

NO SToPS is an interprofessional supportive care program implemented in 2008 for patients with head and neck cancer undergoing chemoradiation. The goals of the program are to reduce radiation treatment breaks and hospitalizations related to toxicity from this difficult treatment. Breaks lead to lower locoregional control and survival rates in this population. This article describes the effect of the NO SToPS program.

AT A GLANCE

- Radiation treatment breaks decreased significantly after implementation of the NO SToPS supportive care program.
- Social work intervention was associated with a significant reduction in hospitalizations during chemoradiation.
- Daily RN/advanced practice provider assessment and spray and weigh were key to the program's success.

KEYWORDS

treatment interruption; head and neck cancer; supportive care; chemoradiation

DIGITAL OBJECT IDENTIFIER

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NO SToPS

Assessment of a supportive care program to reduce treatment breaks in patients with head and neck cancer

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Adding concurrent chemotherapy to head and neck radiation improves survival by 7%–8% at five years when compared with radiation alone, but toxicity increases considerably (Bourhis, Le Maître, Baujat, Audry, & Pignon, 2007). Side effects may include the pain of oral mucositis and radiation dermatitis, dysphagia, excessive secretions with gagging, dysgeusia (taste distortion), nausea, vomiting, anorexia, weight loss, volume depletion, infection, fatigue, aspiration, immunosuppression, emotional distress, and financial strain, often resulting in radiation treatment breaks and hospitalization (Rosenthal & Trotti, 2009). Unplanned breaks in radiation treatment or extended time between surgery and the end of adjuvant radiation therapy lower survival rates in these patients and may reduce tumor control rates at least 1% for every day that radiation is interrupted (Ghanem et al., 2017; Russo, Haddad, Posner, & Machtay, 2008; Yom & Harari, 2018).

An interprofessional team from St. Luke's Mountain States Tumor Institute in Boise, Idaho, developed and implemented a supportive care program called NO SToPS, focusing on nutrition, oral care, skin care, therapy needs (swallowing, range of motion, lymphedema), pain management, and support for psychosocial issues. Development took place in 2008. Standardized medical orders and oral and skin care protocols based on the literature and best practice were implemented across four treatment sites from 2008–2010 (Lambertz et al., 2010).

The NO SToPS program recommends pretreatment dental evaluations, treatment learning classes, prophylactic gastrostomy tube placement, weekly nutrition counseling, baseline swallowing evaluation/exercises and oral eating throughout treatment, social work support, a minimum of weekly follow-up for four weeks after treatment completion, and daily “spray and weigh” throughout treatment. Spray and weigh is RN/advanced practice provider assessment and management of weight, nutrition, hydration, oral mucositis, radiation dermatitis, swallowing, jaw and neck range of motion, pain, and social issues (financial, transportation, home management, psycho-emotional), along with spray cleansing of the oral cavity (Lambertz et al., 2010).

Methods

A team representing the NO SToPS program conducted a retrospective chart review of 295 patients with head and neck cancer who received chemoradiation in the four clinics from 2005–2016. Study data were collected and managed using Research Electronic Data Tools (REDCap) from the University of Washington (Harris et al., 2009).

Data analysis included comparisons between binary outcomes (yes or no) and chi-square analysis. To examine comparisons on duration measures, one-way analyses of variance (ANOVAs) compared the means. Cochran-Armitage Trend tested for changes over time. Alpha for significance was set at 0.05. All analyses were performed using SAS, version 9.4.

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Results

From 2005–2016, all but four patients had a nutritionist consultation. This is believed to be extremely important in minimizing side effects that may lead to treatment breaks (Muller-Richter, Betz, Hartmann, & Brands, 2017). From 2005–2008, 94% of the patients had a feeding tube inserted. This decreased to 88% from 2011–2016, a nonsignificant decrease ($p = 0.13$). The time to feeding tube insertion was calculated as the difference between radiation start date and feeding tube insertion date. A point by serial correlation revealed no significant correlation between the time of feeding tube insertion and having a treatment break ($p > 0.28$); however, the high rate of feeding tube use and close nutritional management likely helps minimize the risk of malnutrition and volume depletion that may lead to treatment breaks.

