# Practitioner Manual for Electronic Voice Aids/ Voice Prostheses and Laryngectomy Consumables

A Manual devised by the SWEP Clinical Advisory Team to assist SWEP registered practitioners

Acknowledgements for information and use of images goes to:
Atos Medical, Main Medical

*Images in this manual have been used to demonstrate the range and breadth of features available within this AT category. However, images provided should not be considered an endorsement of a particular product, nor should they be considered an exhaustive list of all products or features available. As a practitioner you need to use due diligence to ensure that the item and supplier you recommend is best suited to your consumer, their wishes and needs. SWEP will not be held liable for any mismatch of consumer and AT interface that has resulted from the use of images or information in this manual.*

# Contents

# Background

This manual has been developed for Speech Pathology Practitioners who are registered and credentialed with the State-Wide Equipment Program (SWEP). It aims to support and enhance the ability of practitioners to assess, consider and recommend electronic voce aids, voice prothesis and laryngectomy consumable items for consumers.
The State-wide Equipment Program (SWEP) Clinical Advisors have developed this resource manual to:

- Provide useful information for practitioners
- Give links to evidence-based practices
- Recommend assessments to assist with identifying successful voice aids, prosthesis solutions, humidification options and additional consumable products required for daily care post total laryngectomy
- Outline potential risks to consider related to the consumer, support people and the environment
- Describe relevant items and provide links to a range of product types and options

# Guidelines

The Department of Health (DHS) Victoria provides a range of Voice Aids, prostheses and laryngectomy consumables through SWEP to support people with **a permanent or long-term** disability to enhance their independence. Access to the guidelines for the Victorian Aids and Equipment Program (VA&EP) are located on our website here:

https://swep.bhs.org.au/other-relevant-documents.php

# Application and Prescription Form

An application for a consumer to receive items within this prescription category needs to be submitted through the portal available at this link:

https://swep.service-now.com/csm

# Definitions

## Baseplate

Adhesive housing used for HME. Various options available to assist with seal to maintain adequate humidification and promote voicing via voice prosthesis.

## Electro-larynx (Artificial larynx)

Battery powered device that is used to provide the vibratory source for voice production.

## Heat Moisture Exchange (HME)

Designed to facilitate pulmonary function providing the individual, following laryngectomy surgery, with humidified, warmed and filtered inhaled air. The HME acts in a similar fashion to the nose, retaining humidity in the airways that would otherwise be lost by breathing through an open tracheostoma. The HME is held against the stoma by various housing options which can include baseplates or laryngectomy tube/button.

## Indwelling voice prosthesis

Commonly being used for Primary Placement. Has a potentially longer in situ device life, however requires Speech Pathologist for removal and insertion.

## Laryngectomy tube/button

Silicone tube used to maintain stoma patency. Typically, these are compatible for use with HMEs and are available with or without fenestrations (holes) in order to facilitate voicing via voice prosthesis.

## Non-indwelling Voice Prosthesis

Able to be inserted and removed by the individual following appropriate education and training.

## Primary puncture

A TEP created at the time of laryngectomy.

## Primary placement

Where the voice prosthesis is placed at the time of laryngectomy surgery.

## Secondary puncture

Term used when the TEP is created in a completely separate surgical procedure to the original laryngectomy (may be several weeks, months or years post laryngectomy).

### Tracheoesophageal puncture (TEP)

Surgically created hole (Fistula) between the trachea and the oesophagus in a person who has had a laryngectomy, with the purpose of inserting a voice prosthesis.

### Voice Prosthesis

Small device made from medical grade silicone and designed in a one-way valve mechanism to facilitate air from the lungs moving through the prosthesis into the reconstructed pharynx to allow voice production.  The one-way valve prevents food / liquids from entering the lungs via the TEP.

## Products Supplied (summary)

Products supplied under this prescription category are for the purpose of communication (including voice prosthesis or electrolarynx) and consumable products (including HME's and daily care supplies) for individuals post laryngectomy surgery.

## Recommended Assessments and Requirements

### 1. Voice Protheses

Measurement of the TEP length is required in order to determine appropriate voice prosthesis size. This is required prior to prescription using a standard TEP sizing device.

Prior to applying for a voice prosthesis subsidy through SWEP, clinicians should ensure that the TEP is stable for a minimum of three months for primary puncture or primary placement, and a minimum of one month for secondary puncture or secondary placement.

