ARTIGO DE REVISÃO
RECEBIDO: 21 FEVEREIRO 2023; ACEITE: 29 ABRIL 2023
https//doi.org:10.31877/on.2023.46.04
e0138

DECANNULATION IN PATIENTS UNDERGOING HEAD AND NECK CANCER SURGERY: RAPID SYSTEMATIC REVIEW

Remoção da cânula de traqueotomia em doentes com cancro de cabeça e pescoço submetidos a cirurgia: Revisão sistemática rápida

AUTORES:

Ana Inês de Almeida Frade[1]
https://orcid.org/0000-0002-0590-4290
Concetualização, curadoria dos dados, análise formal, investigação, metodologia, administração do projeto, software, redação do rascunho original e redação – revisão e edição

José Manuel Afonso Moreira[2]
https://orcid.org/0000-0003-0059-768X
Metodologia e redação – revisão e edição

Lucinda de Lurdes Ramalho Pires[3]
https://orcid.org/0000-0002-2805-2772
Metodologia e redação – revisão e edição

Marta I. S. Mendes Esteves Duarte[4]
https://orcid.org/0000-0002-1343-3820
Metodologia e redação – revisão e edição

Tiago Filipe Santos Cunha[5]
https://orcid.org/0000-0003-2229-7143
Metodologia e redação – revisão e edição

Susana Sofia Abreu Miguel[4]
https://orcid.org/0000-0001-8830-070X
Concetualização, curadoria dos dados, análise formal, investigação, metodologia, administração do projeto, software, redação do rascunho original e redação – revisão e edição

[1] Unidade de Cuidados Pós-Anestésicos, Hospital da Luz de Lisboa; CIDNUR (Nursing Research, Innovation and Development Centre of Lisbon), Lisboa, Portugal

[2] Universidade de Évora, Évora, Portugal; Comprehensive Health Research Center, Escola Nacional de Saúde Pública, Lisboa, Portugal

[3] Instituto Português de Oncologia de Lisboa de Francisco Gentil, Serviço de Consultas Externas, Lisboa, Portugal.

[4] Instituto Português de Oncologia de Lisboa de Francisco Gentil, Serviço de Cirurgia de Cabeça e Pescoço, ORL e Endocrinologia, Lisboa, Portugal

[5] Instituto Português de Oncologia de Lisboa de Francisco Gentil, Unidade Local do Programa de Prevenção e Controlo de Infeção e Resistência aos Antimicrobianos, Lisboa, Portugal

Autor/a de correspondência
Susana Sofia Abreu Miguel
susanasamiguel@gmail.com

ABSTRACT

Introduction: Tracheotomy is commonly used in patients with head and neck cancer undergoing major surgery. **Purpose:** To identify the nursing interventions in the safe decannulation process in patients undergoing head and neck cancer surgery. **Methods:** Rapid systematic review on MEDLINE and CIHNAL, January 2023. **Results:** Seven studies met the inclusion criteria. The nursing interventions was grouped into before, during and after the decannulation. **Conclusion:** Literature review shows the need for a structured nursing process supporting safe decannulation. The team must ensure that the reason for performing the tracheotomy were resolved and that no anesthetic or surgical procedure is foreseen shortly. These are essential factors associated with the state of consciousness, deflated tube cuff and tube cap tolerance prior decannulation. The literature highlights the need for experienced teams, including nurses, to ensure the safe decannulation process.

KEYWORDS

Head and Neck Cancer; Decannulation; Oncology Nursing; Tracheotomy; Patient safety; Nursing Care.

RESUMO

Introdução: A traqueostomia é habitualmente utilizada em doentes com cancro de cabeça e pescoço submetidos a cirurgias major. **Objetivo:** Identificar as intervenções de enfermagem no processo de remoção da cânula com segurança em doentes submetidos a cirurgia oncológica de cabeça e pescoço. **Métodos:** Revisão sistemática rápida no MEDLINE e CINHAL, janeiro de 2023. **Resultados:** Sete estudos preencheram os critérios de inclusão. As intervenções de enfermagem foram agrupadas em: antes, durante e após a remoção da cânula. **Conclusão:** A revisão da literatura mostra a necessidade de um processo de enfermagem estruturado que apoie a remoção segura da cânula. A equipa deve garantir que o motivo da realização da traqueotomia esteja resolvido e que nenhum procedimento anestésico ou cirúrgico esteja previsto para breve. Estes são alguns dos fatores essenciais, associados ao estado de consciência, *cuff* desinsuflado e tolerância à oclusão da cânula de traqueotomia, antes da sua

remoção. A literatura destaca a necessidade de equipas experientes, incluindo enfermeiros, para garantir que o processo de remoção da cânula seja seguro.

