

The Health Care Improvement Foundation
2019 Delaware Valley Patient Safety and Quality Award
Entry Form

1. Hospital Name

Fox Chase Cancer Center – Temple University Health System

2. Title Of Initiative

Improving Turning Compliance and Reduction of Pressure Injuries

3. Abstract (Please limit this description to 250 words.)

Head and neck cancers (HNC) include tumors of the mouth, pharynx, and larynx. The overwhelming majority of patients with HNC undergo radiation treatment (RT); whether as the primary treatment modality, or as an adjuvant treatment. Radiation-induced inflammation and mucositis leads to odynophagia and difficulty swallowing across the course of treatment. For some, these symptoms are severe enough to preclude oral alimentation and necessitate an alternative method of nutrition. For these patients, surgically placed percutaneous gastrostomy (PEG) tube placement is the standard of care at our organization.

Quality of life is an important consideration in HNC, and swallowing dysfunction is a known side-effect of treatment. Recent research demonstrates that the type of enteral feeding route used during RT can impact long term swallowing function. Patients who receive a reactive nasogastric tube (NGT) for acute dysphagia during HNC treatment have better long term swallowing function than those who receive a PEG. The reasons for this difference are attributed to the shorter duration of tube dependence reported in NGT patients, and that the NGT stents the upper esophageal sphincter (obviating stricture).

The aim of this quality initiative was to implement a process for utilizing NGT feeding for acute dysphagia during RT treatment for HNC. We recognized that some patients would prefer PEG to NGT. We compared outcomes in the two groups in order to better understand the potential benefit of this change in practice.

4. What were the goals of your initiative?

Goal 1: Improve timeliness to fully oral diet by shortening tube duration.

(this will be measured by date of tube insertion to date of tube removal for each group)

Goal 2: Improve timeliness to highest safe diet level (irrespective of whether tube is in place or not).

(this will be measured by Functional Oral Intake Scale scores for each group)

Goal 3: Monitor weight loss, pain measures, and complications to identify any potential negative effects of NGT (as compared with PEG).

(these will be measured by pain visual analogue scale (VAS), weight changes across 3 treatment time points, and description of any complication tracked for each group)

5. What were the baseline data and the results of your initiative?

Baseline data

Prior to implementation of this initiative, all HNC patients requiring an alternative method of nutrition during RT underwent surgical insertion of a PEG tube. We did not routinely collect the above data at all time points across treatment prior to the start of this initiative, making comparative baseline data a challenge. The literature reports PEG duration in this circumstance is typically >100 days. Our team felt this was a reasonable estimate of our baseline usage as well. However, we knew that not all patients would receive an NGT. Thus, by comparing the reactive PEG data with the reactive NGT data collected prospectively as a part of this initiative— we could demonstrate how the change in practice affects our target outcomes in those receiving NGT nutrition. We also decided to collect data on all three groups of patients (those who did not require a tube at all, those who received a tube prior to the start of treatment or “prophylactic” and those who required a tube during treatment or “reactive”). This would help provide a context for the data in the 2 groups of interest (reactive PEG vs reactive NGT). We collected our data across 3 time-points (pre-RT, mid-RT and 1 month post-RT). Most reactive tubes were placed after the mid-RT time point.

RESULTS

We began this initiative in January 2018, and have been collecting data on all patients undergoing RT for HNC. As you will see in the preliminary data below, utilization of NGT in lieu of PEG has had a positive effect on multiple parameters for patients experiencing severe acute dysphagia during RT. Since the project launched, 16% of patients undergoing RT required a reactive feeding tube during treatment, about half received an NGT. See Figure 1 for details on tube utilization. Accrual for this project is ongoing and data will continue to be monitored.

- Goal 1: Tube duration was almost 4x shorter in the NGT group (mean duration 32 days) than in the reactive PEG group (mean duration 118 days). See Table 1 for tube duration data.
- Goal 2: FOIS scoring parameters can be seen in Table 2. FOIS scores at the post-treatment time point were best for the no tube group, and worst for the prophylactic tube group (as expected). Reactive NGT and reactive PEG groups were at similar diet levels across treatment points. However, when comparing timeliness to the safest highest diet level (recommend by SLP), at the post-RT time point the reactive NGT group was on average consuming a diet closer to their functional ability than the reactive PEG group. This consumption of a diet closer to their actual functional ability may be a result of the fact that at 1 month post-RT most NGT patients have had their tube removed and need to meet nutritional needs by mouth. See Figure 2 for details.