In selecting an appropriate voice prosthesis, the following should be considered:

- type of surgery and relevant past history
- respiratory support
- TEP tonicity
- voice quality
- diameter of voice prothesis (measured in French)
- individual features of different voice prosthesis types
- indwelling vs non-indwelling

## 2. Electrolarynx

Selection of an appropriate electrolarynx should be based on a trial period, where possible. This should allow the patient the opportunity to practice with the available device(s) to determine which one produces the best quality of voice for the patient.

## 3. Humidification

Selection of the most appropriate humidification should be made following a trial period. This ensures that the type of humidification prescribed is suitable for the patients' respiratory needs. Where HME's are recommended, a trial period will ensure that the chosen housing (baseplate/laryngectomy tube/laryngectomy button) meets the needs of their skin and stoma.

## 4. Accessories and support items

Selection of appropriate consumables should be based on the individuals needs regarding their routine care of the stoma, skin and voice prothesis.

# Considerations for Practitioners/Equipment

## 1. Non-indwelling voice prosthesis

| **Advantages** | **Important points to consider** |
|---|---|
| Patient can be independent with changing voice prosthesis | Must identify problems in a timely manner and seek help with robust emergency procedures in place |
| Can be modified easily | Potential for lack of Speech Pathology monitoring |
| Lower cost | Need to tape tab to skin - implications for sensitive skin and use of baseplates |
| Easy insertion | Need good manual dexterity, eyesight and cognition |
| Easy access for cleaning | May be more easily dislodged |

## Examples of non-indwelling voice prostheses

Duckbill available in 16Fr only

Low pressure voice prosthesis available in 16Fr and 20Fr

Non-indwelling available in 17Fr and 20Fr

## 2. Indwelling Voice Prothesis

| **Advantages** | **Important points to consider** |
|---|---|
| Potential for longer in situ life | Reliant on Speech Pathologist for all voice prosthesis changes |
| No tab to tape to skin which allows for the use of adhesives/Heat Moist Exchange (HME) or hands-free devices | Must identify problems in a timely manner and seek help with robust emergency procedures in place |
| | More costly per device - need to weight up cost vs in situ device life |

## Examples of indwelling voice prosthesis

Provox Vega available in 17Fr, 20Fr and 22.5Fr

Classic indwelling available in 16Fr and 20Fr

## 3. Electro-larynx

| **Advantages** | **Important points to consider** |
|---|---|
| Long device life with appropriate care | Less natural sounding voice |
| Can be placed against the neck or intraorally with a mouthpiece adaptor | Significant cost per device |
| | Requires normal movement of the articulators (lips, teeth, tongue) |

## Examples of electro-larynx

Servox (Main Medical)

TruTone Emote

## 4. HME system

| **Advantages** | **Important points to consider** |
|---|---|
| Gold standard for pulmonary rehabilitation | Commitment required for proper use of system to achieve benefits |
| 24hr system to maintain humidification throughout day/night | Significant cost due to disposable nature of equipment |
| Various filters available to allow for increased humidification, increased airflow or increased filtration depending on individual needs | Skin integrity must be considered and monitored when baseplates are used. Use of skin care products is advisable. |
| Various housing options available | Stoma position, neck contour and housing options may impact on ability to achieve and maintain an adequate seal which can affect humidification and voice production |
| Can be used in conjunction with indwelling voice prosthesis to achieve more consistent stoma occlusion | Stoma patency must be considered when choosing most appropriate housing option |
| | Non-indwelling voice prothesis may impact integrity of seal for housing options |

## Examples of HME systems:

## 5. Laryngectomy tubes and buttons

| Advantages | Important points to consider |
|---|---|
| Maintains stoma patency where stoma stenosis is a problem for the individual | Requires careful insertion as this may increase risk of voice prothesis dislodgement |
| Compatible with HME's | Difficulty with seal may reduce effectiveness of HME use and ability to effectively communication via voice prosthesis |
| Available with and without fenestrations (holes) to facilitate communication via voice prothesis | Fenestrations may cause irritation to the tissue inside the trachea |
| Available in various widths and lengths | Can be easily dislodged with coughing and may require additional products to secure |

## Examples of Laryngectomy tubes and buttons

## 6. Other humidification and stoma cover options

| **Advantages** | **Important points to consider** |
|---|---|
| Ease of use | Less effective humidification and filtration as they do not provide an occlusive seal |
| Can be used as an alternative to HME systems or in conjunction with HME systems | |



## Consumer Characteristics That May Impact on the Application

1. Adequate cognitive function for use, maintenance, and appropriate care of stoma.
2. Adequate vision for cleaning the stoma and placing the baseplate.
3. Adequate manual dexterity for the use of humidification and daily care equipment.
4. In the case of using an HME system, motivation for success use and adequate manual dexterity for preparing the stoma, placing the baseplate, and placement / removal of the HME.

