

Improving Timing Metrics for Definitive Surgical Management in Head and Neck Cancer Care



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Abstract

The objective of this study is to assess timing metrics for delivery of head and neck cancer (HNC) care at the Eastern Virginia Medical School (EVMS) Department of Otolaryngology. Patients newly diagnosed with HNC were identified during a 12-month period to assess how quickly they were treated. We intend to identify barriers to care and create an action plan to address modifiable factors. This is a retrospective chart review of patients with a new diagnosis of HNC. The data collected includes basic demographic information, cancer characteristics, and dates related to clinic appointments, surgery, and imaging. The defined metrics included time from office visit to staging endoscopy (TM1), time to definitive surgery from staging endoscopy (TM2), and timing of imaging in relation to definitive surgery (TM3). A total of 165 patients were identified. The percentage of patients that met the timing metrics (TM1, 2, 3) respectively were 62.5% (70), 44% (37), and 53.1% (43). One factor that was found to be statistically significant for delay in TM2 was human papilloma virus (HPV) status (p value=0.021). No demographic factor was statistically significant across all timing metrics. Based on our results, it was concluded that delays related to treatment of new HNC at EVMS was non-discriminatory. This leads us to believe there may be hospital and system-wide issues that can cause delays in patient care related to surgical planning and scheduling. We intend to implement an action plan to help improve adherence to the defined timing metrics.

Introduction

The incidence of HNC continues to increase despite decreased rates of smoking, which leads to growing demands on providers and increased wait times. Delays in treatment can lead to patient anxiety and distress but may also lead to reduced survival.¹ Delaying the time between diagnosis and treatment is a risk factor for disease recurrence and worse survival.² In a study of more than 50,000 patients with HNC, the interval from the time of diagnosis to time of curative treatment initiation (TTI) of 61 to 90 days or greater than 90 days predicted a higher risk of death compared to a TTI less than 30 days.³ Patient factors can contribute to an increased time between diagnosis and TTI. African American race, Hispanic ethnicity, uninsured patients, and patients with Medicaid or other government health insurance had a statistically significant longer TTI compared to Caucasian race and those with private insurance in a retrospective study of the National Cancer Database of over 270,000 patients.²

Studies have shown improved survival for patients treated at teaching facilities or high-volume centers. This may be related to more experienced surgeons, better care during hospitalization, multidisciplinary approach, and higher compliance with National Institute of Health treatment recommendations.⁴ Transitioning care to these centers inherently increases the TTI. Despite this increase, survival seems to be improved by treatment at these facilities.² This is the interest of our study - to further define the delay in treatment of HNSCC patients at an academic facility and determine modifiable risk factors for this delay.

Methodology

All new HNC patients treated at the EVMS Department of Otolaryngology from 09/01/18 to 08/30/2019 were identified through a RedCap database of HNC patients. Our inclusion criteria included: patients with a new diagnosis of HNC treated during the specified time frame that had undergone surgical treatment (staging endoscopy and/or definitive surgical resection). Our exclusion criteria included: patients treated outside the time frame and diagnosis and treatment of a previous HNC, cutaneous, soft tissue, or salivary gland malignancy.

The electronic medical record of patients that met inclusion criteria were reviewed. The variables collected included: basic demographic data (sex, age, race, smoking status, zip code, distance from treating facility, and mean adjusted gross income), treating EVMS physician, insurance status and type, date of outside biopsy, clinic appointment or hospitalization, staging endoscopy, definitive surgical resection, and imaging studies, and cancer characteristics (site, subsite, TNM stage, and pathologic characteristics).

The defined timing metrics are as follows - TM1: staging endoscopy within 14 days from the first outpatient office visit or hospitalization; TM2: Definitive surgical resection within 30 days of complete staging (includes staging endoscopy, confirmed histopathology of cancer, and imaging); TM3: Surgical planning scans within 45 days at the time of definitive surgical resection

Results

One hundred sixty-five patients met inclusion criteria. The percentage of patients that met the timing metrics (TM1, 2, 3) respectively were 62.5% (70), 44% (37), and 53.1% (43) as seen in Figure 1. Table 1 describes some of the demographic data collected, and Table 2 describes some of the characteristics of the cancer seen in the patient cohort.

HPV status was one factor found to have statistically significant delay in TM2 (p value=0.021) as seen in Table 3. HPV negative patients had definitive resection performed at an average of 51 days while HPV positive patients had an average of 25 days. There was no single patient demographic factor that was statistically significant across all timing metrics.