- Goal 3:
 - Pain: Reactive NGT use did not appear to increase pain, when compared to reactive PEG use. As seen in Figure 3, both reactive tube groups have the highest pain ratings mid-RT; pain likely being the reason for the need for reactive tube feeding. However, the post-RT pain rating (green box) was 2x higher for the reactive PEG group than the reactive NGT group. This may be a result of pain/discomfort often experienced at the PEG site.
 - Weight loss: We see a similar pattern below with respect to % weight loss. Use of NGT may have a positive effect on mitigating weight loss, compared with reactive PEG. As expected, both reactive groups have the highest mid-RT weight loss (blue boxes). However, the NGT group lost much less weight from mid-RT to post-RT than the reactive PEG group. Similarly, total weight loss is highest in the reactive PEG group, with the NGT group looking similar to the no tube group.
 - Complications: No complications were reported with PEG tubes, either prophylactic or reactive. In the reactive NGT group, 3 patients had issues with clogging. All of these were able to be remediated easily and without significant disruption of feeding needs. Education efforts focusing on how to use the tube to minimize risk of clogging were emphasized after these events.

6. Describe the interventions that were instrumental in achieving the results for your initiative.

Interventions

We organized a team consisting of speech language pathology (SLP), radiation oncology, medical oncology, head and neck surgery, various nursing providers (RN), nutrition (RD), and case management.

We performed a thorough literature review comparing NGT use to PEG use in patients with acute HNC treatment-induced dysphagia. The literature reports several benefits of NGT use (reduced risk of infection, reduced cost, reduced tube duration, reduced long-term dysphagia), as well as some potential disadvantages (high probability of dislodgement, possible increased discomfort, negative social impact due to tube visibility). These findings directed our goals and plan. We implemented this PI project in January 2018.

Identifying Reactive Tube Needs:

Most patients are identified as needing reactive tube feeding in weeks 5 – 9 after starting RT, during their weekly visit with the radiation oncologist. Radiation oncology had already established criteria for the need for reactive tube feeding, which were maintained for this project. The team was not sure if there were any criteria that would exclude someone from being offered NGT. Given the greatest risk associated with NGT is accidental dislodgement, our criteria for NGT was that the radiation oncologist believed the patient to be reliable in self-care and follow-up, and able to identify and act on an issue with the tube should one arise. The team agreed that if highly unreliable or non-compliant

patients or those with evident cognitive dysfunction require a reactive tube, a discussion would be held between the radiation oncologist, social worker and SLP to determine appropriate type of tube. Since starting the project we had 1 patient who was non-compliant and after team discussion determined he would be offered a reactive PEG. In all other cases DHT was offered. Patients who did not want a NGT received a PEG.

Securing NGT to Nose:

Current hospital practice used medical tape to secure the NGT to the nose. This was considered adequate because tube position was closely monitored as, prior to this project, patients were never discharged home with a NGT. Our project involved patients using NGT at home for several weeks. The biggest concern across the team was the NGT tip migrating out of place, increasing the risk for gross aspiration during feeding. We identified a NGT retaining device that would secure the NGT to the nose via a bridle that loops around the vomer bone of the nasal septum. This device minimizes the risk of tube migration and accidental dislodgement. We required senior leadership support to get this device approved through our Value Council, and had to demonstrate the safety need. The device was approved and we could proceed with the project.

NGT Insertion Process:

Most patients were admitted to the hospital for insertion of NGT and teaching/titrating tube feeding. However, we recognized there would be some cases where OP insertion would be needed or optimal. There currently was no process for OP tube placement, thus a process was developed:

1. MD to page registered dietitian and H&N surgery nurse practitioner (NP).
2. NP to take patient to triage, insert nasogastric (dubhoff) tube, and order portable chest x-ray
3. RD reviews chart, assesses patient, and prescribes formula.
4. Clinic RN educates the patient and family on how to feed (performing tube feeding and using teach back method) and pages case management (as needed) to ensure supplies are ordered through durable medical equipment company. Monitor for bolus tolerance.
5. Portable chest x-ray confirms correct placement. NGT bridle retaining device is secured to nose by NP. NP may order a short course of home nursing, as needed.

