Closing a Gap in Cancer Care

In Brief

In 2014 a retrospective analysis of head and neck cancer patients coming through a multidisciplinary clinic at William Beaumont Hospital, Royal Oak, Mich., revealed a 38 percent hospitalization rate—this despite a PEG tube placement rate of 83 percent.[1] The main reasons for the admissions were dehydration and/or malnutrition, leading our clinicians to conclude that patients had not received sufficient education about their PEG tubes and the need for tube feeding. To close this gap in care, William Beaumont Hospital implemented a weekly nutrition clinic for its head and neck cancer patients. In a small, initial cohort of patients, this clinic resulted in shorter hospital stays and a lower hospitalization rate for dehydration and malnutrition. Read how this weekly nutrition clinic had a positive impact on our patients' quality of life, improved our patient education efforts, and reduced the cost of care.

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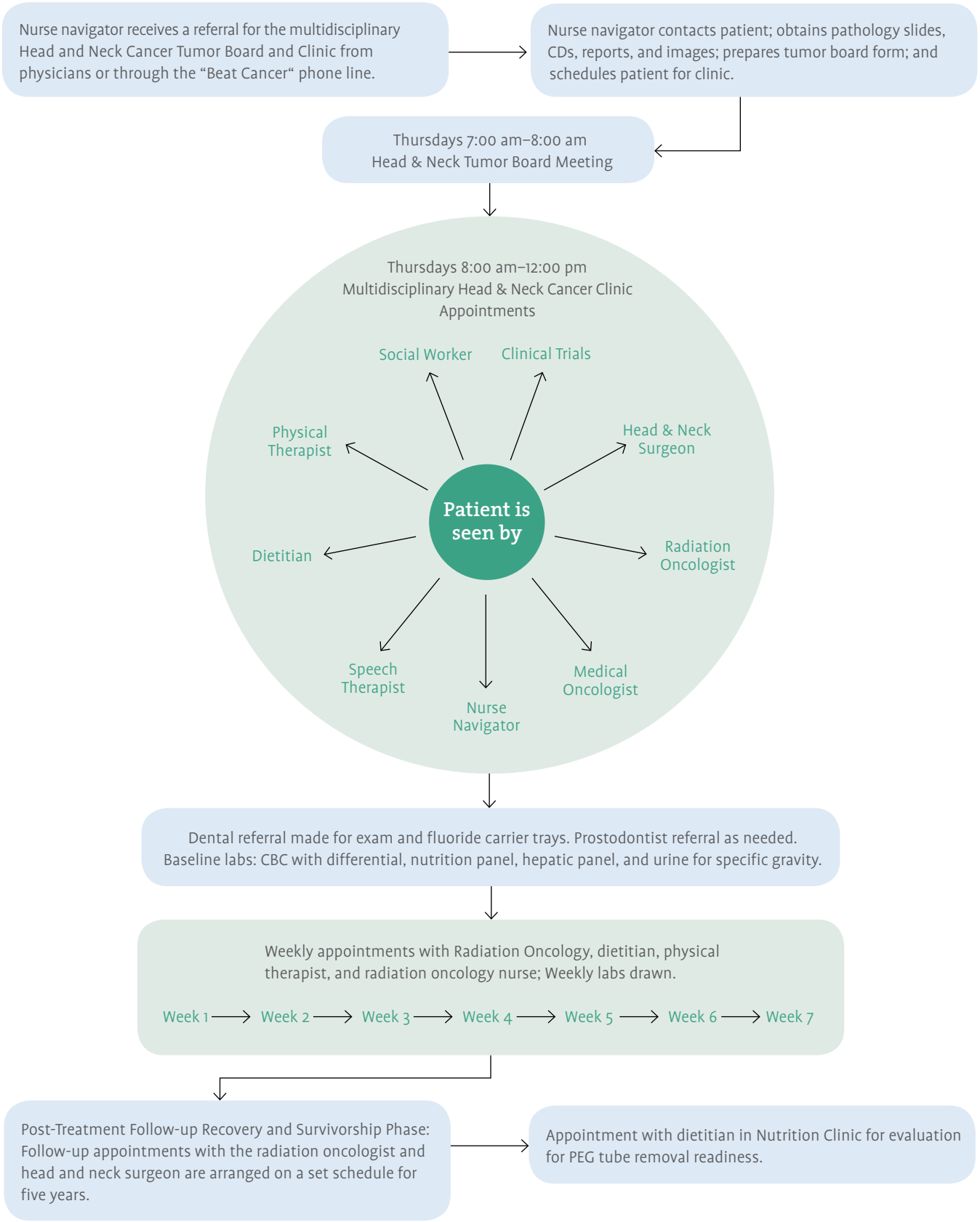
An outpatient weekly nutrition clinic for head and neck cancer patients

Beaumont Health System is a three-hospital system based in southeastern Michigan that provides a wide array of cancer services to the community. In 2013 Beaumont Cancer Institute diagnosed 6,493 new patients with 5,546 being analytical cases. Beginning in 2008 Beaumont Cancer Institute implemented multidisciplinary clinics to improve the coordination of care and outcomes for its patients. Over the past six years, Beaumont Cancer Institute has added these multidisciplinary clinics at all three hospitals.

