

Research Report

Title: Screening adult patients with a tracheostomy tube for dysphagia: a mixed methods study of practice in the United Kingdom

Running head: Dysphagia screening in patients with tracheostomy tubes

Aeron Ginnelly and Nan Greenwood

This is the peer reviewed version of the following article: Ginnelly, A. and Greenwood, N. (2015), Screening adult patients with a tracheostomy tube for dysphagia: a mixed-methods study of practice in the UK. International Journal of Language & Communication Disorders. , which has been published in final form at <http://dx.doi.org/10.1111/1460-6984.12205> . This article may be used for non-commercial purposes in accordance with [Wiley Terms and Conditions for Self-Archiving](#)."

Abstract

Background: Patients with tracheostomy tubes are at risk of aspiration and swallowing problems (dysphagia) and because of their medical acuity, complications in this patient population can be severe. It is well recognised that swallow screening in stroke significantly reduces potential complications by allowing early identification and appropriate management of patients at risk (by health professionals), thereby reducing delays in commencing oral intake and preventing unnecessary, costly interventions by speech and language therapists (SLTs).

However, there is no standardised swallow screen for the tracheostomised population and there is a paucity of literature regarding either current or best practice in this area.

Aims: The aim of this study was therefore to investigate current United Kingdom (UK) practice for swallow (dysphagia) screening for adult patients with tracheostomy tubes and to explore and describe health professionals' perceptions of their current practice/current systems used.

Methods and Procedures: A mixed methods approach was adopted, comprising a semi-structured online questionnaire and recorded follow-up telephone interviews. Participants were SLTs, nurses and physiotherapists working with patients with tracheostomies.

Responses were analysed to determine current practice with regard to swallow screening.

Thematic analysis of interviews allowed further exploration and clarification of the questionnaire findings.

Outcomes and Results: Two-hundred and twenty one questionnaires were completed.

Approximately half (45%) of the participants worked in trusts with formal swallow screens, whilst the remainder used a variety of other approaches to identify patients at risk, often relying on informal links with multidisciplinary teams (MDT). In line with current evidence, patients with neurological diagnoses and a tracheostomy were consistently referred directly to speech and language therapy. Only a quarter of questionnaire participants thought their current system was effective at identifying patients at risk of swallowing problems.

Eleven questionnaire participants were interviewed. They highlighted the important role of MDT team working here, emphasising both its strengths and weaknesses when working with these patients.

Conclusions and Implications: Current practice in the UK for screening patients with a tracheostomy for swallow problems is varied and often sub-optimal. Despite the evidence base for enhancing outcomes, MDT working is still perceived as problematic. A swallow screening tool for use with this population, to enhance MDT working and ensuring that practice fits in line with current evidence, may improve patient safety and care.

Keywords: Tracheostomy, swallow screen, adults, mixed methods research

What this paper adds?

What is already known on this subject?

The complications of swallowing problems are widely acknowledged. These complications can be particularly severe in tracheostomised patients due to their high medical acuity. Swallow screening in the stroke population has been shown to reduce these complications by expediting appropriate management. Despite wide acknowledgement of the role of the SLT in the management of swallowing problems in tracheostomised patients, there remains no specific guidance for swallow screening in this population.

What this paper adds

The findings of this research show that current practice in the UK for screening patients with a tracheostomy for swallowing problems is variable, perceived as suboptimal and is not in-line with current national recommendations. The questionnaire responses suggested that only half of participants have locally agreed swallow screens for use with tracheostomised patients and only a quarter of participants felt current systems were effective at identifying patients at risk of swallowing problems/aspiration. Themes from the interviews revealed perceptions of MDT working to be mixed and often reliant on informal networks. Participants also described innovative ways of identifying patients at risk that differ from the traditional swallow screening model. It was acknowledged that this requires increased presence of SLT within the MDT.

Introduction

With advances in medical and surgical care, more patients are surviving critical illness and the placement of temporary tracheostomy tubes can be key in facilitating the patient's recovery. Tracheostomy is not a rare procedure and a recent audit by the National Confidential Enquiry Patient Outcome and Death (2014) estimated that 12,000 patients a year undergo a tracheostomy, but this figure is acknowledged to be an estimate (NCEPOD 2014).

Whilst traditionally the purpose of a tracheostomy was to remediate airway obstruction, such as in head and neck cancer, temporary tracheostomy tubes are increasingly being placed to facilitate weaning patients from ventilation over a longer period of time. Clearly, performing a tracheostomy can be beneficial, however the procedure and presence of the tube itself is associated with secondary complications (Law *et al.*, 1993) such as increased risk of aspiration and swallowing problems (dysphagia) (Shaker *et al.*, 1995).

Dysphagia in turn can lead to: aspiration, aspiration pneumonia, poor nutrition and hydration, reduced quality of life, longer hospital stays, increased likelihood of needing nursing home care and ultimately, increase mortality (Macht *et al.*, 2013). Furthermore, the risks and consequences of the complications of dysphagia are heightened in the tracheostomy population due to their high medical acuity and their underlying respiratory compromise (O'Neil-Pirozzi *et al.*, 2003).

The NCEPOD (2014) audit reported that 51.6% (n= 425) of inpatients with a tracheostomy, had swallowing difficulties, making it the third most common complication associated with a tracheostomy. However, the extent to which the tracheostomy tube causes aspiration and swallowing problems is a subject of much debate in the literature. Recently, the causal

relationship between tracheostomies and swallowing problems has been questioned (Leder and Ross, 2010; Kang *et al.*, 2012). Such authors suggest that the patients' underlying conditions are responsible for the swallowing problems (Leder and Ross, 2010). The NCEPOD (2014) audit therefore concluded that further research into dysphagia identification was needed in this population.

