

Tracheostomy care in 2015: Are we on the right trach?

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Journal of the Intensive Care Society
0(0) 1–4
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DOI: 10.1177/1751143714567038
jics.sagepub.com



Tracheostomy is a conventional and time-honoured medical procedure. Indeed, the ancient Egyptians (c. 3500 years BC) were acquainted with it.¹ Whilst it is a feature of modern medicine that *new* drugs, *new* interventions and *changes* in practice are subject to forensically detailed scrutiny and the focus of much elaborate science,² sometimes the more established treatments and their familiar complications are just accepted as ‘the way things are...because it’s always been like that.’ Their ‘issues’ are hidden in plain view.

All the more so when the established treatment in question has no obvious alternative. For many years, everyone knew problems occurred with tracheostomies, but perhaps we affected collective *sang froid* about such ‘unfortunate events’, and no one took the time to really quantify them.

The surgeons are traditionally the ‘trache doctors’. They had long enough to ask insightful questions and measure outcomes, but they devoted their enquiries to what they saw as the cutting edge. It is easy to blame them for looking the other way (who could resist). However, percutaneous tracheostomy techniques were introduced in 1985³ and for the next 20 years we largely accepted their assumptions, in that almost the only question we (intensivists) clamoured to ask was ‘is our operation as good as theirs – and preferably better?’⁴

Maybe this was inevitable; it was *our* cutting edge, after all. Thankfully, we appear to have got that out of our system and are now addressing the deeper questions from which our gaze was averted all along: ‘what are the problems with tracheostomies and how can we make them better?’

This effort is all the more important, as patients and their relatives find it difficult to understand when things go wrong because of deficiencies in basic care in conditions we know well and, indeed, create. Likewise Her Majesty’s Coroners.⁵

Summer 2014 saw the publication of a new National Confidential Enquiry into Patient Outcome and Death (NCEPOD) study, *On the Right Trach? A review of the care received by patients who underwent a tracheostomy*.⁶ The idea was proposed to NCEPOD by the Association of Anaesthetists of Great Britain & Ireland. It is the latest in a series of startling pieces of evidence from the UK^{6–8} pointing to the dangers of

tracheostomy and the associated condition of *neck-breathing* which, after five millennia, finally attempt to measure our performance in managing *this entirely iatrogenic state*.

Conducted over 11 weeks in spring 2013, and involving all UK hospitals (NHS and independent) – except in Scotland – which undertake either elective or emergency adult tracheostomy, it upholds the excellent standards we have come to expect from NCEPOD. It is as thought-provoking as it is wide-ranging. If science is the art of measurement, then tracheostomy management is at last joining the arena of medical science.

The scene for its production was set by the earlier seminal work using the NPSA dataset⁷ and also by the document which now sits front-and-centre in all airway discussion and discourse: *NAP4*.⁸ Even to those who regarded themselves as amongst the *airway cognoscenti*, *NAP4*’s *bombshell* – that when adjusted for evidence-based denominator data, the *ICU may be upwards of 50 times more dangerous in terms of airway-related mortality/brain damage than general anaesthetic practice* – came as a revelation. Further, what surprised many was that *half* the *NAP4 ICU deaths/brain damaged patients were tracheostomy complications*.⁹

On the Right Trach’s aim was to explore factors surrounding the insertion and subsequent management of tracheostomies in ICUs and wards, to highlight how care can be improved throughout the patient journey. The methodology used is common to most NCEPOD reports and it uses data exclusively gathered prospectively. This dataset was distilled from five questionnaires: *Insertion*, *Critical Care*, *Ward Care* for the first 30 days, *Ward Organisation* and *Hospital Organisation*. Local reporters were appointed in ICUs, theatre departments and for the general ward areas. There were 2546 cases included.

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Return rates were high, e.g. 219 out of 237 hospitals performing tracheostomy (92%) returned organisational questionnaires, and 2199 insertion questionnaires were returned (86%). Expert assessors reviewed all returns and 402 selected sets of case notes were scrutinised in detail. The subsequent report runs to 153 pages, with 25 general and six principal recommendations.

Significantly, it was no accident that the latest iteration of the Intensive Care Society's (ICS) own standard for tracheostomy management¹⁰ was published contemporaneously with *On the Right Trach*. We believe that these papers complement each other and that practitioners should read them in tandem to derive the full benefit of both.

So what does NCEPOD: On the Right Trach? tell us?

