

Review of Pediatric Tracheostomy Training Program for Home Discharge Patients

Katlyn L. Burr, MSM, RRT-NPS, AE-C; Erin Nilson-Italia, RRT-NPS; Michael Treut, RRT-NPS, AE-C; Kimberly McMahon, MD; Kelly Massa, BHS, RRT-NPS

Department of Respiratory Care, Nemours Children's Hospital

Abstract

Background. Transitioning long term care of pediatric patients with tracheostomy tubes and ventilator dependence from hospital to home is a comprehensive process that requires intense oversight and management to ensure patient safety. Our pediatric hospital has seen an increase in length of stay post tracheostomy tube placement with and without ventilatory dependency since the COVID-19 pandemic. This change is presumed to be associated with an increase of 22-26 week gestational age premature infants surviving beyond birth. Moreover, within the community, there is a shortage of private duty nursing to care for patients with tracheostomy tube needs which has delayed discharge to home for otherwise medically stable patients. Caregivers were reluctant to accept training if there were limited resources available to them upon discharge. We aimed to evaluate the impact of the pandemic on the inpatient education program to support patients' transition to home with trained caregivers. **Methods.** An- IRB approved retrospective review of pediatric patients with tracheostomy placement who elected a path of discharge to home were evaluated from 2010-2022. The home education plan for patients with tracheostomy and ventilator dependence includes 8-13 weeks of intensive inpatient education (Table 1). Our tracheostomy and ventilator training program encompass a multidisciplinary approach including a Respiratory Family Educator, Nursing, Social Work, Case Management, and a Pulmonary APN. Our program occurs over an 8 to 13-week period which is largely dependent on the availability of two caregivers. All caregivers must show competency in tracheostomy changes, managing the artificial airway, CPR, tracheostomy emergency scenarios, as well as all other routine care for a medical complex child. Upon completion of the program, caregivers are required to complete a 24-hour stay within the hospital where they are responsible to perform all aspects of care for their child. Caregivers also are required to participate in a simulation to review tracheostomy emergency using a simulation mannequin. Patient timelines were reviewed and evaluated to assess program efficiency and impact of discharge delays on length of stay and education time. Pre-COVID was defined as 2010-2019 and COVID/Post COVID was defined as 2020-2022. **Results.** During the study period our pediatric hospital provided care, training, and education for 359 patients who required tracheostomy, ventilator support, and training to facilitate home discharge (Figure 1, Table 2). When compared to the pre-COVID period, COVID/post-COVID tracheostomy tube placement increased 13%, time from tracheostomy tube placement to education program start increased by 26%, and time from tracheostomy tube placement to completed education decreased 3.7%, home RN availability related delays increased 442%, and average length of stay increased 2.7%. **Conclusion.** While both the discharge delay time and length of stay increased in the post COVID period they did not increase at the same rate. There was also an increase in time from tracheostomy tube placement to initial education but a decrease in total time to complete the education program. A collaborative team management approach to tracheostomy tube placement, training track, education and discharge planning was able to overcome delays in discharge related to home nursing availability. Further

studies must be done to evaluate the impact of COVID and discharge delays in other populations of technology dependent patients.

Table 1. Tasks and Timelines

TASK (2 Caregivers required to complete all components)	Recommended Timeline
View tracheostomy videos	Week 1-2
Respiratory anatomy	Week 1-2
Assessment of respiratory status	Week 1-2
Suctioning the child with a tracheostomy tube	Week 2
Manual ventilation (self-inflating bag)	Week 2
Care of a tracheostomy site and stoma	Week 2
Changing the tracheostomy tube (each caregiver must insert 3)	week 1-6
3 sessions of CPR and trach emergency scenarios	Week 3-6
Emergency portability bag	Week 3
Nebulizer	Week 4
Pulse oximetry	Week 4
Nebulizer	Week 4
Trach collar/HME/PMV (if applicable)	Week 4
Ventilator	Week 5
Portability	Week 5
Simulation lab scenarios	Week 6
Supervised family care (24-hours)	Week 6