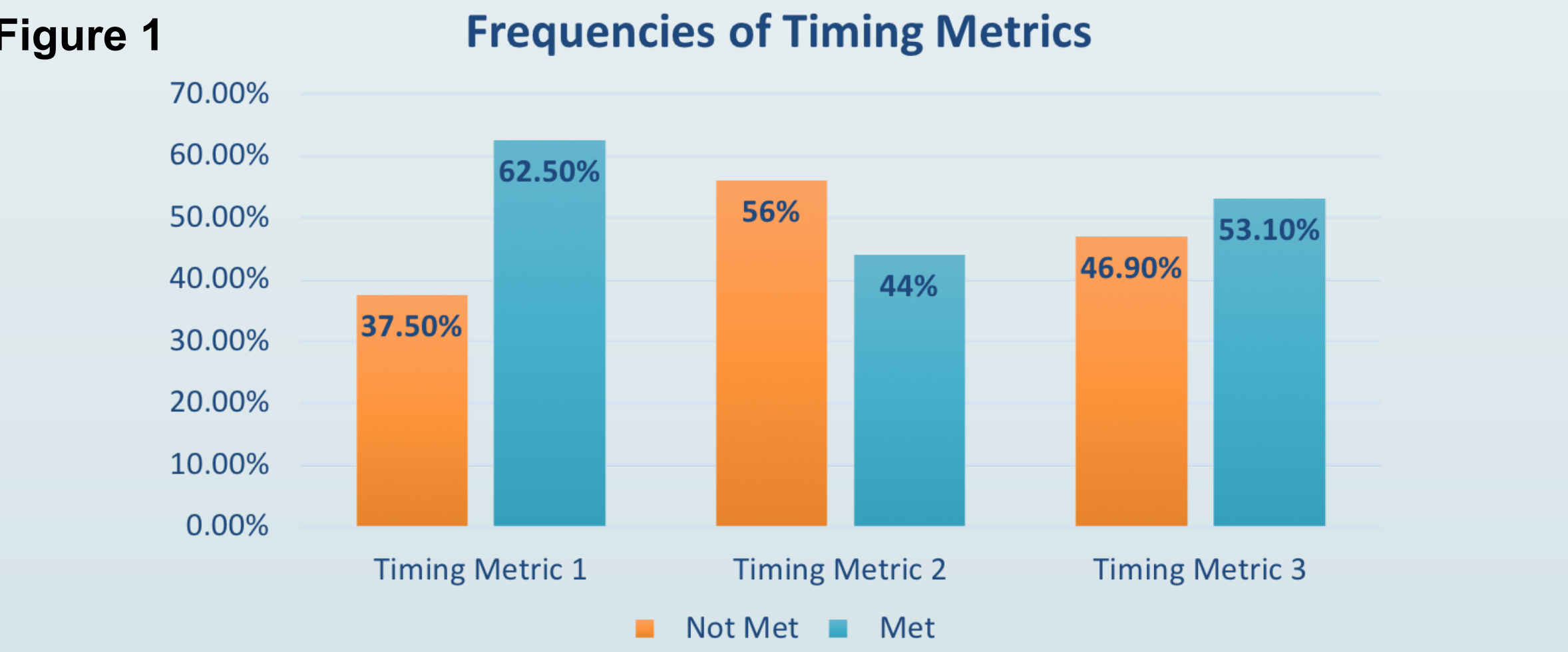


Table 1: Demographic data

Variable		Frequency (N)	Frequency (%)
Gender	Female	44	26.7%
	Male	121	73.3%
Race	Asian	5	3%
	Black	44	26.7%
	Hispanic	2	1.2%
	White	114	69.1%
Insurance Type	Medicaid	17	10.3%
	Medicare	80	48.5%
	Private	54	32.7%
	Self-Pay	4	2.4%
	TriCare	10	6.1%

Table 2: Cancer characteristics

Variable		Frequency (N)	Frequency (%)	Variable		Frequency (N)	Frequency (%)
T Stage	x	4	2.4%	Site	Hypopharynx	8	4.8%
	1	39	23.6%		Larynx	31	18.8%
	1a	1	0.6%		Oral Cavity	51	30.9%
	2	39	23.6%		Oropharynx	67	40.6%
	3	39	23.6%		Sinonasal	5	3%
	4	6	3.6%		Unknown	2	1.2%
	4a	35	21.2%	HPV Status	Negative	30	37%
	4b	1	0.6%		Positive	51	63%

Table 3: HPV status

Sample Descriptives				Chi-square Results		
Variable		Frequency (n)	Frequency (%)	TM1	TM2	TM3
HPV Status	Neg	30	37%	NS	.021	NS
	Pos	51	63%			
TM2						
Variable		Not Met	Met	Average # of days		
HPV	Neg	9 (60%) 81.8%	2 (13.3%) 18.2%	51.09		
	Pos	6 (40%) 31.6%	13 (86.7%) 68.4%	25.47		

Percentages in parentheses represent percentage by column; percentages not in parentheses represent percentage by row.

Discussion and Conclusion

Based on our results, it was concluded that delays related to treatment of new HNC at EVMS was non-discriminatory. This leads us to believe there may be hospital and system-wide issues that can cause delays related to surgical planning and scheduling. We intend to implement an action plan to help improve adherence to the defined timing metrics. The same timing metrics will be reassessed prospectively for new patients for one year to determine the effectiveness of the action plan, which includes working with cancer services staff (schedulers, medical assistants, social worker, and nurse navigator), increased attention to our timing metrics, a checklist to be used for all new HNC patients with suggested goals for surgical dates, and monthly updates to the cancer services staff of adherence to the timing metrics.

Preliminary Prospective Data

The timing metrics are being reassessed prospectively for new patients identified through weekly multidisciplinary EVMS head and neck tumor board conference. Patients will be identified for one year. The quarterly goal is to improve by 2%-3% in each timing metric. Sixty-seven patients have been identified in the first quarter with the same information collected. Table 4 shows the percentage of patients that met or did not meet the timing metrics for the monthly updates given thus far. Update #5 was the last update for the first quarter of the year. The quarterly goal has not been met for TM1. This may be partially related to operating room restrictions during the COVID pandemic, including required COVID testing prior to procedures. We intend to continue recruiting patients, provide monthly updates, and arrange quarterly meetings with cancer services staff to encourage feedback for changes to assist with meeting our metrics.

Table 4: Monthly updates on timing metrics

	TM1		TM2		TM3	
	Met	Not Met	Met	Not Met	Met	Not Met
Update #1	66.67%	33.33%	50%	50%	75%	25%
Update #2	61.54%	38.46%	58.33%	41.67%	75%	25%
Update #3	57.14%	42.86%	68.75%	31.35%	73.33%	26.67%
Update #4	51.52%	48.48%	57.14%	42.86%	65%	35%
Update #5	55.10%	44.90%	54.17%	45.83%	65.22%	34.78%

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