For the first time, we have an accurate estimate of the number of tracheostomies performed. In the 11 weeks of the data collection, 2546 tracheostomies were performed which allows us to extrapolate: c. 12,000 pa (62% males). **Intensivists perform the clear majority of these procedures: 69.6% were percutaneous (PT)** with the remaining third inserted surgically (ST). The most common admission diagnosis was respiratory disease (32%). As part of the study, hospitals were asked how many tracheostomies they performed annually. Only 85% provided an answer to this request and in 54% of these, this was an estimate. Office of Population Censuses and Surveys procedure codes exist only for STs and NCEPOD urges Trusts to create PT codes to address this anomaly to facilitate audit and clinical monitoring.*

Organisation of care

The report looked at whether hospitals had trained 'Tracheostomy Leads'. There was a **medically** trained clinical lead in 75/219 (34%) and a **non-medically** trained lead in 51% of hospitals (they could have both). Of the doctors in this role, most were intensivists or anaesthetists. Clearly, intensive care specialists are the dominant professional group in this area of practice. It is noted that there is also a clear trend to centralise Head and Neck specialists and services. This means that in most Trusts the burden of responsibility, not only for insertion but also for the ongoing package of care, now falls, we believe, squarely on us to deliver, coordinate and lead. This is in our own self-interest: who picks up the pieces of care gone wrong? It is also in-keeping with the spirit of Comprehensive Critical Care¹⁰ and is the ICS view.¹¹

The ICS document¹¹ is unequivocal in calling for this leadership role to be recognised and funded. *On the Right Trach?* fails to make such a clear recommendation and this omission, in our opinion, is unfortunate in a document whose own introduction claims its

aim is to be 'an amplifier for professional voices' who must make the cases of need in an NHS scarce of resources.⁶ This lacuna in the suite of recommendations is perhaps odd, given that leadership – or its absence – is very likely linked to several other key issues highlighted in the report.

For instance, **42/174 (19.4%) of hospitals had no policy to manage blocked or displaced tubes**, and staff training in the management of blocked/displaced tubes was not done in 28% of hospitals. Both these deficiencies are in clear contravention of accepted standards of care.^{10,12} Lack of training was mentioned as one of the most common contributory factors in the NAP4 report.⁸ We think both these cornerstones of care¹³ are much more likely to occur and become embedded in an institution's 'governance DNA', if there is a named and motivated lead who can own, develop and audit a comprehensive package of care.

Revealingly, **multi-disciplinary team (MDT) audit occurred in just 21% of units**. Only 36% of hospitals have a protocol for the management of neck breathers who present as an emergency; the report does not specify how many Accident & Emergency Departments train their staff to deal with this eventuality. Acutely ill neck breathers are at the extreme reaches of vulnerability and the potential to fall between the stools is glaring, so appropriate initial assessment and planning is crucial.

Hospitals offer numerous inpatient services, which often behave like individual silos of care: respiratory, neuro, Rehab, ENT, maxillo-facial, etc. Neck-breathing patients' clinical problems, in contrast, can span several areas of specialist interest. Most Trusts have two to four 'trache wards' where trained nurses and other members of the MDT are concentrated. This brings 'at risk' patients and their carers together and aims to ensure 24/7 'trache-competent' care. Such concentration of expertise is key to quality care. Negotiating individual silos and cutting across single specialty interests is a real test of leadership, but appears to these authors to be central. The NCEPOD report highlights that 15/208 hospitals cared for tracheostomised patients in more than 10 ward areas; some of these were district general hospitals. We believe no effort should be spared in minimising the number of locations where these vulnerable patients are looked after.

One innovation suggested by *On the Right Trach* is the use of 'tracheostomy passports'. These document the history of a patient's tracheostomy from initial indication to discharge (from hospital) planning. This facilitates audit and clear communication in protracted patient journeys.

Further, NCEPOD report authors always ask their assessors to identify areas having 'room for improvement' as issues relating to (i) clinical care, (ii) organisation of that care, or (iii) *both*. Whereas in most NCEPOD reports the third group is the smallest, in this latest study, the third group is the *biggest*.

Indeed, the Chairman of NCEPOD has opined ‘it is telling in this case the third group is the largest because it points to the close interdependence of training, equipment provision and the organisation of care with the clinical delivery of that care’. In other words, clear evidence of deficient ownership, coordination and *leadership* in some institutions.⁶

Insertion

Tracheostomy is a significant surgical procedure whichever technique is used to perform it. There was disquiet amongst the assessors that aspects of documentation differed sharply, depending on whether surgeons or intensivists inserted them. Almost all the STs were performed using a valid (usually **Form 4**) **consent**; this was the case in **only 49% of PTs**. The General Medical Council and the provisions of the Mental Capacity Act¹⁴ both require a clinician to take appropriate steps to **define a patient’s antecedent wishes, seek advice from colleagues and document those steps and best interests**. **Lack of documented information given to family members** was regarded as **inadequate** preparation for the procedure.