Figure 1. Review of Home Tracheostomy Education Program 2010-2022

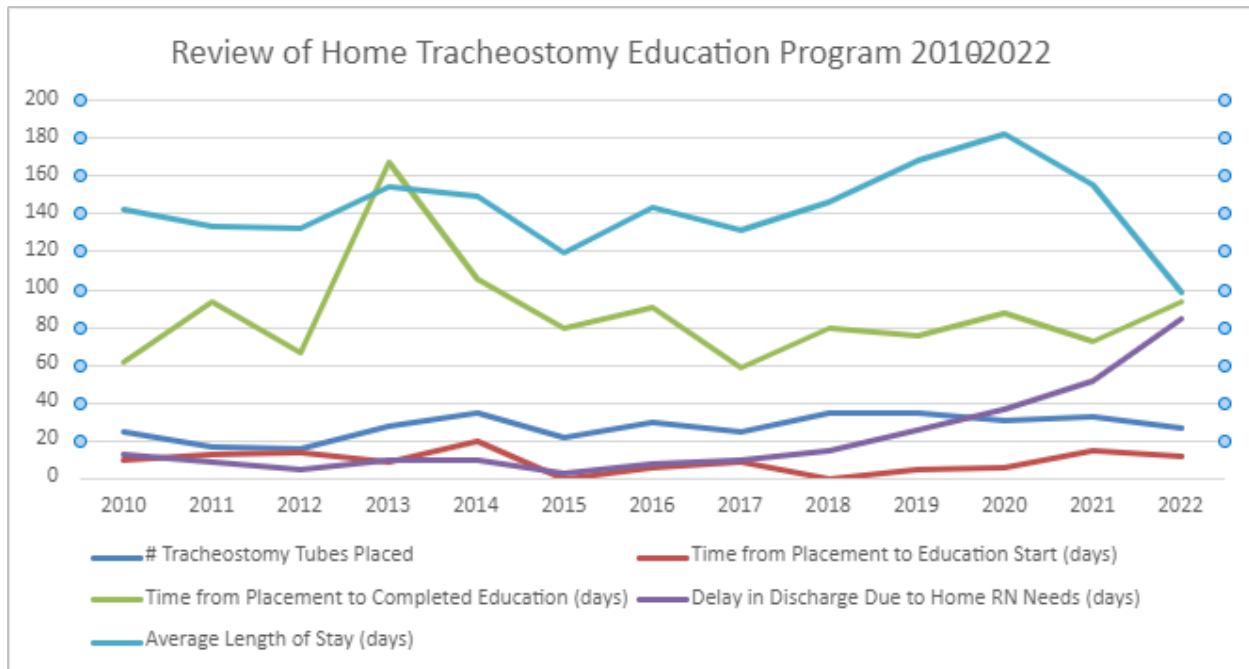


Table 2. Review of Home Tracheostomy Education Program 2010-2022

	# Tracheostomy Tubes Placed	Time from Placement to Education Start (days)	Time from Placement to Completed Education (days)	Delay in Discharge Due to Home RN Needs (days)	Average Length of Stay (days)		
2010	25	10	62	13	142		
2011	17	13	94	8.5	133		
2012	16	14	67	4.8	132		
2013	28	9	167	9.9	154		
2014	35	20	106	10	149		
2015	22	0	80	2.1	119		
2016	30	6	91	8	143		
2017	25	9	59	9.3	131		
2018	35	0	80	14.3	146		
2019	35	5	76	25.8	168		
2020	31	6	88	36.3	182		
2021	33	14.5	73	51.7	155		
2022	27	12	94	84.5	99		
	Average # Tracheostomy Tubes Placed	Average Time from Placement to Education Start (days)	Average Time from Placement to Completed Education (days)	Average Delay in Discharge Due to Home RN Needs (days)	Average Length of Stay (days)		
Pre COVID	26.8	8.6	88.2	10.6	141.7		
Post COVID	30.3	10.8	85	57.5	145.3		

Copyright (c) 2024 Delaware Academy of Medicine / Delaware Public Health Association.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.