PALAVRAS-CHAVE

Cancro de Cabeça e Pescoço; remoção da cânula; Enfermagem Oncológica; Traqueotomia; Segurança do paciente; Cuidados de Enfermagem.

Introduction

Head and neck cancer is one of the most common neoplasms in the world and with the highest mortality rates.[1] Due to their location, these tumors affect critical swallowing, breathing and communication structures.[2] The primary treatment for head and neck cancers includes surgery and/or chemoradiotherapy.[1] Surgical resection can be with or without surgical defect reconstruction, and the tracheotomy is used to bypass the extension postoperative upper airway edema that occurs as a result of the surgery.[3]

Head and neck trauma and cancer are the most frequent indications for performing a tracheotomy.[4] The need for tracheotomy comes up to be associated with respiratory failure, neurological disease, spinal cord injury, head and neck tumors, and major surgery.[5]

Tracheotomy can be defined as "a surgical opening in the trachea" [6] and in terms of localization "the tracheostomy should be made between the 2nd and 4th tracheal rings." [6]

Tracheotomies can be permanent or temporary; we will only address the temporary ones performed in surgery.[7] In this case, the tracheotomy is realized, electively, as part of a planned procedure, in a surgical context in the head and neck area.[7] As a temporary measure of respiratory support, the tracheotomy will later be removed, according to a medical decision.[7] Decannulation is the process of removing the tracheotomy tube that includes the mechanical movement of removing the tube from the tracheal and the process before and after the removal, which includes decisions based on evidence of safe procedure and post-procedure surveillance.

Concerning the criteria and factors that influence the success of safe cannula removal, the presence of swallowing and effective protective coughing are usually minimum requirements for success in this process.[8,9]

There is a paucity of literature on tracheotomy decannulation process and the nursing role in the interdisciplinary team. This review aims to identify the nursing interventions in the decannulation process in patients undergoing head and neck cancer surgery.

Methods

We did this rapid systematic review to respond to a specific need in a timely manner, allowing the production of evidence with effective management of resources.[10]

This rapid review was conducted in accordance with the World Health Organization (WHO) Rapid Review Guide[11] and followed the reporting guidelines for systematic reviews.[12]

Using the Participants (head and neck cancer patients), Concept (nursing interventions in the decannulation process) and Context (inpatients) strategy, we present the eligible criteria for this review.

Eligibility criteria

Inclusion criteria: Papers were considered eligible if: 1. They included nursing interventions in the decannulation process; 2. Were published in English or Portuguese. 3. The population were adults. Exclusion criteria: articles with nursing intervention in decannulation in patients with neurological pathology because they have very different characteristics from the study population. Publication in book chapters, theses, literature reviews, editorials, or conference abstracts without a full paper were also excluded.

Search Strategy

The research was conducted in January 2023. Terms indexed in MEDLINE®, and CINAHL® were used, as shown in Table 1, with the respective Boolean operators. Terms in natural language were also searched in the abstract. When undertaking a rapid review, it is recommended to search a limited number of databases.[13]

Table 1. Search Strategy

CINAHL®	Tracheostomy[a] *OR* Tracheostomy tube[a] *OR* Tracheostomy care[a] *OR* Tracheotomy[b]	*AND*	Extubation[a] *OR* Tube removal[a] *OR* Decannulation[a] *OR* Decannulation process[b]	*AND*	Nurs*[a] *OR* Intervention[b]
MEDLINE®	Tracheostomy[a] *OR* Tracheotomy[a]	*AND*	Airway extubation[b] *OR* Tube removal[b] *OR* Decannulation[b] *OR* Decannulation process[b] *OR* Tracheostomy closure[b]	*AND*	Nurs*[a] *OR* Intervention[b]

[a] – Exact Subject Heading; *[b]* – Abstract

Study selection

The search results were downloaded from databases and uploaded into Rayyan®. Duplicates were removed. Applying the eligibility criteria, with the blind screening of the title and abstracts, was undertaken by two reviewers (AF & SM). The relevance of the articles to be included in the review was analyzed based on the information provided in the title and abstract, and all the conflicts passed to the next step. The full-text screening was undertaken independently by reviewers (AF & SM).