Our Multidisciplinary Head and Neck Cancer Clinic

In 2011 Beaumont Cancer Institute clinicians noticed that patients diagnosed with head and neck cancer seemed to be experiencing a long delay from diagnosis to their first treatment. After making this measure a goal for its Cancer Committee, Beaumont Cancer Institute established and implemented a multidisciplinary Head and Neck Cancer Clinic to support not only its physicians, but also its patients and their families. This multidisciplinary clinic addressed all of the patients' ancillary needs at a single visit, including speech pathology, physical therapy, dietary needs, etc. Since 2011 the multidisciplinary Head and Neck Cancer Tumor Board and Clinic has met every Thursday morning to discuss and treat complicated, loco-regionally advanced head and neck cancers. First, a team of physicians from treating specialties (head and neck and reconstructive surgery, radiation oncology, and medical oncology) and ancillary specialties (neuro-radiology, pathology, and nuclear medicine), along with staff from ancillary services (speech pathology, rehabilitation, social services, and nutrition) gather to review the cases. Then, the team selects the patients to be seen in the multidisciplinary clinic. Figure 1, page 32, is a flowchart that illustrates how our multidisciplinary Head and Neck Cancer Clinic and Nutrition Clinic works.

Figure 1. Multidisciplinary Head and Neck Cancer Clinic and Nutrition Clinic Flowchart



Our goal is to offer a seamless one-stop-shop for these difficult to treat patients, spanning from diagnosis, through staging, to treatment and management planning, ensuring the delivery of proper, coherent, and consistent information about the diagnosis and management plan. Over the last few years, we have fine-tuned the process for the approximately 200 advanced head and neck cancer patients seen annually. At the Head and Neck Cancer Tumor Board and Clinic, our team discusses every available treatment option with the patient, including organ preservation protocols for concurrent chemoradiation and brachytherapy and minimally invasive surgical techniques, such as transoral laser and robotic surgeries, as well as a wide variety of ancillary services (i.e., voice and swallowing rehabilitation).

Continuous Quality Improvement

As a part of Beaumont Cancer Institute's continuous quality improvement (QI) strategy, we arrange an annual multidisciplinary Head and Neck Symposium with invited national speakers and presentations from all participating specialties and ancillary services, including our translational research group that analyzes biospecimens from our patients for biomarker discovery studies. Most importantly, we have a head and neck cancer workgroup that consists of representatives from participating specialties and ancillary services that meets regularly to discuss innovative, pragmatic solutions to daily issues.

At one such meeting, the workgroup decided to analyze our current practice of PEG tube placements and nutritional patient education. We knew that a vast majority of our patients received a feeding tube, but we wondered if and how the patients really used them. A retrospective study of 193 patients who received primary chemoradiation for head and neck cancer at our institution revealed that 83 percent of our patients received a PEG tube. Despite that fairly high percentage, 38 percent of patients were still admitted during treatment for dehydration and malnutrition—in some cases resulting in death.[2]

These numbers were striking to our clinicians. After conducting a sub-analysis, it became clear that even though we offer PEG tubes and provide education on how to use them, patients were clearly not getting the message. The workgroup concluded that, as clinicians, we must pay more attention to this issue. Specifically, we had to better guide our patients through the treatment steps and help them start using their PEG tubes before they encountered hydration and nutrition issues. This QI initiative led to the conception and implementation of a nutrition clinic for head and neck patients in 2014.

Our Weekly Nutrition Clinic

The rationale for a weekly nutrition clinic for head and neck cancer patients is intuitive; if we see our patients every week during treatment, we can better inform them how and when to use their PEG tubes and closely monitor their nutritional status. The weekly nutrition clinic helps us identify patients who may be at risk for potential nutritional problems and, hopefully, prevent serious adverse events related to dehydration and malnutrition. This type of care is not only patient-centered, it can lead to important cost-savings, as hospital admissions and more expensive treatment of serious nutritional complications (intensive care treatments, etc.) are reduced or even prevented.

