REGULATION 28: REPORT TO PREVENT FUTURE DEATHS

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	THIS REPORT IS BEING SENT TO: 1. **Mr Peter Homa, Chief Executive, Nottingham University Hospitals NHS Trust** 2. **Sir Andrew Cash, OBE, Chief Executive, Sheffield Teaching Hospitals NHS Foundation Trust** 3. **Mr Simon Stevens, CEO, NHS England**
1	**CORONER** I am Heidi Connor, assistant coroner for the coroner area of Nottinghamshire.
2	**CORONER'S LEGAL POWERS** I make this report under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and regulations 28 and 29 of the Coroners (Investigations) Regulations 2013.
3	**INVESTIGATION and INQUEST** On 3 October 2016 I commenced an investigation into the death of Teresa Dennett, aged 58. The investigation concluded at the end of the inquest on 6 January 2017. The medical cause of death was : 1a Malignant middle cerebral artery territory infarct 1b Hypertension. I recorded a narrative conclusion as follows : Teresa Dennett's death was the result of a rare type of stroke. Attempts were made to arrange for her to be transferred for urgent neurosurgery, but this did not happen. If an operation had taken place before her final deterioration at around 0330 on 7 February 2016, then it is likely that she would have survived, albeit with ongoing neurological disabilities.
4	**CIRCUMSTANCES OF THE DEATH** I have summarised the key evidence below. I am mindful of the fact that not all recipients of this letter will be familiar with local hospitals and policies and take that into account in my summary. A full note of my summing up and conclusions has been supplied to all Interested Persons. The coroner will consider any further request for a copy of this from the recipients of this report. The family requested that we refer to their mother as Teresa at the inquest, and I reflect that request in this report.

Teresa Dennett was born 17.2.57. She was admitted to the ED at Kings Mill Hospital ('KMH') at 09.20 on 6 February 2016 via ambulance, and diagnosed as having suffered a stroke. Subsequent review of the CT scans indicated that she may be suffering from a rare type of stroke that carried a risk of sudden deterioration, requiring neurosurgery to relieve any subsequent raised intracranial pressure. KMH in Mansfield does not have neurosurgery services. It usually refers neurosurgery patients to the Queen's Medical Centre in Nottingham.

Initial advice from Nottingham neurosurgeons consulted at around 1600 was that Teresa should be observed. At that time her GCS was 12, and she was able to obey commands. There was no midline shift. The advice was that neurosurgeons should be contacted again if her GCS dropped, especially if she became confused or drowsy.

Concerns were later raised about Teresa's condition, and a further CT scan (carried out at 2107, reported at 2153, and actioned by ward staff between 2300 and 2330) showed increased mass effect and an 8mm midline shift.

Further contact with Nottingham was made, and the Nottingham neurosurgery registrar [redacted] asked for the scans to be sent to him, indicating that it would be a further half an hour before he could access them. We were told that radiologists used the IEP (Image Exchange Portal) to send the scans.

After reviewing the scans, the neurosurgery registrar indicated that Teresa should be transferred to Nottingham for urgent decompressive hemicraniectomy. KMH records state that this call was at or shortly before 0020 hrs on 7 February. He did not consider whether an ICU bed was available before giving this advice. When he checked this after speaking to his consultant, it became clear that a post-operative ICU bed was not available and there was no prospect of one becoming available in the near future. [redacted] (ICU consultant) told us that not only were all the ICU beds full, but he had already transferred out his least sick patient to make way for another, and a further patient was being looked after in theatre recovery, already a far from ideal situation.

[redacted] advised the medical registrar [redacted] to ask Sheffield to take this patient. Mansfield is almost equi-distant between Nottingham and Sheffield (Sheffield being perhaps 5 or 10 minutes further away). Sheffield is in a different catchment area.

I accepted in evidence that Nottingham and Sheffield neurosurgery units have in the past assisted each other where one unit has not been able to provide urgent surgery to a patient. This is not an everyday occurrence, but this has occurred not infrequently in the past.