Data extraction and analysis

Data extraction of the included studies was undertaken by one reviewer (SM) and checked by a second review (AF). The researchers designed an instrument in line with the objective of the review. It includes methodology, participants, country, study design and nursing intervention.

Results

A total of 130 papers were retrieved. When duplicates were removed, the title and abstracts of 113 papers were screened, and 17 full-text papers were assessed for eligibility. Seven papers met the inclusion criteria (Figure 1).

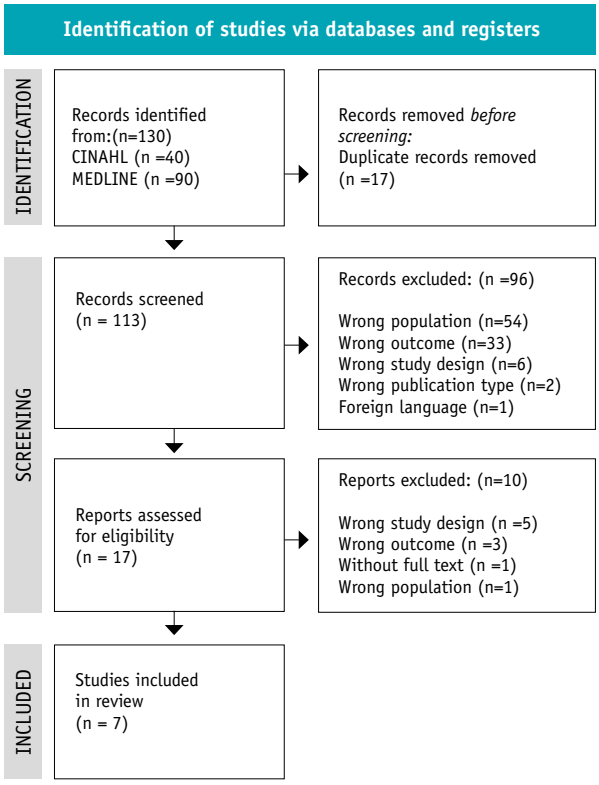

Figure 1. Prisma 2020 flow diagram *(Source: [12])*

Seven studies were included in the review. The studies were performed in Canada (n=2), Europe (n=2), USA (n=1), Saudi Arabia (n=1) and Australia (n=1). The number of participants in the studies ranged from 20 to 330 (Table 2).

For the analysis of the nursing interventions in the health team, we grouped the interventions found in the review into three groups: 1) before decannulation, 2) during the decannulation process, 3) after decannulation.

1) Before decannulation

Before starting the decannulation process, the leading cause for the tracheotomy must be solved, and clinical stability or normality of vitals observation was a prerequisite.[14-17] Understanding whether the patient will soon need any anesthetic or surgical procedure.[17,18] In this case, decannulation is delayed.[17]

Assess that the patient can protect his airway with a strong cough[14,15,18] and no more than two aspirations every 8 hours during 24 hours before the decannulation.[19]