Swallow screening is the first step in identifying dysphagia and aspiration risk and is both quick and minimally invasive. Evidence suggests introducing formal protocols, supported by training, leads to increased compliance with (conducting) swallow screening and reduced chest infection rates (Hinchey *et al.*, 2005; Cichero *et al.*, 2009).

Compliance with swallow screening can be low, but there is limited research conducted on MDT members perceptions of the swallow screening. It may be that by exploring this area further improvements can be made to current practice that will increase compliance. Prompt intervention in the management of dysphagia can prevent costly and life threatening complications such as aspiration pneumonia (Royal College of Speech and Language Therapists, 2014) and the role of speech and language therapists (SLT) with dysphagia management in the tracheostomised population is widely acknowledged (Royal College of Speech and Language Therapists, 2014; Intensive Care Society, 2014). However, there is currently no clinical benchmark for referral and timing of speech and language therapy input in this population. This potentially places patients at risk of the complications of dysphagia and being unnecessarily kept nil by mouth with associated psychological implications. Historically, staining saliva and or drink with blue dye was seen as a convenient and cost effective way of determining the presence of aspiration in patients with a tracheostomy (Cameron *et al.*, 1973) but evidence from the 1990's onwards cast doubt over

the sensitivity and specificity of this technique (Belafsky *et al.*, 2003; O'Neil-Pirozzi *et al.*, 2003). Furthermore, the test cannot detect penetration, [when material enters the airway but does not go below the vocal cords] a clinically significant event indicative of swallow abnormality and it only identifies aspiration and furthermore dysphagia and aspiration are not mutually exclusive Therefore, there has been a move away from recommending the use of blue dye as a screening tool with only one in five SLTs using it (McGowan *et al.*, 2014). Given the blue dye test's limitations and the fact that it is currently unclear how patients with tracheostomies are currently screened, this study aimed 1) To investigate current UK practice for screening adult patients with a tracheostomy for dysphagia and 2) To explore and describe participants perceptions of their current swallow screening process.

Methods

Study Design

A mixed methods approach was adopted incorporating an online semi-structured questionnaire using SurveyMonkey® and follow up open-ended telephone interviews with a purposive sample of the questionnaire participants. Questionnaire findings informed the development of subsequent telephone interviews.

Ethical Approval

Approval was obtained from the Faculty Research Ethics Committee of Kingston and St George's University (Reference No. FREC2014/02/006).

Participants

To be included, participants needed to be practicing physiotherapists, nurses or speech and language therapists working with adults with tracheostomies in the UK. Questionnaire distribution was via clinical excellence networks (CEN) and equivalent professional membership lists, social media and advertising at relevant professional study days. Snowball sampling was utilised for onward distribution of the questionnaire.

Online Survey and Telephone Interview Guide Development

Online survey: Online questionnaires have been used successfully within the allied health professions (McGowan, *et al.*, 2014) making it an appropriate method here. Since no published instrument was available, a self-completion questionnaire was developed from the available literature. One published question was included, with permission (Ward *et al.*, 2007).

An expert panel of four health professionals scrutinised the questionnaire focussing on content and face validity. Following their comments, a revised version was piloted with five healthcare professionals and minor amendments were made.

Semi-structured interviews: Whilst an online questionnaire is a relatively inexpensive method for gaining the views of participants from a wide geographical area, additional semi-structured interviews allowed in-depth exploration of participants' perceptions of their current system for swallow screening. Inclusion of interviews also provided opportunities for expansion and clarification of the of the questionnaire findings. This ensured that specific topics were covered but allowed interviewees to bring up issues of importance to them (Green and Thorogood, 2004). Therefore, semi-structured telephone interviews using a topic guide, developed from the questionnaire findings, were included. Participants were purposefully sampled from the questionnaire participants to cover all three professions. The topic guide was piloted with two participants.

Data collection took place in 2014. Audio recorded telephone interviews were conducted by the first author who also anonymised and then transcribed them verbatim.

Data Analysis

Questionnaire:

Questionnaire data were transferred from Survey Monkey into the Statistical Package for the Social Sciences (SPSS) version 21. Quantitative data were analysed using descriptive statistics. Percentages of responses were calculated relative to the number of participants for that question. Responses to open ended questions were analysed using content analysis (Kumar, 2011).

Interviews:

Interview data were analysed using thematic analysis (Braun and Clarke, 2006). Meanings and categories were identified through thorough reading and re-reading of the interview transcripts. Using an inductive approach, the first author identified and developed themes. These were then developed taking into consideration the relationships between categories (Braun and Clarke, 2006). These were then reviewed and agreed by the second author.

Results

Questionnaire Data

Two hundred and thirty questionnaires were returned. Of these, nine included only demographic information meaning only 221 questionnaires could be analysed. Nearly two-thirds 137 (62%) were SLTs, 45 (20%) were physiotherapists and 39 (18%) were nurses and. The vast majority had received the questionnaire via colleagues (54%) or CENs (44%).

Participant Characteristics

The vast majority of participants 194 (88%) worked in England. Fifteen participants (7%) worked in Scotland, 7 (3%) in Northern Ireland and 4 (2%) in Wales. Degrees (BSCs and Masters) were the most common qualifications.

