



Tracheostomy teams reduce total tracheostomy time and increase speaking valve use: A systematic review and meta-analysis[☆]

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Keywords:

Tracheostomy;
Multidisciplinary care;
Intensive care units

Abstract

Purpose: Multidisciplinary tracheostomy teams have been implemented in acute hospitals over the past 10 years. This systematic review of the literature and meta-analysis aimed to assess the effect of tracheostomy teams on patient outcomes.

Materials and Methods: We conducted an electronic search of the literature in the following databases: MEDLINE, CINAHL, EMBASE, and AMED. Inclusion/exclusion criteria were applied, and included articles were assessed against quality criteria. Qualitative synthesis and meta-analysis were completed.

Results: Seven studies were included. The studies were all pre-post cohort designs of low-moderate quality. Meta-analysis showed that tracheostomy teams were associated with reductions in total tracheostomy time (4 studies; mean difference, 8 days; 95% confidence interval, 6-11; $P < .01$; $I^2 = 0\%$) and hospital length of stay (LOS) (3 studies; mean difference, -14 days; 95% confidence interval, -39 to 9; $P = .23$; $I^2 = 50\%$). Reductions in intensive care unit LOS (3 studies) and increases in speaking valve (3 studies) use were also reported with tracheostomy teams.

Conclusion: There is low-quality evidence that multidisciplinary tracheostomy care contributes to a reduction in total tracheostomy time and increase speaking valve use for patients leading to improved quality of life. There is insufficient evidence to determine that multidisciplinary tracheostomy teams reduce hospital or intensive care unit LOS.

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1. Introduction

There is growing evidence supporting the benefits of multidisciplinary health care across a broad range of settings. Several reviews have established that multidisciplinary care

improves patient outcomes including treatment and rehabilitation for chronic back pain [1], rehabilitation in post acute stroke [2], and interventions to enhance return to work in patients with cancer [3].

This trend toward multidisciplinary care has also been seen in the management of tracheostomy patients, with tracheostomy teams beginning to emerge in acute hospitals 10 years ago in the United Kingdom [4,5]. Tracheostomy care has traditionally been managed by surgical teams that performed the procedure, but this has changed with the

[☆] Funding: Nil.

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introduction of percutaneous tracheostomy [6]. There is also growing recognition that the needs of tracheostomy patients are complex and require the expertise of a variety of professionals for optimal management. Tracheostomy insertion has implications for communication, airway management, and nursing care [7,8], suggesting a rationale for a multidisciplinary approach involving speech pathologists, physiotherapists, and nursing staff.

Garrubba et al [9] conducted a systematic review in 2009 of multidisciplinary care for ward-based tracheostomy patients. They identified 3 studies that met the inclusion criteria and concluded that the studies demonstrated some improvements in time to decannulation, length of stay (LOS), and adverse events. However, the authors of the review noted that these results should be taken with caution because of the low quality of the evidence.

Since this time, further work has been done in multidisciplinary management of tracheostomy patients, and additional studies have been published examining the effects of multidisciplinary teams. This systematic review of the literature and meta-analysis aimed to assess the available evidence to answer the following question:

What is the effect of multidisciplinary team management compared with usual care on outcomes for patients with a tracheostomy?

2. Method

2.1. Protocol and registration

Methods were developed in advance and registered on the PROSPERO register (registration no. CRD42011001565).

2.2. Search strategy

In July 2011, an electronic search of all literature was conducted from the earliest available date in the following databases: MEDLINE, CINAHL, EMBASE, and AMED. The keywords and search terms used included tracheostomy and tracheotomy, combined with multidisciplinary, interdisciplinary, and team. Reference lists were checked, and citation tracking (using Google Scholar) was conducted for all articles that met the inclusion criteria to search for any additional articles that were not identified in the initial search.

2.3. Study selection

Titles and abstracts of articles identified in the search were independently assessed by 2 reviewers against selection criteria (Table 1). Any variations between the assessors were discussed until consensus was reached. Full-text copies of articles were obtained for those that

Table 1 Inclusion/exclusion criteria

	Inclusion	Exclusion
Population	Patients with temporary tracheostomy Tracheostomy weaning	Structural abnormalities, for example, tracheoesophageal puncture, tracheoesophageal fistula, or tracheal stenosis Ventilator weaning Permanent tracheostomy
Intervention	Multidisciplinary/interdisciplinary Include at least 1 allied health professional and a total of ≥ 2 health professionals, for example, PT and nursing, SP and medical, or PT, SP, and medical.	Team consists of medical/nursing or medical only
Outcomes	Any outcome reported, for example LOS ICU or hospital Failed decannulation Time tube in situ Adverse events Speaking valve use Qualitative data—for example, staff/patient satisfaction	No outcomes reported
Methodology	Any methodology that includes comparison between multidisciplinary care and an alternative model of care	Service descriptions without data Opinion pieces Review articles
Publication type	Peer-reviewed publication	Non-peer-reviewed publications Conference presentations/ published abstracts

PT indicates physiotherapist/respiratory therapist; SP, speech pathologist/speech language pathologist/speech and language therapist.

met the selection criteria or where eligibility could not be established from the abstract. An online translator was used for non-English full-text articles to obtain sufficient information to determine eligibility, with provision for further translation if required.

The selection criteria were applied to full text by each researcher independently. These results were discussed, and any disagreements between the reviewers were discussed until consensus was reached.

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