The number of swallowing evaluations performed increased, with 17% having a swallowing evaluation in 2005–2008 and 70% having a swallowing evaluation from 2011–2016 ($p < 0.0001$). Although this is not significantly correlated with treatment breaks, it is believed that maintenance and recovery of swallowing is improved.

The percentage of social work consultations also increased significantly from prior to NO SToPS, with 37% in 2005–2008 versus 90% in 2011–2016 ($p < 0.0001$). Daily spray and weigh did not exist prior to NO SToPS but was fully implemented in all four centers at St. Luke's by 2010. Participation after full implementation of the program was 96% from 2011–2016.

Radiation Treatment Breaks

The percentage of patients who completed radiation without a treatment break showed a significant increase from 2005–2016 ($p = 0.0068$). Patients participating in the daily spray and weigh had a greater percentage of completing radiation without a break, trending toward significance ($p = 0.06$).

Hospitalizations

Four percent of those completing radiation without a treatment break were

hospitalized, whereas 31% of those who had a break were hospitalized ($p < 0.0001$). Those who had a social work consultation had a significantly lower percentage of hospitalization during chemoradiation ($p = 0.02$), dropping from 26% to 14%. Participation in spray and weigh reduced the raw percentage of hospitalizations by 10 percentage points; although not statistically significant ($p = 0.09$), this is likely clinically important.

Discussion

Radiation treatment breaks decreased significantly after implementation of the NO SToPS supportive care program, and social work involvement was associated

supports language and cultural differences, along with tobacco and alcohol cessation. Referrals are made to the oncology psychiatrist or community mental health resources as appropriate. Together, these efforts helped reduce hospitalizations.

Based on data gathered from the study period, the daily spray and weigh with RN/advanced practice provider assessment prompted early detection of problems that may lead to treatment breaks (trend toward a significant effect on treatment breaks and associated with a 10% reduction in percentage of hospitalizations). Daily nursing assessment of weight, hydration, nausea, bowels, and feeding tube management often led to immediate consultation

"Unplanned breaks in radiation treatment or extended time between surgery and the end of adjuvant radiation therapy lower survival rates."

with a significant reduction in hospitalizations. Given that 97% of patients were treated with intensity-modulated radiation therapy/rapid arc techniques, variability in radiation delivery was minimal and unlikely to have affected a change in treatment breaks or hospitalizations. Therefore, based on data analysis from 2005–2016, the interprofessional team-based NO SToPS program prompted these improvements.

Social work involvement increased significantly with the program. Along with patient financial advocates, social workers help patients gain access to resources for treatment, such as healthcare supplies, enteral feeding solutions, transportation to treatment, housing, utilities, and medications, particularly for the uninsured or underinsured. Psychosocial support is provided to patients and caregivers related to depression, anxiety, fear, anger, body image, grief, and loss. Social work

with the nutritionist and adjustment in the nutritional plan, IV hydration, consultation with the pharmacists, and/or adjustment of the chemotherapy treatment plan by the medical provider to minimize the risk of radiation breaks.

Daily direct observation of the oral mucosa leads to early detection and management of infection and changes in saliva or secretions. The program includes evaluation of swallowing and a review of head and neck exercises, consistent with Hutcheson et al.'s (2013) findings that show that compliance with swallow exercises and oral intake during treatment results in significant better long-term diet and shorter duration of gastrostomy dependence. If needed, immediate consultation or referral back to the swallowing therapist is accomplished to evaluate for aspiration risk. Close management of radiation dermatitis per protocol or referral to the wound/ostomy/continence nurse

is performed. Pain is monitored daily, with adjustments made in the pain management plan as needed. The radiation therapists report symptom changes to the nursing staff or medical providers and help to ensure that, if a radiation treatment machine is down, the patient is treated in another facility rather than miss a treatment.

Conclusion

Because of the components of daily assessment in the NO SToPS program, symptom management and close follow-up by an interprofessional team, patients had a foundation for better self-care throughout treatment. Anecdotal feedback from patients has indicated the spray cleansing is soothing, and the daily interaction gave them reassurance and a sense of safety. Along with weekly provider and nutritionist follow up for four weeks after treatment completion, many patients requested ongoing spray and weigh for several days or weeks during this time as well.

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