

# An In-depth Look into Laryngectomy Pulmonary Kits (LPK)

Angelica Pawlowski, M.S. CCC-SLP; Kenton Woo, M.S. CCC-SLP; Barbara Patterson, MCD CCC-SLP

## BACKGROUND

There are over 12,000 diagnosed cases of laryngeal cancer in the U. S. annually and many undergo a total laryngectomy. A total laryngectomy is a surgical procedure requiring removal of all laryngeal structures and a section of the upper trachea resulting in a disconnection of the airway and creation of a permanent stoma (tracheostoma) (Chotipanich 2021).

This procedure impacts patients in various ways including:

- alterations in respiration/pulmonary health,
- loss of voicing with significant impact to communication abilities
- swallow function
- socio-emotional problems such as chronic fatigue, sleep disorders, anxiety, and depression (Ward 2023).

## PURPOSE

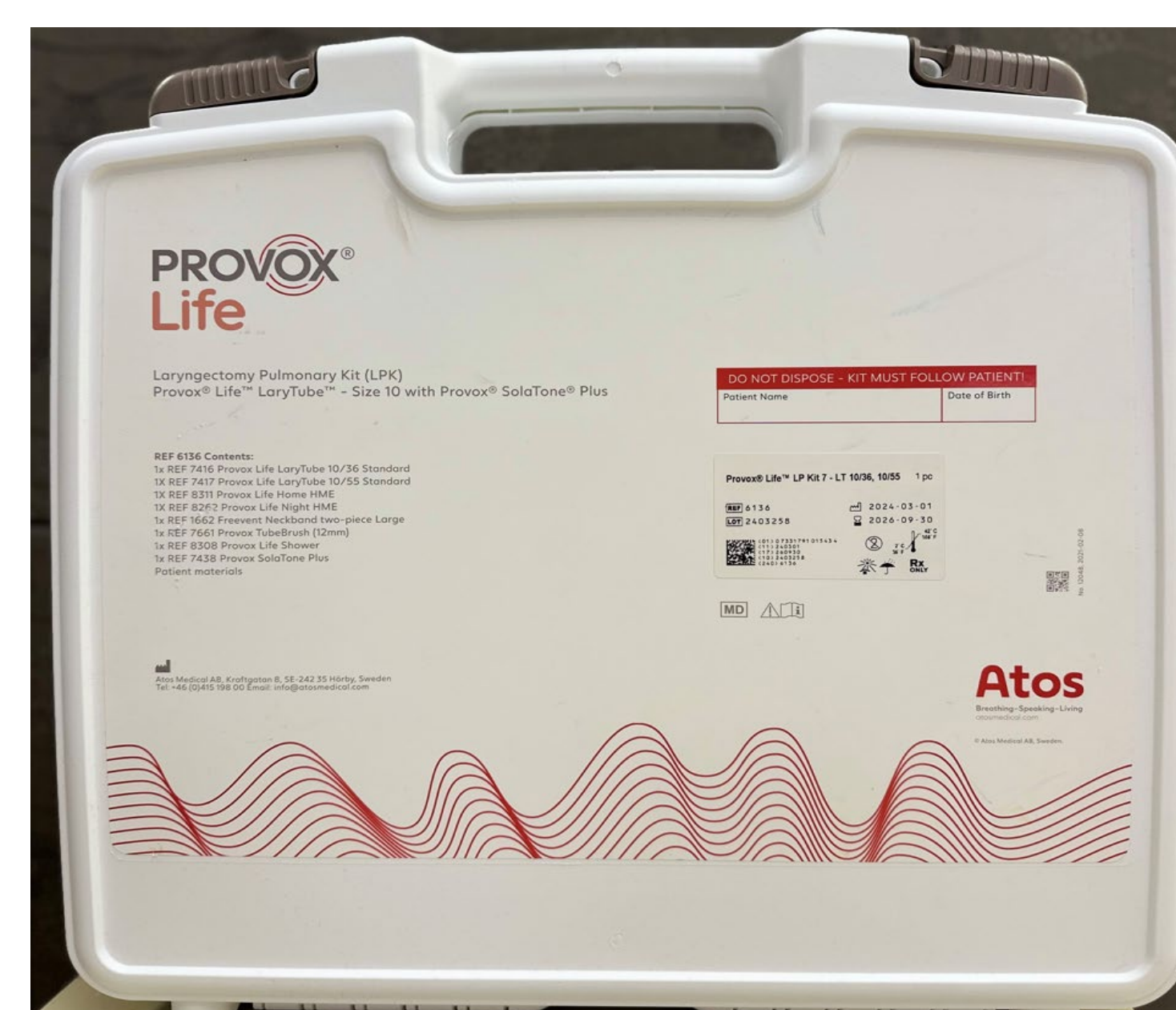
The SLP department identified a limitation in patient access to communication methods for the total laryngectomy population. This led to the introduction of the Laryngectomy Pulmonary Kit (LPK) with additional goals to improve advocacy for early SLP intervention, multidisciplinary collaboration, discharge planning, and facilitate future modalities of communication and pulmonary rehab.