Sheffield neurosurgery registrars were happy to accept the patient, but their consultant, [redacted] advised that Nottingham should treat the patient. KMH records state that contact was first made with Sheffield at 0115 hrs. Sheffield records give a time of 0159 hrs. The Sheffield trust's response to a Freedom of Information Act request by Teresa's family indicates that surgeons were available, and there were 8 ICU beds free that night.

Although the Sheffield consultant indicated that he may reconsider via a 'consultant to consultant referral', this possibility was not mentioned to either [redacted] at KMH or [redacted] in Nottingham. [redacted] declined to contact his consultant despite requests by [redacted]. He advised [redacted] to approach Birmingham or Oxford.

[redacted] knew that Teresa would not survive the journey to Birmingham or Oxford, and time was against her. He contacted an on-call stroke physician in Nottingham, [redacted]

made further contact with and all agreed that she should come to Nottingham for surgery – as that was the clear clinical priority – and the ICU bed situation would be resolved thereafter – even if that required ICU management at a different centre post-operatively.

Sadly, by this time, Teresa had deteriorated too much for surgery to be carried out. Her GCS at 0326 hrs was noted to be 6. She died later that morning.

The evidence of 3 consultant neurosurgeons at the inquest was that if the operation had been carried out, then on the balance of probabilities, Teresa would have survived, albeit with ongoing neurological disabilities. This of course depends on whether transfer to a neurosurgery unit would have been possible before her final deterioration. Even if Sheffield had agreed to take the patient when first contacted, I found it unlikely she would have had the operation in time.

Key concern

With the exception of himself, all neurosurgery witnesses stated that, on the facts of this case, and taking account of the steps already taken to try to arrange transfer, should have accepted the patient. These witnesses include a senior neurosurgery consultant colleague in Sheffield. made no enquiries as to why Nottingham had not felt able to take Teresa – either directly or via the registrars involved. He gave evidence that he did not know where KMH was – although he accepted that he knew it was in the Nottinghamshire area, given that he had advised that Nottingham should take the patient.

We heard evidence about a 2015 Care Quality Statement made by the Society of British Neurological Surgeons. This in effect says that a patient requiring "life-saving, emergency surgery" should always be accepted by the regional neurosurgical unit – and that critical care bed availability should never be used as a reason to refuse admission.

said that he relied on this in support of his decision. We heard in evidence that this Society is a voluntary one. Many of the neurosurgeons involved in this case had not heard of the statement before this case, and some described it as 'aspirational'.

