minutes were achieved. The patients NIHSS improved from 11 to 6 without complications. This report highlights the impact of nurse-driven stroke pathways in exceeding recommended DNT benchmarks.

Key words: Door-To-Needle (DNT); Acute ischemic stroke; Diabetes mellitus

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1. Introduction

Stroke remains one of the leading causes of long-term disability and mortality worldwide. The principle "Time is Brain" reflects the rapid neuronal loss occurring during untreated cerebral ischemia. Early thrombolytic therapy significantly improves neurological recovery when administered within the recommended therapeutic window. International guidelines recommend a door-to-needle time of ≤ 60 minutes, with high-performing centers targeting ≤ 30 minutes^[1]. Efficient emergency department systems and coordinated nursing leadership are essential to achieving these targets. Emergency nurses play a critical role in rapid recognition, protocol activation, multidisciplinary coordination, and continuous monitoring. This report demonstrates how structured nursing-led workflow optimization enabled an ultra-rapid 19-minute Door-To-Needle time^[2].

2. History

A 73-year-old male, known to have hypertension and diabetes mellitus, presented to the emergency department at 08:16 AM.

3. Chief complaints

- Sudden right upper limb weakness
- Slurred speech
- Facial deviation
- Difficulty walking

4. Clinical findings

On Arrival

Blood Pressure	70/90 mmHg
Heart Rate	85 beats/min
Respiratory Rate	18 breaths/min
Oxygen Saturation	99% (on room air)
Capillary Blood Glucose	300 mg/dL
Glasgow Coma Scale	5/15

“BE-FAST screening was positive”

- Neurological examination revealed right-sided motor weakness and facial deviation.
- Initial NIHSS Score: 11/42 [moderate stroke severity].

5. Investigations & results

Radiological investigation

Urgent non-contrast CT Brain: Acute ischemic infarction with no evidence of intracranial haemorrhage

Door-to-CT	6 minutes
Door-to-needle	20 minutes

6. Diagnosis

Acute ischemic stroke- left hemispheric infarction presenting with right hemiparesis and dysarthria.

7. Management

7.1. Pre-Thrombolysis

Emergency actions included:

- Rapid triage and BE-FAST screening
- Immediate NIHSS documentation
- Establishment of two large-bore IV lines
- Simultaneous laboratory sampling (CBC, PT/INR, electrolytes, glucose)
- Continuous BP monitoring and control (<185/110 mmHg target prior to thrombolysis)
- Expedited radiology coordination
- Preparation and independent double-check of Inj. Tenecteplase dose
- Family counselling and informed consent

7.2. Thrombolytic therapy

- Intravenous Tenecteplase 20 mg was administered at 08:35 AM after checking eligibility confirmation

7.3. Post-Thrombolysis Monitoring

- Neurological and vital monitoring:
 - Every 15 minutes for 2 hours
 - Every 30 minutes for 6 hours
 - Hourly for next 16 hours
- BP maintained <180/105 mmHg
- Patient monitored for Strict bed rest and aspiration precautions
- Avoidance of invasive Procedures
- Serial NIHSS reassessment in stroke unit

8. Outcome

The patient showed significant neurological improvement. The NIHSS improved from 11 to 6. No complications such as intracranial haemorrhage, systemic bleeding, or angioedema were observed. The patient was shifted to the Neuro critical care unit for further management and rehabilitation.

9. Discharge

The patient was discharged in stable condition after completion of acute management and initiation of secondary stroke prevention therapy, including antiplatelet agents, statins, antihypertensive optimization, and diabetic control. He was advised regular follow-up in neurology and continuation of physiotherapy rehabilitation.

10. Discussion

Acute ischemic stroke management focuses on early reperfusion to salvage penumbral tissue. Delays in thrombolysis are directly associated with increased mortality and long-term disability. Early thrombolytic therapy significantly improves functional outcomes when administered within the therapeutic window. Achieving 19 minutes DTN reflects efficient stroke pathway activation, rapid imaging and timely eligibility assessment were crucial components to favorable outcome. Emergency nurses function as primary coordinators in acute stroke pathways.

Nursing leadership enabled:

- Immediate stroke protocol activation
- Parallel workflow execution
- Medication preparation readiness
- Strict adherence to monitoring protocols
- Prevention of secondary complications

Structured nursing protocols minimized delays and ensured patient safety during thrombolysis.

11. Conclusion

This case demonstrates that structured emergency nursing protocols can reduce door-to-needle time and improve outcomes in acute ischemic stroke. Efficient multidisciplinary coordination and rapid intervention were key to achieving a 19-minute treatment time.

References

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