Comparison between SLTs and physiotherapists showed similarity across most demographic characteristics. Nurses on the other hand appeared to be more experienced being qualified for longer and having worked for longer with tracheostomised patients (see table 1)

	SLTs (%)	Nurses (%)	Physiotherapists (%)
Level of highest academic qualification:			
- Diploma	4 (2.9)	11 (28.2)	2 (4.4)
- Degree	84 (61.3)	13 (33.3)	25 (55.6)
- Masters	45 (32.8)	13 (33.3)	16 (35.6)
- PhD	4 (2.9)	2 (5.1)	2 (4.4)
Length of time practicing (years):			
- Mean	14.8	21.2	13.3
- SD	8.7	9.7	7.5
- Range	37	33	33
Length of time working with patients with tracheostomy tubes (years):			
- Mean	9.52	17.87	11.40
- SD	6.8	9.1	6.5
- Range	26	33	30
Percentage of clinical time spent working with patients with tracheostomy in last year:			
- None	0 (0)	1 (2.6)	3 (6.7)

- 1 – 9%	68 (49.6)	9 (23.1)	11 (24.4)
- 10 – 24%	31 (22.6)	9 (23.1)	10 (22.2)
- 25 – 49%	19 (13.9)	8 (20.5)	14 (31.1)
- 50+%	19 (13.9)	12 (30.8)	7 (15.6)

Table 1. Participant Demographics- Questionnaire

Questionnaire responses

For clarity, the findings are described under the question as presented in the questionnaire

Does the trust/ward/unit/service where you currently work have a locally agreed protocol/guideline for screening patients with tracheostomy tubes for swallowing difficulties? (n= 221)

Trusts were approximately equally split between those with and those without swallow screen protocols or guidelines (45.2% and 44.8% respectively). One in ten participants did not know if there was an agreed protocol/or guideline.

The following questions relate to participants with protocols/guidelines, therefore were only answered by about half the participants (n=93-100).

Which professional groups were involved in producing the swallow screening guideline/protocol? (n = 100)

According to these participants SLTS (83%) were most likely to be involved in producing the swallow screen guidelines followed by half (52%) indicating nursing, 30% physiotherapy and 28% medical staff involvement. One in ten was unaware who developed the guidelines.

Is the swallow screen used with all or only some of the patients? (n=93, 7 missing)

Just over half (56%) reported that all tracheostomised patients received swallow screening.

If only used with some of the patients, please can you describe why. (n = 20, 24 missing)

Content analysis showed the most frequently reported reasons for the guideline only being used for some patients were: Poor awareness of swallow screen protocols or insufficient/lack of training, staff by-passing/ignoring protocol and referral directly to speech and language therapy for high risk patients.

Have you received any training/teaching in conducting swallow screens with patients with tracheostomy tubes? If so, what type of training? (n=46)

The vast majority of participants (82%) reported receiving training in swallow screening. Content analysis of the open ended responses from these participants, revealed the most common training was in-house/informal training by SLTs, followed by attendance at formal courses, such as critical care or dysphagia study days.

Do you conduct the swallow screen? (n = 95)

Half the participants (46%) answering this question conducted the swallow screen themselves. A slightly higher proportion of nurses (58%) reported conducting swallow screens compared to physiotherapists (45%) and SLTs (44%).

On average, how many swallow screens with patients with tracheostomies do you conduct per month? (n = 45)

Here participants were offered categories for numbers of swallow screens per month. Few swallow screens were undertaken per month with similarity across professions (table 2). Overall, nearly nine in ten (87%) participants conducted five or fewer swallow screens

monthly whilst only 13% conducted more than six per month. The maximum was between 11 and 15 per month with only two participants in this category.

	SLT (%)	Nurse (%)	Physiotherapist (%)	Total (%)
Swallow screens per month				
<1	6 (31.6)	5 (35.7)	6 (50)	17 (37.7)
1-5	9 (47.4)	7 (50)	6 (50)	22 (48.9)
>6	4 (21.1)	2 (14)	0 (0)	6 (13)

Table 2. Number of swallow screens conducted per month

The responses for those participants without a locally agreed screening guideline/protocol are presented below (n= 110 – 121).

In your unit what happens with patients with tracheostomy tubes with regard to eating and drinking? (n = 121)

For this question participants were provided with a list of possible responses. Just over a quarter (28%) selected ‘all patients with a tracheostomy are seen by an SLT prior to commencing oral intake’ and a third (30%) selected ‘small amounts of food and fluid were permitted following a team decision and that patients were monitored’. Two in five (39%) selected the ‘other’ category. Content analysis of their descriptions of what happened in

their organisation showed the two most frequently occurring scenarios were; high risk groups were referred direct to speech and language therapy or that the swallow was managed by the MDT and a referral to speech and language therapy was made if problems were identified.

The next question was asked slightly differently for those participants whose organisation did not have a swallow screen (121) and those participants whose organisations with a swallow screen which they conducted it themselves (46). The wording was altered to reflect this. All participants were offered a list of options.

Which signs do you observe for during screening (n= 46)/during oral intake (n=121) to help you make the decision regarding swallow safety/aspiration risk?

As the three professions tended to use the same signs, their responses are presented together (table 3). More than four in five used: ‘patient coughs/chokes after swallowing’ (89%), ‘food or drink is suctioned from the tracheostomy’ (88%), ‘patient has a ‘wet’/gurgly voice after swallowing’ (87%), ‘patients breathing is obstructed after swallowing’ (86%) and ‘wet voice after swallowing’ (84%). The least frequently used signs were: ‘the patient tells you that their swallow is fine’ (13%), ‘the patient tells you that they enjoy the food and drink you gave them’ (9%) and ‘another professional tells you their swallow is fine’ (7%).