The LPK provides total laryngectomy patients with an all-in-one package for immediate post op cost effective pulmonary rehabilitation and an introduction to Augmentative & Alternative Communication (AAC) (to aid in communication of patients needs during the hospitalization).

## METHODS

The role of the speech language pathologist (SLP) is established through the American-Speech-Language-Hearing Association (ASHA) which includes but is not limited to: social aspects of communication, articulation, and Augmentative and Alternative Communication (AAC), and pulmonary rehab in regard to total laryngectomies.

The overview and utility of the LPK will be exemplified through a review of existing literature and account of the authors' first hand clinical practice.



## RESULTS

### Communication:

- Facilitates immediate post op communication methods
  - Electro larynx (external vibrating device to create alaryngeal voicing by placing device on neck or intra-orally with adaptor) to be trained by an SLP.
  - Boogie/white boards for written communication.
- Enable future discussions for alaryngeal speech options including/but not limited to esophageal speech, trachea-esophageal punctures and prosthesis (TEP).

### Pulmonary Health

- Reduced in-hospital complications and fewer adverse events (mucus plugs) with consistent use of Provox HME. 11% of patients with Provox HME had a mucus plug compared to 50% of patients with external humidification devices (ward 2023) (Ebersole et al. 2020) (Foreman 2016).
- Reduced coughing, mucus production, and need for suctioning. This improved nursing satisfaction and reduced nursing care time. (Merol JC 2012).
- Earlier mobilization/better sleeping resulting in increased patient satisfaction (Merol JC 2012)
- May reduce length of stay/readmission rates (Ward 2023) (Foreman 2016) (Merol JC 2012).

## CONCLUSIONS

100% of qualified patients seen by SLPs at UMC who received the LPK kit, are confirmed to have prescriptions for ongoing supplies and SLP follow-up post discharge.

The LPK is designed to optimize functional outcomes for patients with head and neck cancer. Total laryngectomy patients at UMC are now provided with immediate modalities to facilitate communication, improve pulmonary health, and provide an opportunity for further modes of communication such as candidacy for restorative voicing with a Tracheoesophageal voice prosthesis (TEP).

## REFERENCES

- Chotipanich A. (2021). Total Laryngectomy: A Review of Surgical Techniques. *Cureus*, 13(9), e18181. <https://doi.org/10.7759/cureus.18181>
- Ebersole, B., Moran, K., Gou, J., Ridge, J., Schiech, L., Liu, J. C., & Lango, M. (2020). Heat and moisture exchanger cassettes: Results of a quality/safety initiative to reduce postoperative mucus plugging after total laryngectomy. *Head & neck*, 42(9), 2453-2459.
- Foreman, A., De Santis, R. J., Sultanov, F., Enepekides, D. J., & Higgins, K. M. (2016). Heat and moisture exchanger use reduces in-hospital complications following total laryngectomy: a case-control study. *Journal of otolaryngology - head & neck surgery = Le Journal d'oto-rhino-laryngologie et de chirurgie cervico-faciale*, 45(1), 40.
- Longobardi, Y., Galli, J., Di Cesare, T., D'Alatri, L., Settini, S., Mele, D., Basso, F., & Parrilla, C. (2022). Optimizing Pulmonary Outcomes After Total Laryngectomy: Crossover Study on New Heat and Moisture Exchangers. *Otolaryngology-head and neck surgery: official journal of American Academy of Otolaryngology-Head and Neck Surgery*, 167(6), 929-940. <https://doi.org/10.1177/01945998221086200>
- Mérol, J. C., Charpiot, A., Langagne, T., Hémar, P., Ackerstaff, A. H., & Hilgers, F. J. (2012). Randomized controlled trial on postoperative pulmonary humidification after total laryngectomy: external humidifier versus heat and moisture exchanger. *The Laryngoscope*, 122(2), 275-281.
- Ward, E. C., Hancock, K., Boxall, J., Burns, C. L., Spurgin, A. L., Lehn, B., Hoey, J., Robinson, R., & Coleman, A. (2023). Post-laryngectomy pulmonary and related symptom changes following adoption of an optimal day-and-night heat and moisture exchanger (HME) regimen. *Head & neck*, 45(4), 939-951.