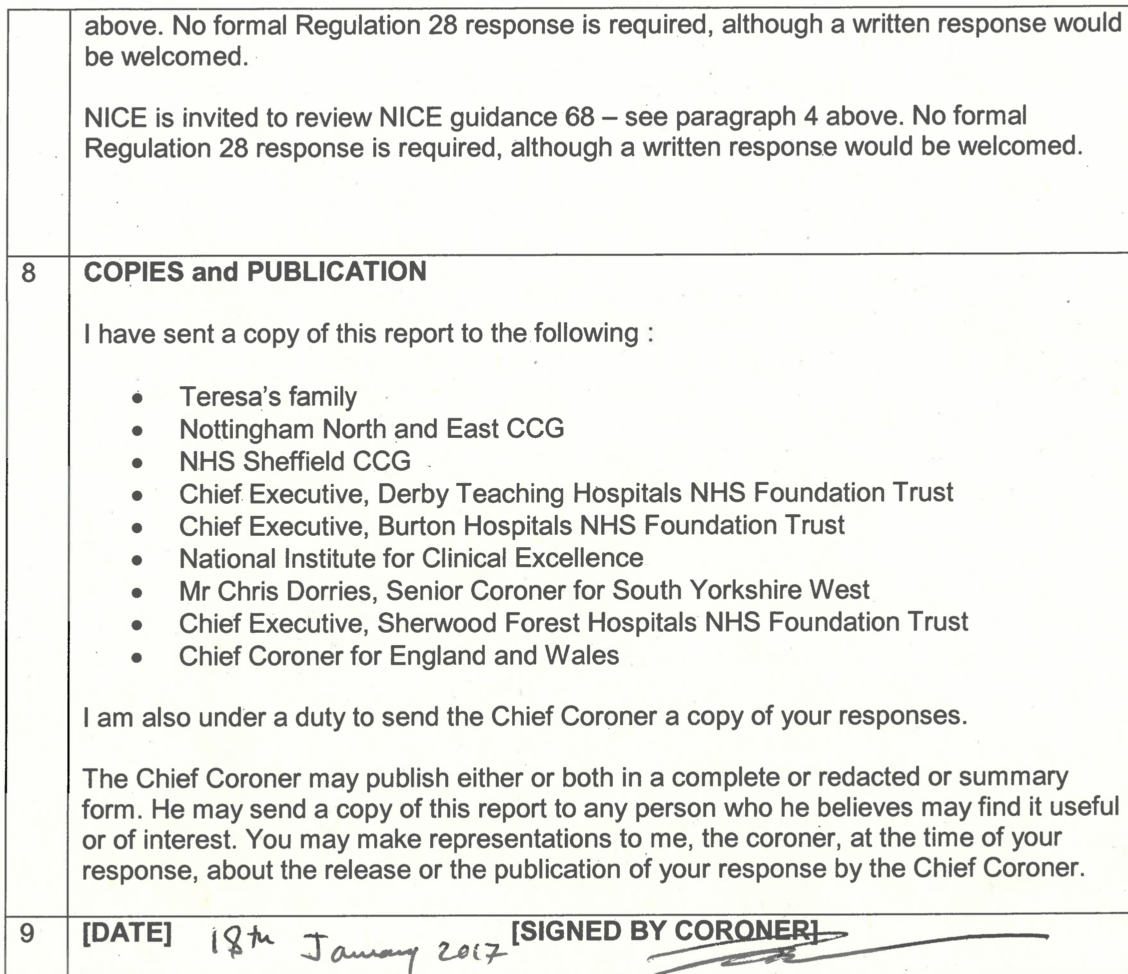
We also heard that the Mid Trent Critical Care Network policy (November 2014) allows admission for emergency neurosurgery regardless of critical care bed availability only in 3 specified clinical scenarios (which would not include Teresa). The Mid Trent area does not include Sheffield.

Crucially, it was clear that there was no written protocol in place to set out a clear pathway for referral for emergency neurosurgery. The medical registrar at KMH was left to try to 'broker a deal' with multiple neurosurgery units, and valuable time was lost in this process. I made it clear at the inquest that the efforts of the medical registrar, are to be praised for all he tried to do to facilitate this.

There are clear advantages to surgery and post-operative management happening at the same centre. In Teresa's case, that would have meant 1 transfer rather than 2, but the most time critical step which Teresa required was neurosurgery. By the time a decision was made to transfer her regardless of critical care bed availability, it was too late for her to have the operation.

	Other concerns 1. Radiology access I reviewed the neurosurgery contract with NHS England. This states clearly that all neurosurgical units must have immediate and direct web-based access to critical diagnostic imaging in all referring units. Whilst we heard that Nottingham now has this arrangement with most of its referring hospitals, the exceptions to this are Derby and Burton hospitals. Sheffield does not have immediate access with any of its referring hospitals. These hospitals are now invited to review this arrangement as a matter of urgency. 2. Input from stroke physicians I found it likely that Teresa did fit the criteria for NICE CG 68 ('Stroke and TIA in over 16s : diagnosis and initial management') from the time of her first CT scan. Although she was subsequently considered for hemicraniectomy, in line with that guidance, the evidence of [redacted], a senior stroke physician at KMH, was that input from a stroke physician would have been useful. The type of stroke Teresa suffered is a rare type and [redacted] said that patients with this condition can deteriorate suddenly. The neurosurgery witnesses agreed that this would have been useful. Interested Persons are invited to review stroke care pathways to take this into account, and NICE is invited to reconsider NICE 68 in this respect.
5	**CORONER'S CONCERNS** During the course of the inquest the evidence revealed matters giving rise to concern. In my opinion there is a risk that future deaths will occur unless action is taken. In the circumstances it is my statutory duty to report to you. I have identified a key concern in this case (the absence of a clear pathway for referral for life-saving neurosurgery) and two further concerns (regarding diagnostic imaging, and input from stroke physicians into appropriate cases). The Way Forward On the final day of the inquest, we heard evidence from [redacted], ICU consultant , [redacted] consultant neurosurgeon in Sheffield, and [redacted] consultant neurosurgeon in Nottingham. [redacted] told us about a proposed new way of working, to reduce the risk of a similar occurrence. He advised us that his proposal is the start of the process, but that he had discussed this with his clinical director. In essence, the proposed system would mean that, if a decision is made that a patient needs life-saving surgery, they should be transported immediately to their local unit. This may mean that a critical care bed would have to be found for that patient thereafter – even if that requires extensive 'bed-juggling' (as I termed it) by critical care doctors – or in extreme cases, treatment post-operatively being offered elsewhere. The proposal is that this should cover all types of life-saving surgery – not just neurosurgery. The advantage of this system is that it avoids all uncertainty for a hospital referring a