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Our weekly nutrition clinic focuses on preventing serious side effects and hospitalizations from dehydration and malnutrition by improving how clinicians monitor head and neck patients during radiation treatment. The nutrition clinic consists of an initial 60-minute post-PEG-tube placement instruction and weekly visits with the registered dietitian thereafter. The goal is to prevent or reduce enteral access complications by providing hands-on monitoring of the PEG tube, including site care, free-water flushes, and feeding instructions. Clinicians believed that this care would decrease complications and prevent a lapse in PEG tube usage, thus reducing the incidence of weight loss, protein calorie malnutrition, and dehydration. (To achieve the benefits of enteral nutrition, the PEG must consistently function to prevent interruption of use.)

Symptoms of tube feeding intolerance, such as nausea or diarrhea, are better managed with availability of an onsite resource for patients to turn to when complications occur. In addition to evaluating the patient's tolerance to tube feeding and compliance with the recommended tube-feeding regimen, the dietitian monitors the patient's nutrition panel and weight weekly. Table 1, page 34, outlines the evaluations and interventions offered during the weekly nutrition clinic.

Patients have weekly labs drawn for monitoring by the medical oncologist. A nephrologist oversees the lab work, including a complete blood count with differential, a nutrition panel, a hepatic panel, and a urine check for specific gravity. If pump-managed tube feedings are needed, the dietitian or the nurse navigator makes a referral to Home Care.

Table 1. Evaluation and Interventions Offered at the Weekly Nutrition Clinic for Head and Neck Cancer Patients

REGISTERED DIETITIAN NUTRITION EVALUATION	NUTRITION INTERVENTION
Pre-Treatment Visit in Multidisciplinary Clinic	• Nutrition assessment completed, including patient calorie needs • Protein and fluid needs calculated • 24-hour recall and weight history obtained • Patient instructed on a high-calorie, high-protein diet prior to treatment
Post-PEG Placement	• One-hour PEG instruction, including care of PEG site, water flushes, and formula instruction
OTV (On Treatment Visits) Weeks 1-7	• Monitoring of oral intake of calories, protein, and fluids via 24-hour recall • Weekly weights • Weekly nutrition panel to monitor pre-albumin status • PEG tube site monitoring and continued reinforcement of PEG tube usage, including water flushes and formula • Tolerance to tube feeding closely monitored, including checking of gastric residuals and symptoms of nausea, vomiting, diarrhea, and constipation
Post-Treatment	• Follow-up phone call one week post-treatment • If patient experiences difficulty eating, drinking, or tolerating tube feeding, an appointment is made to follow up with registered dietitian in weekly nutrition clinic • Standard follow-up appointment; patient seen on visit with MD at six-week check-up • Weight and oral fluid intake monitored; fluid needs assessed

Our Nutrition Clinic Results

We have so far managed 25 head and neck cancer patients through our weekly nutrition clinic; 18 of these patients received concurrent chemoradiation, which makes them comparable with the retrospective study cohort. Of these, 14 had PEG tubes placed, 12 prophylactically and 2 reactively. While long-term data are not yet available, we have conducted a short-term analysis of hospitalization rates during treatment for this limted cohort of patients. Looking at this data, our weekly nutrition clinic appears to have improved our patient monitoring and management, leading to shortened hospital stays and decreased hospitalization rates due to dehydration and malnutrition (see Table 2, right).

Nine of eighteen patients from the weekly nutrition clinic were admitted to the hospital, but only three admissions (17 percent) were due to primary dehydration and malnutrition. One of those three was known to be non-compliant with his PEG tube usage. Of the remaining 6 patients, 2 were admitted for reactive placement of PEG tubes due to dysphagia, 2 were hospitalized for nausea and vomiting due to cisplatinum chemotherapy, 1 was admitted for hemoptysis, and 1 was admitted for a c-diff (clostridium difficile) infection.

Hospital stays were significantly shorter for the patients in the nutrition clinic cohort (median 4 days) compared with patients from the retrospective study (median 7 days), which reflects less severity with regards to the reasons for admission. The median length of

stay for those hospitalized for dehydration or malnutrition versus other reasons was 3 versus 16.5 days respectively. One patient who was a post-kidney transplant and blind from diabetic retinopathy died from apparent complications from hypoglycemia.

These preliminary findings from our nutrition clinic led to a change in our treatment regimens. All patients on cisplatinum now receive IV steroids, which has reduced the incidence of treatment-related nausea and emesis. Our close monitoring of these patients led to this intervention opportunity, and we were able to implement a rapid change in treatment protocols.