	During oral intake (%) n = 121	During screening (%) n = 46	Total (%) n = 167
The patient coughs/chokes after swallowing food or	104 (86)	44 (96)	148 (89)

drink			
Food or drink is suctioned from the patient's tracheostomy	106 (88)	40 (87)	146 (87)
The patient has a wet voice after swallowing food and drink	102 (84)	42 (91)	144 (86)
The patient's breathing is obstructed after swallowing	104 (86)	39 (85)	143 (85)
Wet/'gurgly' voice on talking	101 (83)	39 (85)	14 (83)
The patient has food or drink left over in their mouth after swallowing	93 (77)	38 (83)	131 (78)
The patient drools food or drink from their mouth after swallowing	87 (72)	38 (83)	125 (75)
The patient has a drop in saO2	91 (75)	32 (70)	123 (74)
Blue dye is suctioned from the patient's tracheostomy	0	31 (67)	0
The patient complains of pain/discomfort on swallowing	79 (65)	23 (50)	102 (61)
Hoarse voice	58 (48)	20 (43)	78 (47)

The patient has noisy swallow sounds on auscultation	51 (42)	21 (46)	72 (43)
Slurred speech	52 (43)	20 (43)	72 (43)
The patient tells you that their swallow is fine	17 (14)	4 (9)	21 (12)
The patient says they enjoy the food and drink you gave them	12 (10)	3 (6)	15 (9)
Another professional tells you that their swallow is fine	9 (7)	2 (4)	11 (7)
Other	13 (11)	0	0

Table 3. Signs used during the swallow screen/oral intake, to determine swallow effectiveness /aspiration risk.

Is the tracheostomy cuff always deflated for eating and drinking/when the swallow screen is being conducted?

This information was analysed separately for those participants who had formal swallow screens (n = 46) and those who did not (n = 121). See table 4.

Overall, 50% of participants conducted cuff deflation during swallow screening/eating and drinking, 36% of participants did not always deflate the cuff and 14% did not know if the cuff was deflated or not during swallow screening/eating and drinking.

Is the cuff deflated?	Those who have swallow screens (%)	Those who do not have swallow screens (%)	Total (%)
Yes	32 (70)	51 (42)	83 (50)
No	12 (26)	48 (40)	60 (36)
Don't know/Missing	2 (4)	22 (18)	24 (14)
Total	46 (100)	121 (100)	167 (100)

Table 4. Is the tracheostomy cuff always deflated for a swallow screen/ for eating and drinking?

All participants (221) had the opportunity to answer the question below.

Overall do you think that the process you are currently using is detecting all the patients that are at risk of swallowing difficulties?
(n = 178)

Just over half (53%) thought their current system was not effective at identifying patients at risk of swallowing difficulties and aspiration, over a quarter (29%) thought their current system was effective and 18% did not know if their current system was effective.

Interview Data

Eleven participants were interviewed (five SLTs, four physiotherapists and two nurses).

They came from England, Ireland and Wales and their length of time working with patients with tracheostomy tubes ranged from four to 32 years, their highest qualifications ranged from Diploma to Masters Degree and the majority worked in intensive care. Interviews lasted between 15 and 25 minutes.

Themes

Four themes were identified and are described below. The MDT working theme appeared to underpin the other three themes and is presented last to highlight this.

Anonymised participant quotes with their profession (NS=nurse, PT= physiotherapist, SLT= speech and language therapist) are provided.

Theme 1: Processes in identifying patients at risk

These processes fell into four types; Informal, formal, all tracheostomised patients seen by speech and language therapy and no process.

Informal process

This was the most frequently reported means of identifying patients at risk of swallowing problems. Here, there were no specific guidelines, policies or procedures. Participants relied on their own clinical judgement, experience and knowledge. *“We would liaise with the team that they were with,...and then give them a drink... the tiniest bit and just see, do they leave it in their mouth, any coughing, you know” (PT 1)*. Although there were no formal processes, participants highlighted the need for a gradual approach to the introduction of oral intake. They also mentioned signs to look out for, reinforcing the questionnaire findings. *“We don’t*

just give them steak and chips...there is a sort of walking through water...the nurse offers them a drink and is with them....so it's not just, here's a cup of tea" (NS 2).

Formal process

Here participants described a formal, policy or guideline based screening processes. Clear guidance was provided on when and how to conduct screening and the signs clinicians should be looking for. Criteria were provided for referral to SLT and when to start oral intake. *"There are three parts to the screen...Part one is looking at cuff deflation and phonation....if they're not achieving any voice on cuff deflation then they are referred to speech and language therapy.....Stage two.....given some blue dye on the tongue to see if they are aspirating their secretions...Stage three...give the patients some blue dyed water" (SLT 1).* Four of the six participants with a formal system, described using blue dye as part of that screening protocol.

All patients with a tracheostomy tube seen by speech and language therapy

Two participants described how all patients with a tracheostomy were referred to speech and language therapy irrespective of potential risk for swallow problems *"With regard to....erm taking stuff by mouth, they would all be assessed by speech and language" (NS 1).* One of the participants indicated that this was because *"They've all got swallow problems because of theseverity of the patients that come to us" (SLT 2).*

No identified processes

Here, participants were uncertain how other MDT members decided which patients were referred to speech and language therapy or were to commence oral intake. One participant described identification of patients at risk as *"a little bit like a lottery" (SLT 4),* resulting in

SLTs seeing some patients who do not actually need a speech and language therapy swallow assessment, whilst missing some patients that did.