## Product Range and Features

Refer to links provided below for Blom Singer and Provox range of laryngectomy consumables.

https://www.atosmedical.com.au/product_category/laryngectomy-en-au/

https://mainmed.com.au/collections/all

## Contract/Tender Details

SWEP currently do not have a contracted supplier for this category. You can access the quotable picklist catalogue here:

https://swep.bhs.org.au/picklists-catalogue.php

# Summary of Evidence

Total laryngectomy involves removing the larynx and permanent disconnection of the upper and lower airways (Hilgers & Ackerstaff et al., 1990). This results in a permanent tracheostoma in the neck. Total laryngectomy impacts voice production; however, further to this is changes to breathing and olfaction. The individual will now breathe in and out via the neck's tracheostoma instead of through the nose and mouth.

The upper airways' function is to warm, humidify, and filter inhaled air (Pohunek, 2004). This function is lost through a total laryngectomy. Filtering of airborne particles is essential for providing resistance to the spread of viral and bacterial diseases, which otherwise can lead to the risk of infection. Also, filtration is important for protection against other particles such as allergens, pollen, dust, and particulate matter (Schwab & Zenkel, 1998). A reduction in exposure to particulate matter can improve health almost immediately. This is important concerning individuals' health post laryngectomy and cost-benefit and the impact of exposure to particulate matter on respiratory health and the health care system globally (Lepell et al., 2012).

The implications for the pulmonary function of breathing through a tracheostoma include coughing, excessive sputum production, crusting, and shortness of breath (Tipel & Stamate, 2019). Chest infections are common for individuals post laryngectomy (Jay & Ruddy et al., 1991). As a result of these common symptoms post laryngectomy, they significantly impact the quality of life and contribute to anxiety and depression (Ackerstaff et al. 1994, Hilgers et al. 1990).

Heat moisture exchanges (HME's) are designed with three functions in mind. That is heat and moisture exchange capacity, providing resistance and filtering particles. A significant reduction in coughing episodes, daily sputum production, stoma clearing, feelings of fatigue, and anxiety and depression levels following short-term trials of HME devices have been demonstrated. (Ackerstaff & Hilgers et al., 1994; Hilgers & Aaronsoon, et al, 1990; Bien & Okla et al., 2010; Tiple & Stamate, 2019). For this reason, HME's are widely accepted as the gold standard for the management of pulmonary health post total laryngectomy.

The placement of an HME may not be possible for some individuals post laryngectomy for many reasons, including relating to the neck's contours, skin reaction, or perceived discomfort. These individuals may require an alternative source of stoma protection in the form of a foam cover or stomal bib. Furthermore, maintenance of the stoma may require devices such as laryngectomy tubes to maintain the aperture and shower shields' patency to protect the airway from exposure to water during showering.

Working with people who have had a laryngectomy is considered within the scope of practice for speech pathologists and is recognized as an advanced area of practice (Speech Pathology Australia, 2013). The speech pathologist is responsible for evaluating and recommending appropriate tracheostoma equipment. The speech pathologist must be aware of the advantages and limitations of the many laryngectomy consumable products and work with the individual post laryngectomy to determine the most suitable equipment to optimise these individuals' pulmonary health.

# Standards

## Relevant Articles


Ackerstaff, A. H., Hilgers, F. J. M., Aaronson, N. K., & Balm, A. J. M. (1994). Communication, functional disorders and lifestyle changes after total laryngectomy. Clinical Otolaryngology & Allied Sciences, 19(4), 295-300.

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Pohunek, P. (2004). Development, structure and function of the upper airways. *Paediatric Respiratory Reviews,* 5(1). https://doi.org/10.1016/j.prrv.2003.09.002.

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## Further Resources

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Royal College Of Speech and Language Therapists (RCSLT) (2010). Prosthetic Surgical Voice restoration (SVR): The role of the speech and language therapist. Policy statement.

Ward, E.C. & Van As-Brooks, D.J. Eds. (2007). Head and neck cancer: treatment, rehabilitation and outcomes. San Diego: Plural Publishing.