Benefits & Lessons Learned

Information and education on PEG tubes is normally given to patients several weeks before treatment starts, when the patients are eating and drinking without difficulty, and when their focus is on treatment, prognosis, and financial concerns rather than possible downstream nutritional issues. PEG tubes are placed by radiology, GI physicians, or general surgeons under sedation or anesthesia. This means that much of the information about the PEG tube is given to the person who drives the patient home—not directly to the patient. All of these factors combine to create a gap in patient understanding of PEG tube usage during hospitalization—when they are least likely to retain the information post-PEG placement. Unfortunately, a patient's lack of understanding can lead to noncompliance at home.[2] Inadequate education about PEG tube usage can also cause patients to delay use of the PEG tube until it's too late, resulting in unnecessary hospitalizations. Our weekly nutrition clinic has changed the way our clinicians educate our patients and how we prepare them for the dysphagia that they will likely face during treatment.

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Multiple retrospective studies have demonstrated the importance of PEG tube usage in decreasing weight loss and hospitalizations.[3-7] Our data from this small preliminary cohort of patients demonstrates lower rates of hospitalization secondary to dehydration and malnutrition for patients enrolled in our nutrition clinic compared to our retrospectively analyzed cohort. Because

Table 2. Patient Data from the Weekly Nutrition Clinic

EVENT	PROSPECTIVE COHORT (NUTRITION CLINIC)	PUBLISHED RETROSPECTIVE COHORT
Hospitalization due to dehydration and malnutrition	3/18 (17%)	62/161 (38%)
Median hospital stay	4 days (1–28 days)	7 days (4–26 days)
Radiation therapy interruption due to hospitalization	0 patients	4 patients
Chemotherapy interruption	1 patient	1 patient
PEG tube complication	1/18 (6%)	16/161 (10%)
Death	1 patient	2 patients

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of the close monitoring that takes place at the nutrition clinic, we were able to identify patients having increased difficulty with treatment much earlier in their treatment course. Specifically, this improved management allowed our clinicians to more closely monitor diet, tube feeding, and fluid intake, likely contributing to the lower hospitalization rates seen in this patient cohort.

Implementation of our nutrition clinic resulted in numerous other benefits including:

- Clinicians had the opportunity to improve their treatment practices. As stated previously, in an effort to decrease chemotherapy-associated nausea, our clinicians changed their treatment of head and neck cancer patients to include IV steroids with the administration of cisplatinum chemotherapy.
- Clinicians are now able to detect problems with prescribing and filling tube feedings much earlier in the treatment course. Before implementation of the nutrition clinic, we often saw significant delays in getting the tube-feeding formula to patients' homes, which, in turn, triggered malnutrition and hospitalizations. Leveraging nutrition clinic resources, we are now able to ensure timely prescription and delivery of tube-feeding formula.
- A dietitian now assesses patients for readiness for PEG tube removal.
- Clinicians can more easily identify patients who need to come to the nutrition clinic following completion of treatment for ongoing nutritional support needs.
- Clinicians have improved their early intervention efforts for head and neck cancer patients. This early intervention begins at the patient's first Head and Neck Multidisciplinary Cancer Tumor Board and Clinic visit prior to start of treatment, and continues throughout the course of treatment, closing any potential gaps in care.
- Hands-on teaching in the nutrition clinic decreases the patient's fears and anxiety. This enhanced education empowers both patients and their support persons and caregivers.

In addition to improving care and education for our patients, the weekly nutrition clinic has opened up the possibility of implementing a translational research program. Through Beaumont's Biobank, patients in the nutrition clinic can participate in a prospective study that aims at identifying predicting biomarkers that can identify patients at risk to develop dehydration and malnutrition before it actually happens. Longitudinally collected blood, urine, and saliva samples are analyzed by proteomics and metabolomics in our core molecular laboratory, which is financed through philanthropy. Data analysis from this study is projected for the spring of 2015.

The success of our nutrition clinic has allowed the department of radiation oncology to incorporate a permanent dietitian into the program. This staff member not only addresses the needs of our head and neck cancer patients, but also provides services to other patients who can benefit from continual education about nutritional health during treatment.

Beaumont Cancer Institute will continue to support nutritional consultations for all of its multidisciplinary clinics, as well other educational opportunities, such as cooking classes for our patients and resources for picking healthy options while grocery shopping. In the future, we hope to continue expanding these vital services with the continued support of the hospital, along with philanthropic contributions from our generous patients and community. OI

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