Data/Outcome monitoring

We identified multiple parameters of data for monitoring (see outcomes above), based on our literature review and goals. We collected the data prospectively on all patients undergoing RT for HNC at SLP visits occurring pre-RT, mid-RT and 1 month post-RT. This schedule is a part of our standard pathway for HNC patients undergoing RT, we simply added a process for collecting the specific data we wanted to track. Data was stored in an excel spreadsheet, as well as documented in the electronic medical record. We reviewed the data quarterly and shared it with our organization's Performance Improvement Committee. No major complications or process issues were identified across the 15 months.

- 7. Describe the key steps required to successfully replicate this initiative throughout the region. (Please limit this description to 100 words.)**

Each organization should 1. Gather a team of key stakeholders: H&N surgery, radiation oncology, medical oncology, nurse practitioner/staff nursing, speech pathology, nutrition, case management. Obtain consensus that this is an important initiative, and that your team has the bandwidth to pursue it. 2. Determine as a team how the processes described in our initiative needs to be modified to fit the clinical operations of their organization. 3. Determine communication processes for patients and staff for NGT complications, so all stakeholders are aware and issues are addressed quickly. 4. Obtain senior leadership support to purchase nasal retaining devices

- 8. Explain how the initiative demonstrates innovation (Please limit this description to 100 words.)**

This initiative involves the adoption of a completely new process in our organization for H&N outpatients requiring short-term non-oral alimentation during radiation treatment. This project is perceived as being successful, such that several surgical services have now adopted our processes and are sending some patients who require short-term post-operative tube feeding home with an NGT. The presumed benefit of this unexpected development is reduced post-operative LOS and avoiding an additional surgical procedure (PEG).

- 9. How does this initiative demonstrate collaboration with other providers within the continuum of care? (Please limit this description to 100 words.)**

We had a multidisciplinary team that included surgical oncology, radiation oncology, medical oncology, nurse practitioner, clinical nurse specialist, staff RNs, registered dietitians, case managers and speech pathologists. This team worked together to develop the process as well as determine the outcome measures to be tracked over time. Furthermore, when a patient required NGT placement, the radiation oncologist, nurse practitioner, clinical nurse specialist and dietitian had to work together to ensure the patient could get the tube safely placed, undergo sufficient teaching and have supplies ordered on very short notice.

- 10. Explain ways in which senior leadership exhibited commitment to the initiative (Please limit this description to 100 words.)**

Senior leadership supported this initiative by approving the ongoing purchase of special NGT retaining devices specifically for this initiative. This device is more costly, but helps minimize the risk of accidental dislodgement and nasal mucosal breakdown: important for safe use of DHT at home for several weeks. Our chair of H&N surgery also supported this initiative by participating in the development process and encouraging other key stakeholders on the team to participate.

11. Appendices (i.e., tables and graphs)

Figure 1: Tube Utilization Flow Diagram
Tube Utilization: JAN 2018 – APR 2019

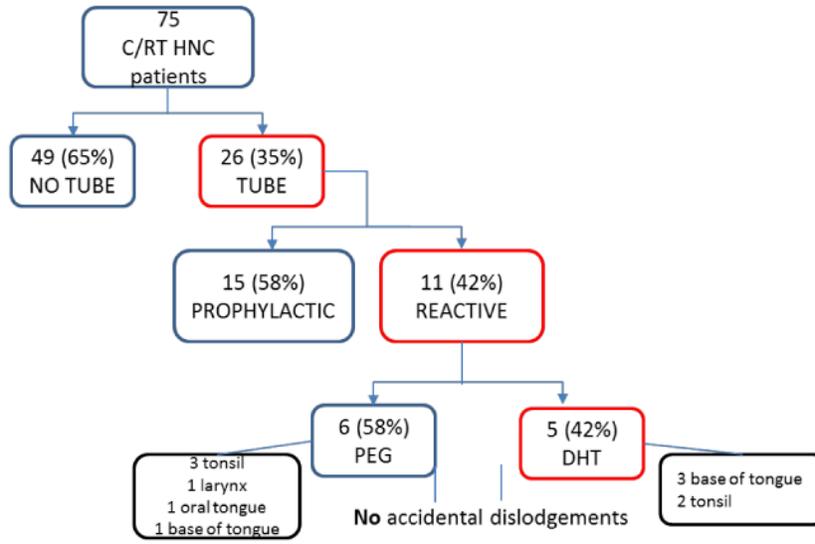


Table 1: Reactive Tube Duration (NGT vs PEG)