Theme 2: Patient Safety and Wellbeing

Supporting the questionnaire findings, interview participants also usually reported that high risk patients (e.g. patients with neurological disorders) were referred directly to speech and language therapy thereby arguably making them least at risk. *“If they were a head injury then we would refer to speech and language therapy straight away” (PT 1).*

Screening in this population was seen positively in terms of patient wellbeing, as it reduced the time patients waited to begin eating and drinking. *“We didn’t want...every patient ...who had a tracheostomy...to go to speech and language therapy because it delayed an important process for them which was getting a drink” (NS 2).* Without a screening process all patients had to be referred to speech and language therapy which could lead to delays in eating and drinking. *“If SLT are not available, if they’re swamped...sometimes people are left fasting for a day or two...when there may possibly not be any issues” (NS 1).*

Many participants were dissatisfied with their current system and believed it was not detecting all patients at risk of swallowing problems and aspiration. Some thought this was a direct failing of the screen. *“It was felt that a lot of patients were not being appropriately referred to speech and language therapy, they passed the screen but still had an underlying dysphagia”. (SLT 1).* Others reported it was more to do with how the screen was being applied or adhered to in the context of the MDT. *“I think that they’ll just give them a drink of water, they won’t be tending to use the swallow screen” (SLT 5).* One SLT suggested that because of her lack of confidence in her nursing colleagues, it was faster and safer to assess

the patient herself. *"I just thought it would be quicker to go and do it myself"* (SLT 5). This was perceived to have a direct impact on patient safety and wellbeing.

Theme 3: Balancing Risk against Resources

Most participants acknowledged that their current system was imperfect but that they were doing the best job possible, with the resources available, in order to maintain patient safety and wellbeing. With low risk patients, the use of a formal screening tool was described as a way of maximising patient safety. In the absence of adequate speech and language therapy resources, one physiotherapist saw herself conducting swallow screens as a safety measure. *"I'm doing something about it, it's got to be safer trying to assess it [swallow] than not"* (PT 2).

The lack of resources was particularly apparent when discussing training. Participants frequently expressed frustration at the insufficient resources available for training. *"There's no proper underpinning, you know teaching around swallow assessment"* (PT 2). This impacted on the team's ability to use the swallow screen appropriately and refer patients. *"It's great to have the screening tool there but if people aren't using it or know how to use it then it's not going to work"* (SLT 1).

The need to balance resources with potential risk, meant adopting alternative ways of identifying patients at risk of swallowing problems which at the same time, educated teams, and raised the profile of speech and language therapy amongst the MDT. *"Just by being there and by being on MDT [meeting] every week, and even yesterday it's like four or five patients were bought up"* (SLT 5). The following participant described how she felt that a swallow screen was now unnecessary because of her presence at meetings/ward rounds.

“There are other ways that we are effectively getting to see the patients that we need to...without using a screen” (SLT 5).

Integrative Theme: MDT Working

MDT working was an overarching theme cutting across the other themes.

The importance of enhanced MDT relationships was highlighted. All three professions using formal swallow screens described how it empowered nurses providing them with a tool they could use as evidence for decision making *“They [medical team] can be trying to push the nurses to do things...so if they’ve got something to follow....they can actually show evidence” (SLT 4).*

When an informal process was in place, it was usually thought to work well because of long term, well established relationships between the SLT and MDT, involving respect and trust in each other’s knowledge and skills. This led to confidence that although informal, the system was accurately identifying all patients. *“I get the referrals I need to see....I’ve been working down here 11 years...so we’ve got that relationship, they know me...I trust them...and they see me as part of the team” (SLT 4).*

The need for a visible presence on ward rounds was frequently mentioned by the SLTs as important in order to be perceived as a valid MDT member. *“Swallowing is not at the forefront of their minds...if we’re present there on the ward rounds and things...well they see the face and they think ‘Ok we’ll refer you the patient’” (SLT 1).* However, this was constantly balanced against the availability of resources and funding. *“I’d love to be able to go to the ward rounds and pick up people that way...but I’m not funded by the unit” (SLT 4).* Here the

importance of MDT training and relationships was seen as vital to maintaining patient safety and wellbeing.

By contrast, poor MDT cohesion, lack of professional boundaries and differing opinions about sharing responsibilities for swallow screening amongst the MDT were perceived to lead to poor patient care. This resulted in some MDT members failing to follow swallow screening protocols/guidelines. Sometimes this was seen as a result of lack of awareness highlighting the need for further training. *"I generally feel like the consultants could do with a bit of teaching...to be aware of how the screen works"* (SLT 1). On other occasions, it was perceived as being due to differences in working cultures between the disciplines. *"The consultants, I don't know...they don't like following guidelines do they, they like doing their own thing"* (PT 4). At times, nurses, were described as caught in the middle. *"They'll [doctors] come down and go 'get them eating and drinking, they're fine...they don't need SALT [speech and language therapy], just carry on' and the nurse will go 'no actually I'd rather just get confirmation'"* (SLT 4). In contrast other MDT members were excluded, thus leading to diverging/different clinical decisions being made within the team. *"By having that screening process and doctors essentially not being part of that, they feel they need to make the decision, so that's the downside of it"* (NS 1).

In addition, SLTs appeared reluctant to hand over responsibility for swallow screening. *"I still think that the actual doing the swallow assessment out of hours and at the weekend, I'm still a bit precious about that"* (SLT 4). This was at times due to a lack of confidence in other MDT members' ability to conduct the job competently. *"I'm not sure how equipped they are generally to be able to make those sort of judgements"* (SLT 5). This is related to training needs within the team. In contrast, other professionals were happy to share responsibility

within the team. *“If a couple of nurses were more competent at doing it at weekends when one of us isn’t here, that would be good” (PT 4).*

Discussion

Although there is currently no specific guidance in the UK with regard to swallow screening in the tracheostomy population, evidence from the non-tracheostomised population suggests the implementation of screening protocols can reduce aspiration events (Hinchey *et al.*, 2005) and a formal screening protocol increases compliance (Hinchey *et al.*, 2005). It would therefore seem advantageous, in this medically fragile population, to have a formal swallow screen. The Intensive Care Society (2014) recently recommended that *'all patients with a tracheostomy should have their swallow assessed once the decision to wean from the ventilator has been made'* (Intensive Care Society, 2014, p.11), but the findings here suggest this is currently not the case. This study found that only half the questionnaire participants worked in organisations with swallow screening protocols/guidelines. This is in contrast to the findings of a recent audit which reported that 95% of trusts in the UK had *'procedures and/or tools for checking safe swallow'* (NCEPOD, 2014 p. 40).