Tabela 2. Study characteristics

Study topic	Authors / Country	Study design	Participants	Nursing interventions (as part of the interdisciplinary team)
To identify the proportion of tracheostomy subjects with successful decannulation and time to decannulation	Alhashemi et al.[14] / Saudi Arabia	Retrospective cohort study	221 patients	Interdisciplinary tracheotomy team (respiratory therapist, an ear, nose, and throat specialist, rehabilitation medicine specialist, and a tracheotomy resource nurse). – Cuff deflation is needed to progress toward decannulation. – Medically stable and have a strong cough. – Subjects who were vitally stable. – Humidification is an essential component of care for tracheostomy patients (prevent dried secretions). – Innertube care was performed (1–2 times per shift). – Subjects with good airway assessment had tracheostomy tube (cuff deflated) changed to a cuffless fenestrated tube and progressed to a capping trial. – Subjects who had successful capping progressed to decannulation.
The time to decannulation, compared by means of the log-rank test	Martinez et al.[19]	Unblinded trial	330 (161 control group, 169 intervention group)	Performed a tracheostomy-tube occlusion test to rule out tracheal airflow obstruction. – Occluded the opening of the cannula with the tracheal cuff deflated for 5 minutes. – To cap the tracheostomy tube for 24 hours to see whether they can breathe on their own. – No more than two aspirations every 8 hours during a 24-hour period, before decannulation. – Patients who had any sign that was suggestive of airflow obstruction underwent diagnostic bronchoscopy.
To identify the proportion of patients tolerating continuous cuff deflation at first attempt	Pryor et al.[15] / Australia	Retrospective case-note	13 participants	– Medical status stable. – Respiratory status stable. – Cough strength. – Patient alertness (eyes open to voice) – Sputum colour (clear or white). – Sputum nature (thin and easy to suction). – Tracheal suction frequency (≤1–2 hourly). – Continuous cuff deflation. – 86% of the cohort progressing to decannulation (after cuff deflation).
To evaluate the interprofessional tracheostomy team and its impact on time from weaning off mechanical ventilation to decannulation	Welton et al.[16] / Canada	Retrospective analysis	Pre (n=20), Post (n=0) intervention	– The patient must be assessed to determine the likelihood that they will tolerate decannulation. – Corking was to be implemented for a maximum of 24 h, if tolerated, then the patient would be decannulated with the physician. – If corking trials are not initially tolerated, it is common practice at our institution to downsize the tracheostomy tube.

To improve care for pediatric and adult patients with a tracheostomy tube	Mitchell et al.[18] / USA	Clinical Consensus statement		Prerequisites for decannulation in adult patients. – Have the indications for the tracheostomy placement resolved or significantly improved? – Is the patient tolerating a decannulation cap on an appropriately sized uncuffed tracheostomy tube without stridor? – Does fiberoptic laryngoscopy confirm airway patency to the level of the glottis and immediate subglottis? – Does the patient have an adequate level of consciousness and laryngopharyngeal function to protect the lower airway from aspiration? – Does the patient have an effective cough while the tracheostomy tube is capped? – Have all procedures that require general endotracheal anesthesia been completed? Proceed with the following decannulation process. – Remove the tracheostomy tube. – Clean the site. – Cover the site with a dry gauze dressing. – Instruct the patient to apply pressure over the dressing with fingers when talking or coughing. – Change dressing daily and as needed if moist with secretions until the site has healed.
To assess the impact of this multidisciplinary team on downsizing and decannulation times	Mestral et al.[17] / Canada	Control group study	32 patients in the preservice group; 54 patients in the postservice group	– Standard practice to downsize the tracheostomy tube before decannulation (to allow for sufficient airflow and improved secretion clearance around the tracheostomy) – Before decannulation, patients must have sufficient neurologic capacity to protect their upper airway, be able to manage their secretions and tolerate corking trials. – If an operative intervention is expected, decannulation is delayed.
To evaluated respiratory mechanics after decannulation	Dellweg et al.[20] / Germany	Experimental Protocol	25 participants	– Positioned in bed with their upper body at a 45° upright angle. – Assessment of respiratory flow through the tracheotomy cannula and verification of the flow through the mouth with the cannula obstructed. – Application of a device ("Tube retrainer") to keep the tracheostomy site open in case of need for cannula reinsertion.