	patient. Teresa could have been prepared for immediate transfer for surgery to a clearly defined destination, without delay, if this protocol had been in place. This is clearly vital for patients whose priority is life-saving surgery. It was proposed – and agreed by the 3 witnesses referred to above – that the decision as to whether proposed surgery is 'life-saving' or not should be a matter for the consultant surgeon – who would routinely be contacted for a new admission in any event. I believe that is right for the reasons suggested, but also because no protocol can ever cater for every situation – sometimes a senior decision needs to be made to deviate from a protocol, for common sense reasons and in the best interests of a patient. This is of course just the start of the discussion. There will need to be input into the new policy/ies by surgeons and critical care doctors. I am aware that the Mid Trent Critical Care Network policy is also undergoing review. This will need to be consistent with any new approach adopted. It was agreed that close working between Nottingham and Sheffield is to be encouraged, to adopt policies that are consistent. I also appreciate that, as with any big change, there will need to be careful auditing to make sure that this does not disadvantage other patients or not work well for some other reason. It is clearly vital that any new system of working – for surgeons and critical care at both trusts - be put in writing. It has been agreed that both Nottingham and Sheffield will work together on this, with [redacted] leading the process, and providing a response to my report from NUH by the end of March this year. Sheffield's response will be required by the same date. In those responses, I will also want to hear about the proposal for communicating this new approach to all referring hospitals.
6	**ACTION SHOULD BE TAKEN** In my opinion action should be taken to prevent future deaths and I believe you have the power to take such action.
7	**YOUR RESPONSE** For the avoidance of doubt, and given the multiple recipients of this report, I require formal responses as follows : • Nottingham University Hospitals NHS Trust and Sheffield Teaching Hospitals NHS Foundation Trust – response regarding the 'key concern' and 2 'other concerns' referred to in paragraph 4 above. They should also address how any new policy/ies are to be communicated. Response by 31 March 2017. • NHS England – to consider the 'key concern' referred to in paragraph 4 only. By 30 June – ie 3 months after Nottingham and Sheffield's response – predominantly to consider whether this should be a country-wide policy. I, the coroner, may extend the period. Your response must contain details of action taken or proposed to be taken, setting out the timetable for action. Otherwise you must explain why no action is proposed. Derby and Burton Hospitals are invited to review radiology access – see paragraph 4



	above. No formal Regulation 28 response is required, although a written response would be welcomed. NICE is invited to review NICE guidance 68 – see paragraph 4 above. No formal Regulation 28 response is required, although a written response would be welcomed.
8	**COPIES and PUBLICATION** I have sent a copy of this report to the following : • Teresa's family • Nottingham North and East CCG • NHS Sheffield CCG • Chief Executive, Derby Teaching Hospitals NHS Foundation Trust • Chief Executive, Burton Hospitals NHS Foundation Trust • National Institute for Clinical Excellence • Mr Chris Dorries, Senior Coroner for South Yorkshire West • Chief Executive, Sherwood Forest Hospitals NHS Foundation Trust • Chief Coroner for England and Wales I am also under a duty to send the Chief Coroner a copy of your responses. The Chief Coroner may publish either or both in a complete or redacted or summary form. He may send a copy of this report to any person who he believes may find it useful or of interest. You may make representations to me, the coroner, at the time of your response, about the release or the publication of your response by the Chief Coroner.
9	**[DATE]** 18th January 2017 **[SIGNED BY CORONER]**