It is of concern that only about a quarter of participants (29%)/three in ten participants indicated that their current swallow screening process was effective at identifying patients at risk of aspiration and/or swallowing problems. This is consistent with literature regarding the accuracy and reliability of both the blue dye swallow screen (Belafsky *et al.*, 2003; O-Neil-Pirozzi *et al.*, 2003) and swallow screens in general (Bours *et al.*, 2009). Given that swallow screening is mentioned in the Intensive Care Society (ICS) Core Standards for ICU (2013) and the purpose of a swallow screen is to keep patients safe and prevent complications, to allow patient to eat and drink as quickly as possible and avoid unnecessary use of resources/over investigation of patients, this is an important finding. It indicates that

teams are not consistently carrying out swallow screening and even if they are, only a quarter are satisfied with their current system.

The findings from this research also indicated that participants want more formalised objective processes in place. However, even with formal swallow screens, adherence seemed to be problematic at times amongst MDTs. SLTs described needing to keep a physical presence in teams in order to maintain awareness and compliance. This contrasts with the findings of Hinchey *et al.* (2005) where compliance amongst stroke MDTs increased with the introduction of a formal swallow screening protocol and education. However, Hinchey *et al.*'s, (2005) study was conducted on stroke patients, a population with a well-recognised risk of swallowing problems and established and evidence based guidelines for their management. The role of the SLT is also more established in this patient population and the MDTs working with them. In contrast, the presence of SLT and the recognition of swallowing problems and what SLT can offer in the tracheostomy population, especially the intensive care population, is relatively new, with only half of SLTs feeling they have a defined role within their MDT when working with tracheostomised patients (Ward *et al.*, 2012). A factor that further compounds this situation, is the majority of SLT services are not funded for this client group (RCSLT, 2014).

The current study also found that swallow screening guidelines were mostly developed by SLTs. Whilst, inevitably SLTs need to provide their expertise in producing the swallow guidelines, this suggests that SLTs are seen as dominant in this area. Perhaps, if compliance and engagement with such tools is to be increased, other members of the MDT need to have greater involvement in producing and implementing them. The perceived low

physiotherapy involvement was surprising. Physiotherapists are involved in tracheostomy management with regard to respiratory function and physiotherapists in the UK often work closely with SLTs because of the close interplay between breathing and swallowing. This low involvement warrants investigation.

Very few participants from the three professional groups responding to the survey, conducted more than five swallow screens a month. Such infrequent swallow screening may have implications for gaining and maintaining competencies. Research with nurses (Cichero *et al.*, 2009) highlighted that education is critical to improving their knowledge around swallowing and identifying patients at risk of aspiration. This is supported here with training needs being highlighted in the telephone interviews. All participants indicated the desire to either receive or conduct more training in swallow screening or identifying patients at risk.

Of particular interest in this study, is the finding that nearly half (45%) of SLTs reported conducting swallow screens. This large proportion was unexpected, as although the diagnosis and management of dysphagia falls to SLTs, one of the purposes of a swallow screen is to identify patients that do not have dysphagia and therefore do not require a full clinical swallow assessment conducted by an SLT. Therefore it does not make economic sense for the SLT to be the profession conducting swallow screens. It could also be argued that unnecessary use of limited speech and language therapy resources is unethical. A further reason why swallow screening is performed is to prevent patients from having to wait for an SLT to be available. SLT's availability is currently mainly confined to standard working hours during the week, again it does not make sense for the SLT to be the profession that conducts the swallow screen.

In line with the current evidence (Ding *et al.*, 2005), a higher percentage of clinicians in this study said they would always deflate the cuff for eating and drinking or for a swallow screen than would not. However, the percentage of clinicians indicating that they would not always deflate the cuff was still relatively high (36%). This is of concern, as when the cuff is inflated it is impossible to determine aspiration risk. A possible explanation for this finding is that in some cases, especially long term patients or palliative patients, eating with the cuff up is seen as an appropriate management technique to increase comfort and quality of life (McGowan *et al.*, 2007). Unfortunately, the questionnaire did not have scope to capture this information.

This research identified that clinicians used both formal and informal approaches to swallow screening. Informal processes for identifying patients at risk were described as working well due to the relationships with the MDT. In this instance, it seems that the tacit understanding and respect for what each professional can bring to supporting patients with dysphagia allowed the informal screening process to work. However, there are dangers with relying on 'unspoken' relationships for such an important aspect of patient care, such as when there are workforce changes. A process that is so crucial to maintaining patient safety and wellbeing should not be dependent on individuals and should be developed so that all appropriate members of the MDT can identify patients at risk, ensuring continuity and safety of care.

Another interesting finding reported by SLTs was the use alternative ways of identifying 'at risk' patients, either in conjunction with or instead of a swallow screen. These included attending MDT ward or rehabilitation rounds. This introduces interesting questions for the speech and language therapy profession. Should efforts and resources be concentrated on

developing and validating a screening tool? Alternatively should resources focus on increasing the profile of speech and language therapy with the MDT by gaining more funding for designated posts working with this population and attending regular MDT meetings?