Again, STs utilised **WHO-style checklists**. This occurred in barely **16% of PTs**. This anomaly is difficult to justify, especially since PTs are performed in an environment more suited to acute resuscitation than to surgery. Preparation in such circumstances is surely even more important. **A model checklist is included as an appendix** and it is to be hoped that practitioners avail themselves of it. There can, nowadays, be little excuse for not ensuring adequate documentation for what is almost always a planned procedure.

With regard to the technical details of PT insertion, 95% were performed by consultants or senior trainees, pointing to ICM’s hands-on approach and commitment to junior training. Hippocrates warned against performing ST to avoid fatal damage to the carotid arteries but thankfully nowadays, ultrasound (US) has an established role in advanced airway management.¹⁵ Intensivists appear to be in the vanguard of airway US, with fully **33% PT insertions utilising US**, mainly to avoid damage to vascular structures.

Society’s trend to obesity is reflected in the data: **62% of patients having a tracheostomy were overweight or obese**. Body mass index (BMI) is not a universally sound indicator of airway problems, especially in women.¹⁶ Thoughtfully, the study design did not rely on BMI to address this issue. The insertion questionnaire pragmatically asked operators whether the patient’s neck was considered difficult at the time of insertion; 45% of those whose BMI exceeded 30 were considered to have a difficult neck, yet **only 10.8% of the obese had anything other than a standard length tracheostomy tube (TT) inserted – mainly 8.0mm internal diameter**.

This **reliance on such standard TTs, even in large, potentially difficult patients** rightly concerned the assessors. They perceived a lack of appreciation amongst intensivists that **adjustable-flanged TTs with inner canulae are now widely available**, including for initial insertion. That **standard TTs are not universally suited to all patients** has been noted before.⁸ As if to emphasise this undue reliance, only 15/89 obese patients had a non-standard TT inserted at first tube change.

Most tracheostomies are inserted to wean patients from ventilators and most such people have flexible necks and adjust the position of their head and neck as they wean, mobilise and rehabilitate. Technology now permits them to have **TTs as adjustable and flexible** as they are and NCEPOD’s call for more appropriately shaped TTs should be heeded.

The advisors were satisfied that the timing of insertion was appropriate in 92% of cases, but 45% were inserted within seven days of ICU admission. The accompanying graph of insertion day, however, has a prolonged tail. The study did not look for complications of prolonged translaryngeal intubation.¹⁷ TracMan¹⁸ demonstrated that *early* tracheostomy has little advantage; we look forward to studies which identify **whether significantly delayed insertion is harmful**.

Summary

That apparently suboptimal tracheostomy care is not just a UK issue is revealed by the development of the innovative *Global Tracheostomy Collaborative*, which is a world-wide quality improvement initiative consisting of community nurses to Harvard professors of head and neck surgery – all united in their enthusiasm to end preventable tracheostomy-related mortality and morbidity. The Global Tracheostomy Collaborative saw its European launch in London, September 2014.¹⁹ It warrants the attention of the Critical Care community.

Finally, in the second decade of the 21st-century, the focus of tracheostomy care has shifted from how to put one in to all encompassing organisation of care, technique, audit of current practice and so what was previously ‘unseen’ is being thrown into stark relief.

This NCEPOD report highlights the potential for avoidable complications of tracheostomy care. We believe that it shows us where the problems are. Together with the comprehensive implementation of the latest ICS guideline¹⁰ and thorough adoption of resources like the National Tracheostomy Safety Project,¹² we should see an impressive reduction in avoidable mortality and morbidity. This process calls out for leadership from intensivists. Many improvements can be seen as low-hanging fruit. Others require the hard-slog of training, audit and ownership, but our experience is that, given sufficient leadership, NHS hospitals have the dedicated multi-disciplinary staff to deliver care suited to the modern age. The remit of NCEPOD is to ‘improve

standards of medical and surgical care for the benefit of the public'. The authors of *On the right trach?* should be congratulated on giving the profession a tool worthy of their goal.

The NCEPOD authors entitle their report using the interrogative pun 'On the Right Trach?'

We would answer: 'Er, yes, but there's a long way to go'...

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*The Difficult Airway Society has approached the OPCS to request that a new code specific to percutaneous tracheostomy insertion is created. AH 2015.