	Mean (days)	Range (days)
DHT	32	21-47
PEG	118	60-166

Table 2 Functional Oral Intake Score Scoring Parameters

	Functional Oral Intake Scale (FOIS) <i>Crary, Mann, & Groher 2005</i>
Level 7	Total oral diet with no restrictions (WNL)
Level 6	Oral diet, multiple consistencies, no special prep but specific food limitations
Level 5	Oral diet, multiple consistencies, requiring special prep or compensations
Level 4	Oral diet, single consistency
Level 3	Tube dependent, with consistent oral intake of food or liquid
Level 2	Tube dependent, minimal attempts of food or liquid
Level 1	Tube dependent, nil per os (NPO)

Figure 2 Functional Oral Intake Scale (FOIS) – Patient Reported (current diet) vs. SLP Recommended Safe Diet Level

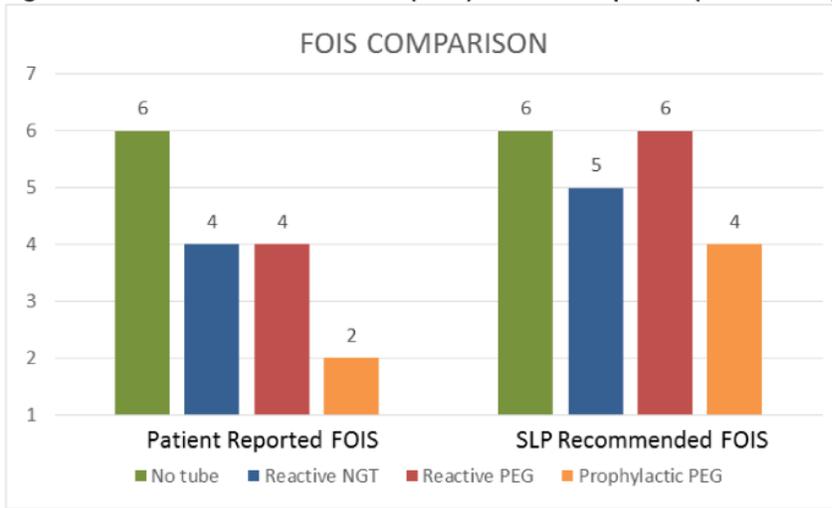


Figure 3 Pain Ratings by Tube Type and Across Treatment

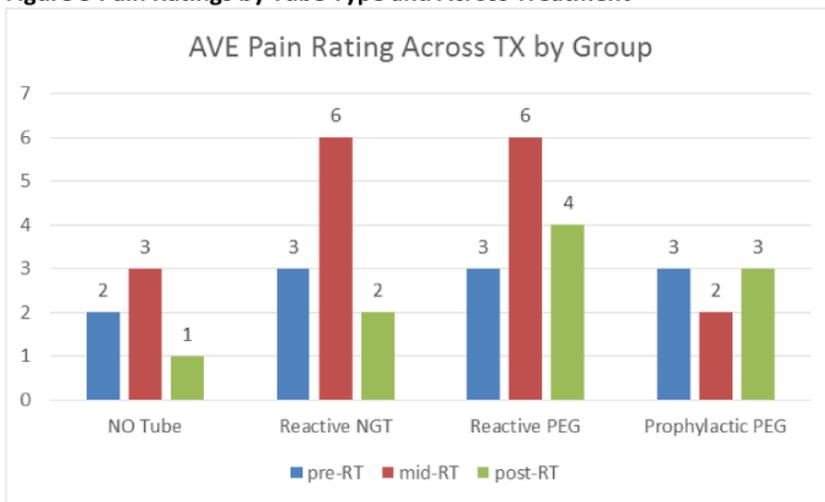


Figure 4 Weight Loss by Tube Type and Across Treatment