It is consensual that cuff deflation is needed to progress toward decannulation.[14-16,18] At this time is suggested to change for a tracheotomy tube without the cuff and fenestrated tube. Assess respiratory flow through the tracheotomy cannula and verify the flow through the mouth with an obstructed cannula.[20] That change is safer if using a device application ("Tube retrainer") to keep the tracheotomy site open in case of the need to reinsert the cannula.[20]

The next step will be to cap the tube trial for a maximum of 24 hours; if tolerated, the patient should be decannulated;[14,15,18,19] if this process fails, some authors suggested downsizing the tracheotomy tube.[15-19] The physician stopped the trial cap if the patient had any sign of respiratory distress.[19]

2) During the decannulation process

The decannulation process should be done by an experienced physician and nurse.[16,18]

3) After decannulation

After decannulation, the patients should be monitored for decannulation failure.[18] It is advisable to position the patient in bed with their upper body at a 45° upright angle.[20]

After removing the tube, cover the stoma with a gauze dressing, change daily and as needed if moist with secretions until the site has healed[18], and keep the stoma clean.[18] After decannulation, patients should be instructed to apply pressure over the dressing with their fingers when talking or coughing to decrease the air leak.[18] The nurse identifies the subjects' needs, like training, material and equipment, and caregiver education.[14]

Discussion

From the review, a multidisciplinary team with a consistent and systematic approach to these patients emerges as a success factor in the safe decannulation

process.[14,17,18] In the search carried out by Escudero and collaborators, they state that the decision to remove the tracheotomy tube is a multi-professional process.[21]

Before starting the decannulation process, first, it must be resolved the primary reason for the elective tracheotomy.[21] New surgical interventions should not be planned involving general anesthesia.[22]

During the process of decannulation ought to be present the health team, able to reinsert the tracheotomy tube in a post-decannulation emergency during and following the decannulation.[7]

Reducing time to decannulation would be expected to reduce the risk of developing hospital-acquired pneumonia,[23] early removal also improves patient satisfaction and allow a more rapid post operative recovery in patients undergoing surgery for head and neck cancer. [23]

Decannulation should be performed before ten days, particularly for patients with head and neck cancer with free flaps, avoiding the risk of prolonged or permanent tracheotomy.[3,23] Patients with total glossectomy defects and those who continue to smoke during the perioperative time are at increased risk of delayed or failed decannulation.[3] Education programs for smoking cessation should be performed during the preoperative time. Patients who smoke beyond the 4-week preoperative time have 35 times more risk of failure decannulation and take more time to decannulation.[3] Thus, decannulation should be carried out as early as possible after resolving the issues that were the basis for the need for tracheotomy. The presence of a tracheotomy makes patients more susceptible to respiratory tract infections, particularly if they have a cannula with an inflated cuff.[7]

This review also identified the care once the decannulation. After removing the tracheotomy tube, nurses should care for the stoma by cleaning it with 0.9% sodium chloride, drying it, and then applying an occlusive dressing according to the institutional guidelines.[7] This dressing should be changed every day, and the site observed for signs of infection.[7] Nurses need to teach the patient to press on the dressing directly to the stoma when talking or coughing to occlude the stoma, reducing the air passed through the stoma, enabling the patient to have a better voice and helping the stoma to heal.[7]

For the patient, removing the tracheotomy tube restores a sense of physical and psychological normality.[7] However, when starting the decannulation process, people may become anxious and worried about not being able to breathe without the cannula.[7] Therefore, professionals need to discuss each step of the decannulation process with the patient and any fears or concerns they have.[7]

Limitations

This rapid review has a few limitations. Only papers in English were included. We couldn't find the full text of one article. Nursing interventions in the decannulation process of head and neck patients do not allow generalizations to be made to other populations. It would be interesting in future studies to compare different types of patients.

Conclusion

Tracheotomy is commonly performed after major surgery for head and neck cancers. Usually, during the postoperative period, the patient is decannulated. A multidisciplinary approach to tracheotomy decannulation should be performed to ensure safe and appropriate practices.

Decannulation should only be undertaken when the patient has completed all the steps toward decannulation. The management of the process of decannulation should have a plan for a systematic approach to tracheotomy progression. In the future, it would be interesting to identify studies that compare the decannulation process between men and women, as women are generally tracheotomized with smaller-diameter cannulas.

Tracheotomy progression is essential in daily assessment and planning and improves the quality of life of the head and neck cancer patients undergoing surgery and their families. In this decannulation process, nurses can motivate and encourage, assess respiratory well-being, and ensure that training and material education are met and attended, assuming a privileged position next to the patient.

This review presents the nursing team's importance in all decannulation phases. It reflects the relevant role in evaluating the conditions and the other team members in the preparation, procedure and post-decannulation monitoring, preventing decannulation complications, such as the need to cannulate the patient again.