Multidisciplinary working was an over-arching theme in the interviews. The apparent difference in team dynamics, which contributed to the success or failure of the process used was striking. Good MDT relationships often appeared dependent on personal, longstanding relationships. Of particular interest, were perceived roles and role boundaries described by all participants. Doctors were frequently described as not wanting to follow guidelines but instead '*doing their own thing*' (PT 4). This hierarchy within MDTs is acknowledged in the literature and recognised to impede effective team working and patient care (Clarke, 2010). It was reported in the present study that nurses often felt '*stuck in the middle*' (NS 2) but that having a swallow screen provided them with evidence to find their 'voice' in the team. This would suggest, the presence of a swallow screen would be beneficial to nurses working with this population and could improve MDT working and patient care. Conversely, the presence of a swallow screen, at times led to the exclusion of certain MDT members. Participants thought doctors sometimes felt excluded from the process and would then make uni-lateral decisions to bring the patient's care back under their control. This is supported by wider literature on MDT working, with studies finding that doctors usually have more dominant roles in teams (Atwal and Caldwell, 2005).

The importance of MDT working in improving outcomes in this population is supported by the literature (de Mestral *et al.*, 2011). The National Tracheostomy Safety Project Manual (2013) lists who would ideally make- up the tracheostomy MDT and discusses the importance of MDT agreement in managing this population. Despite this, Ward *et al.*, (2012) found that only one third of SLTs felt they worked in an optimal team for managing patients with a tracheostomy and this is supported by the findings of this research. Interestingly, in the current study, SLTs did not necessarily want to relinquish control over swallow screening whilst sometimes nurses did not want to take on this role. Cichero *et al.*, (2009) found in their study that nurses welcomed a screening tool that reduced their responsibility for establishing oral intake in patients. Perhaps the reluctance exhibited by the nurses in the present study was because of the frequently less formalised approach to screening where the nurse may feel a greater burden of responsibility.

Less than optimal MDT working in this area has been highlighted in the literature for more than a decade (Ward *et al.*, 2012). Possibly a two pronged approach is required in order to improve timely and accurate identification of dysphagia. Firstly, further research into the risk factors/prognostic indicators that could help predict a pts risk of swallowing problems, this could then lead to the development of a standardised, accurate and reliable swallow screen accompanied by an education package that focuses on the role of the SLT, dysphagia and its complications, such as that developed by Cichero *et al.*, (2009). Secondly, further discussion, research and work needs to be done with clinicians and managers to address the issues preventing a team approach.

Strengths and Limitations

One of the main strengths of this study was the large number of participants (221) from three key professions working with tracheostomised patients. It is the first study to the authors' knowledge that goes beyond determining the prevalence of formal swallow screening tools for tracheostomised patients and goes further to describe differing practices used to identify swallowing problems. By using a mixed methods approach, it enabled much deeper exploration and 'unpacking' of the issues that were highlighted in the questionnaire.

There are several limitations to this study. A higher percentage of SLTs, in comparison to nurses and physiotherapists, completed the questionnaire and interviews, which may reflect the mode of questionnaire distribution or greater professional interest. As currently no professional body holds a list of all professionals that work with tracheostomy, an initial sampling frame was unavailable making snow ball sampling the best approach but also meaning it was not possible to calculate a response rate. However, this approach has also been successfully used by other SLTs conducting survey based research (McGowan *et al.*, 2014) suggesting it was appropriate for use with this project. The findings from this study were divergent from that of the NCEPOD audit (2014) in terms of the use of swallow screens for this population. Only half of participants in the present survey worked in organisations with swallow screens, whilst the NCEPOD reported 95% of trusts in the UK had '*procedures and/or tools for checking safe swallow*' (NCEPOD, 2014 p. 40). Possible reasons for this could be the terminology used. The study here specifically referred to a swallow screening as opposed to the less specific '*procedures and /or tools for checking safe swallowing*'. Secondly it was unclear from the NCEPOD audit which professionals completed the question on swallow screening, leading to potential for inaccuracy in reporting or varied

understanding the concept of swallow screening. Lastly, differences in sampling strategy could have led to the differing results.

Conclusions

The aim of this study was to investigate current UK practice for screening adult patients with a tracheostomy for dysphagia. Results revealed a varied practice in the UK which is not in line with current evidence base or national guidelines. If care and outcomes of patients with tracheostomy tubes is to improve, the identification of patients at risk of swallowing problems needs to become more consistent and less of a 'lottery'. Although this research was conducted in the UK, it is likely that aspects of the findings are relevant to other healthcare systems in the developed world, as the issues identified relate to MDT working and a high risk patient group and will not be specific to the National Health Service.

Further research is needed into what is the best method for identifying patients at risk, taking into account health economics as well as reliability and validity of the screen.

Acknowledgements

The authors are grateful to all groups or networks that assisted in distribution of the questionnaire and the participants that supported the investigation. *Declaration of interest:*

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References

Atwal, A. and Caldwell, K. (2005) 'Do all health and social care professional interact equally: a study of interactions in multidisciplinary team in the United Kingdom', *Scandinavian Journal of Caring Sciences*, 19 (3), pp. 268 - 273.

Belafsky, P.C., Blumenfeld, L., LePage, A. and Nahrstedt, K. (2003) 'The Accuracy of the Modified Evan's Blue Dye Test in Predicting Aspiration', *The Laryngoscope*, 113 (11), pp. 1969 - 1972.

Bours, G.J.J.W., Speyer, R., Lemmens, J., Limburg, M. and de Wit, R. (2009) 'Bedside screening tests vs. videofluoroscopy or fiberoptic endoscopic evaluation of swallowing to detect dysphagia in patients with neurological disorders: systematic review', *Journal of Advanced Nursing*, 65 (3), pp. 477 - 493.

Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3 (2), pp. 77 - 101.

