

# Characteristics of Head and Neck Cancer Patients Evaluated in Multidisciplinary Clinic

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## Abstract

**Objective:** As head and neck cancer (HNCA) treatment becomes increasingly multidisciplinary and complex, the multidisciplinary clinic (MDC) model may improve coordination and collaboration across disciplines. We sought to characterize patients who participated in MDC and determine impact on care.

**Study Design:** Retrospective analysis of newly diagnosed HNCA patients evaluated in a HNCAMDC at a tertiary care center.

**Methods:** The medical records of 597 patients evaluated in MDC from 2009-2015 were evaluated using cross-tabulations.

**Results:** The majority of patients were male (82%), white (79%), and married (69%), with a median age of 59 years. The majority of patients had private insurance (49%), followed by Medicare (45%); 69% of participants had a median annual income per household greater than \$60,000. Oropharyngeal tumors were the most common primary site (54%), of which 79% were HPV+. Nonoperative management was recommended in 63% of cases, and 20% of patients enrolled in clinical trials. Out-of-state and international patients comprised 41% of the MDC population, of which majority of those treated (67%) were self-referred. Overall, 80% of patients chose to stay and receive care from the MDC team (88% of in-state residents and 74% of out-of-state or international patients). The geographic distribution of patients did not differ over time; however, between 2009 and 2015, the overall percentage of patients who self-referred to the MDC clinic increased steadily from 24% to 43% ( $p=0.05$ ).

**Conclusion:** The MDC model encourages multidisciplinary collaboration and care for HNCA patients. The observed upward trend in self-referrals suggests that patients increasingly value the MDC model.

## Introduction

The multidisciplinary clinic (MDC) model is becoming an increasingly prevalent way of managing the complexities of head and neck cancer treatment. The popularity of this model may be due to perceived facilitated coordination and collaboration across disciplines, along with the impact of multidisciplinary tumor board on treatment decisions<sup>1</sup>, associated improved survival<sup>2</sup>, and improved compliance with treatment and therapy<sup>3</sup>.

Our MDC benefits from the expertise of various fields—otolaryngology, radiation oncology, medical oncology, speech and language pathology, pathology, radiology, and social work—that address specific needs of head and neck cancer patients. We sought to characterize patients who have participated in MDC since its inception at our tertiary care institution.

## Methods and Materials

The medical records of all HNCA patients who were evaluated in the MDC at the Johns Hopkins Hospital from 2009 to 2015 were retrospectively reviewed in compliance with the Health Insurance Portability and Accountability Act. Data were compiled through a manual chart review and a database was created which included age, sex, race, marital status, occupation, median income, health insurance, referral status, histology, tumor stage, human papilloma virus (HPV)-status, treatment recommendations, and clinical trial enrollment status. Health insurance was grouped into six categories, and private insurance was defined as commercial or HMO insurance.

Median income per household was determined based on residential address. For each address, the corresponding county was determined; the county and year of evaluation in MDC was used to determine median household income from the Robert Wood Johnson Foundation, an extraction of the US Census Bureau data. HPV status was based on HPV in-situ hybridization or p16 immunohistochemical analysis, an established surrogate marker for HPV in oropharyngeal squamous cell carcinoma<sup>4</sup>. Data were analyzed using Stata 12 (StataCorp, College Station, TX). Chi-square tests were used for statistical comparison of differences between groups.

Table 1. Occupational Categories of Participants by US Census 2000 Classifications

Occupation Group	Number (%)
Retired	127 (21.27)
Management, professional, or related	97 (16.25)
Service occupations	61 (10.22)
Sales and office occupations	65 (10.89)
Farming, fishing, & forestry	3 (1.01)
Construction, extraction, & maintenance	23 (3.85)
Production, transportation, & material moving	25 (4.19)
Unemployed	106 (17.76)
Yes, not specified	90 (15.08)

## Results

A total of 597 patients were evaluated in the MDC between 2009 and 2015. The majority of patients were male (82%), white (79%), and married (69%). The ages of participants ranged from 16 to 90 years, with a median age of 59 years and 50.92% of the participants greater than equal to the median age. A total of 290 participants (49%) had HPV-associated tumors. The majority of patients had private insurance (49%), followed by Medicare (45%). 69% of participants had a median annual income per household greater than \$60,000 (Table I). Occupation was reported as retired by 127 (21%) of participants. For the remaining participants, occupation was classified by U.S. Census 2000 criteria<sup>5</sup>, and 18% were unemployed while 16% were in management or professional careers. (Table II). Oropharyngeal tumors, comprising soft palate, tonsil, and base of tongue, were the most common primary site (54%), of which 79% were HPV+ (Figure 1).