The review intends to guide the practice of the Nursing team when dealing with a patient with a tracheotomy with planned decannulation, favoring earlier and safer decannulation, increasing the safety of the professional and also of the procedure and contributing to the safety and well-being of the patient.

This rapid review highlights the need for a structured and systematized program for the patient's decannulation process, which will ensure the safe and effective management of patients with a tracheotomy. Nurses have an active role in all phases of the decannulation process.

References

1. Baijens LWJ, Walshe M, Aaltonen LM, Arens C, Cordier R, Cras P, Crevier-Buchman L, Curtis C, Golusinski W, Govender R, Eriksen JG, Hansen K, Heathcote K, Hess MM, Hosal S, Klussmann JP, Leemans CR, MacCarthy D, Manduchi B, Marie JP, Nouraei R, Parkes C, Pflug C, Pilz W, Regan J, Rommel N, Schindler A, Schols AMWJ, Speyer R, Succo G, Wessel I, Willemsen ACH, Yilmaz T, Clavé P. European white paper: oropharyngeal dysphagia in head and neck cancer. Eur Arch Otorhinolaryngol. 2021 Feb;278(2):577-616. doi: 10.1007/s00405-020-06507-5.
2. Bolt S, Baylor C, Burns M, Eadie T. "I would have told you about being forgetful, but I forgot": the experience of cognitive changes and communicative participation after head and neck cancer. Disabil Rehabil. 2020 Apr;42(7):931-939. doi: 10.1080/09638288.2018.1514535
3. Isaac A, Zhang H, Varshney S, Hamilton S, Harris JR, O'Connell DA, Biron VL, Seikaly H. Predictors of failed and delayed decannulation after head and neck surgery. In: Otolaryngology - Head and Neck Surgery (United States). SAGE Publications Inc.; 2016. p. 437–42.
4. Bhatti ABH, Iqbal H, Hussain R, Syed AA, Jamshed A. Tracheotomy in Cancer Patients: Experience from a Cancer Hospital in Pakistan. Indian J Surg. 2015 Dec;77(Suppl 3):906-9. doi: 10.1007/s12262-014-1061-2.
5. Zaga CJ, Sweeney JM, Cameron TS, Campbell MC, Warrillow SJ, Howard ME. Factors associated with short versus prolonged tracheostomy length of cannulation and the relationship between length of cannulation and adverse events. Aust Crit Care. 2022 Sep;35(5):535-542. doi: 10.1016/j.aucc.2021.09.003.
6. Pracy P, Conboy P. Upper airway obstruction and tracheostomy. In: Watkinson J, Clarke R, editors. Scott-Brown´s Otorhinolaryngology Head & Neck Surgery - Head & Neck Surgery, Plastic Surgery. 8th ed. New York: CRC Press; 2018. p. 1037–48.
7. Everitt E. Managing the weaning of a temporary tracheostomy. Nurs Times. 2016 May 18-24;112(20):17-9.
8. Singh RK, Saran S, Baronia AK. The practice of tracheostomy decannulation—a systematic review. J Intensive Care. 2017 Jun 20;5:38. doi: 10.1186/s40560-017-0234-z.
9. Credland N. How to remove a tracheostomy tube. Nursing Standard. 2015 Oct 28;30(9):34–5. doi: 10.7748/ns.30.9.34.s43
10. Hamel C, Michaud A, Thuku M, Skidmore B, Stevens A, Nussbaumer-Streit B, Garritty C. Defining rapid reviews: a systematic scoping review and thematic analysis of definitions and defining characteristics of rapid reviews. J Clin Epidemiol. 2021 Jan;129:74-85. doi: 10.1016/j.jclinepi.2020.09.041.
11. Tricco AC, Langlois E V, Straus SE. Rapid reviews to strengthen health policy and systems: A pratical guide [Internet]. 2017 [cited 2023 Feb 5]. Available from: https://apps.who.int/iris/bitstream/handle/10665/258698/9789241512763-eng.pdf
12. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaf JM, Akl EA, Brennan SE, Chou R, Glanville J, Grimshaw JM, Hróbjartsson A, Lalu MM, Li T, Loder EW, Mayo-Wilson E, McDonald S, McGuinness LA, Stewart LA, Thomas J, Tricco AC, Welch VA, Whiting P, Moher D. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021 Mar 29;n71. doi: 10.1136/bmj.n71.
13. Garritty C, Gartlehner G, Kamel C, King V, Nussbaumer-Streit B, Stevens A, Hamel C, Affengruber L. Cochrane Rapid Reviews Interim Guidance from the Cochrane Rapid Reviews Methods Group [Internet]. 2020 [cited 2022 Nov 6]. Available from: http://methods.cochrane.org/sites/methods.cochrane.org.rapidreviews/files/uploads/cochrane_rr_-_guidance-23mar2020-v1.pdf
14. Alhashemi H, Algarni M, Al-Hakami H, Seebran N, Hussain T, Bhutto T, Tashkandi A, Alayed M, Bukhari E, Alzahrani A. An Interdisciplinary Approach to the Management of Individuals With Tracheostomy. Respir Care. 2022 Jan 1;67(1):34–9. doi: 10.4187/respcare.08869.
15. Pryor LN, Ward EC, Cornwell PL, O'Connor SN, Chapman MJ. Clinical indicators associated with successful tracheostomy cuff deflation. Aust Crit Care. 2016 Aug;29(3):132-7. doi: 10.1016/j.aucc.2016.01.002.
16. Welton C, Morrison M, Catalig M, Chris J, Pataki J. Can an interprofessional tracheostomy team improve weaning to decannulation times? a quality improvement evaluation. Vol. 52, Can J Respir Ther. 2016.
17. Mestral C, Iqbal S, Fong N, Leblanc J, Fata P, Razek T, Khwaja K. Impact of a specialized multidisciplinary tracheostomy team on tracheostomy care in critically ill patients. Can J Surg. 2011 Jun;54(3):167-72. doi: 10.1503/cjs.043209.
18. Mitchell RB, Hussey HM, Setzen G, Jacobs IN, Nussenbaum B, Dawson C, Brown CA, Brandt C, Deakins K, Hartnick C, Merati A. Clinical consensus statement: Tracheostomy care. Otolaryngol Head Neck Surg. 2013 Jan;148(1):6-20. doi: 10.1177/0194599812460376.
19. Martínez GH, Rodriguez ML, Vaquero MC, Ortiz R, Masclans JR, Roca O, Colinas L, Pablo R, Espinosa MC, Acilu mg, Climent C, Cuena -Boy R. High-Flow Oxygen with Capping or Suctioning for Tracheostomy Decannulation. N Engl J Med. 2020 Sep 10;383(11):1009-1017. doi: 10.1056/NEJMoa2010834.
20. Dellweg D, Barchfeld T, Haidl P, Appelhans P, Kohler D. Tracheostomy decannulation: Implication on respiratory mechanics. Head Neck. 2007 Dec;29(12):1121–7. doi: 10.1002/hed.20653.
21. Zhou T, Wang J, Zhang C, Zhang B, Guo H, Yang B, Li y, Ge J, Li Y, Niu G, Gao H, Jiang H. Tracheostomy decannulation protocol in patients with prolonged tracheostomy referred to a rehabilitation hospital: a prospective cohort study. J Intensive Care. 2022 Jul 16;10(1):34. doi: 10.1186/s40560-022-00626-3.
22. Escudero C, Sassi FC, de Medeiros GC, de Lima MS, Cardoso PFG, de Andrade CRF. Decannulation: a retrospective cohort study of clinical and swallowing indicators of success. Clinics (Sao Paulo). 2022 Jun 24;77:100071. doi: 10.1016/j.clinsp.2022.100071..
23. Littlewood CG, Jebril A, Lowe D, Konig R, Groom P, Rogers SN. Factors contributing to delayed decannulation of temporary tracheostomies following free tissue reconstructive surgery for head and neck cancer. Br J Oral Maxillofac Surg. 2021 May;59(4):472-477. doi: 10.1016/j.bjoms.2020.09.019.

Financiamento
Sem financiamento

Aprovação pela Comissão de Ética
Não carece de aprovação pela comissão de ética

Conflito de Interesses
Os autores declaram não existir conflito de interesses