Cameron, J.L., Reynolds, J. and Zuidema, G.D. (1973) 'Aspiration in Patients with Tracheostomies' *Surgery, Gynecology and Obstetrics*, 136 (no issue number) pp. 68 - 70.

Cichero, J.A.Y, Heaton, S. and Bassett, L. (2009) 'Triaging dysphagia: nurse screening for dysphagia in an acute hospital', *Journal of Clinical Nursing*, 18 (11) pp.1649 - 1659.

Clarke, D.J. (2010) 'Achieving team work in stroke units: the contribution of opportunistic dialogue', *Journal of Interprofessional Care*, 24 (3), pp. 285 - 297.

De Mestral, C., Iqbal, S., Fong, N., LeBlanc, J., Fata, P., Razek, T. And Khwaja, K. (2011) 'Impact of specialized multidisciplinary tracheostomy team on tracheostomy care in critically ill patients', *Canadian Journal of Surgery*, 54 (3), pp.167 - 172.

Ding, R., Logemann, J. (2005) 'Swallow physiology in patients with with trach cuff inflated or deflated: a retrospective study', *Head and Neck*, 27 (9), pp.809 - 813.

Green, J. and Thorogood, N. (2004) *Qualitative Methods for Health Research*. London: Sage publications.

Hinchey, J.A., Shephard, T., Furie, K., Smith, D., Wang, D. and Tonn, S. (2005) 'Formal Dysphagia Screening Protocols Prevent Pneumonia', *Stroke*, 36 (9), pp. 1972 - 1976.

Intensive Care Society (2014) *Standards for the care of adult patients with a temporary Tracheostomy*. Available at: <http://www.ics.ac.uk/ics-homepage/guidelines-and-standards/> (Accessed: 4.4.14).

Intensive Care Society (2013) *Core Standards for ICU*. Available at: <http://www.ics.ac.uk/ics-homepage/guidelines-and-standards/> (Accessed 15.7.14).

Kang, Y.J., Choi, K.H., Yun, G.J., Kim, M.Y. and Ryu, J.S. (2012) 'Does Removal of the Tracheostomy Affect Dysphagia? A Kinematic Analysis', *Dysphagia*, 27 (4), pp. 498 - 503.

Kumar, R. (2011) *Research methodology a step-by-step guide for beginners*. 3rd edn. London: Sage publications.

Law, J.H., Barnhart, K., Rowlett, W., de la Rocha, O. and Lowenberg, S. (1993) 'Increased frequency of obstructive airway abnormalities with long-term tracheostomy', *Chest*, 104 (1), pp. 136 - 138.

Leder, S.B. and Ross, D.A. (2010) 'Confirmation of No Causal Relationship Between Tracheotomy and Aspiration Status: A Direct Replication Study', *Dysphagia*, 25 (1), pp. 35 - 39.

Macht, M., King, C.J., Clark, B.J., Benson, A.B., Burnham, E.L., Williams, A. and Moss, M. (2013) 'Post-extubation dysphagia is associated with longer hospitalization in survivors of critical illness with neurologic impairment', *Critical Care*, 17 (3), (no page numbers) Available at: <http://dx.doi.org/10.1186/cc12791>.

McGowan, S.L., Gleeson, M., Smith, M., Hirsch, N. and Shuldham, C.M. (2007) 'A pilot study of fiberoptic endoscopic evaluation of swallowing in patients with cuffed tracheostomies in neurological intensive care', *Neurocritical Care*, 6 (2), pp.90 – 93.

McGowan, S.L., Ward, E.C., Wall, L.R., Shellshear, L.R. and Spurgin, A.L. (2014) 'UK survey of clinical consistency in tracheostomy management', *International Journal of Language and Communication Disorders*, 49 (1), pp. 127 - 138.

National Confidential Enquiry Patient Outcome and Death (2014) *On the Right Trach? A review of the care received by patients who underwent a tracheostomy*. Available at: http://www.ncepod.org.uk/2014report1/downloads/On%20the%20Right%20Trach_FullReport.pdf (Accessed: 4.4.15).

National Tracheostomy Safety Project (2013) *National Tracheostomy Safety Project Manual*.

Available at:

http://www.tracheostomy.org.uk/Resources/Printed%20Resources/NTSP_Manual_2013.pdf

f (Accessed: 12.7.15)

O'Neil-Pirozzi, T.M., Lisiecki, D.J., Jack Momose, K., Connors, J.J. and Milliner, M.P. (2003)

'Simultaneous Modified Barium Swallow and Blue Dye Tests: A Determination of the Accuracy of Blue Dye Test Aspiration Findings', *Dysphagia*, 18 (1), pp. 32 - 38.

Royal College of Speech and Language Therapy, (2014) *Position Paper: Speech and Language Therapy in Critical Care*. Available at:

http://www.rcslt.org/members/publications/publications2/criticalcare_positionpaper_0601

[14](#) (Accessed on 4.4.14).

Shaker, R., Milbrath, M., Ren, J., Campbell, B., Toohill, R. and Hogan, W. (1995) 'Deglutitive Aspiration in Patients with Tracheostomy: Effect of Tracheostomy on the Duration of Vocal Cord Closure', *Gastroenterology*, 108 (5), pp. 1357 - 1360.

Ward, E., Jones, C., Solley, M. and Cornwell, P. (2007) 'Clinical Consistency in Tracheostomy Management', *Journal of Medical Speech-Language Pathology*, 15 (1), pp. 7 - 26.

Ward, E, Morgan, T., McGowan, S.L., Spurgen, A. and Solley, M. (2012) 'Preparation, clinical support, and confidence of speech-language therapists managing clients with a tracheostomy in the UK', *International Journal of Language & Communication Disorders*, 47 (3), pp.322 - 332.