The majority of patients evaluated in MDC chose to stay for treatment (82%), of whom the majority (55%) underwent non-surgical treatment. 20% of patients who stayed for treatment enrolled in clinical trials (Table III).

Out-of-state and international patients comprised 41% of the MDC population, of which majority of those treated (67%) were self-referred. Overall, 80% of patients chose to stay and receive care from the MDC team (88% of in-state residents and 74% of out-of-state or international patients). The geographic distribution of patients did not differ over time. A total of 199 (33%) participants were self-referred, and between 2009 and 2015, the overall percentage of patients who self-referred to the MDC clinic increased steadily from 24% to 43% ( $p=0.05$ ) (Figure 2).

There was no significant change in the composition of MDC patients from the year of MDC inception to subsequent years.

Figure 1. Prevalence of Primary Tumor Site

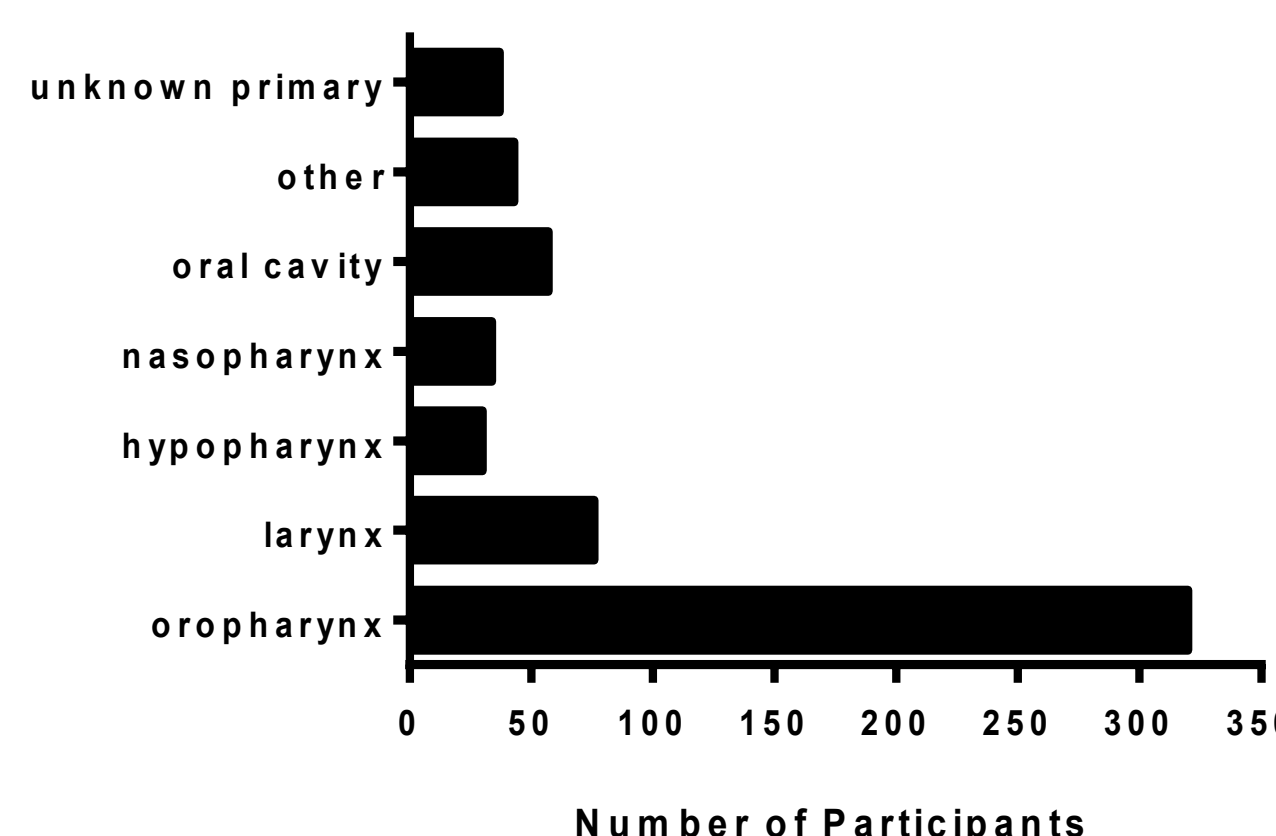
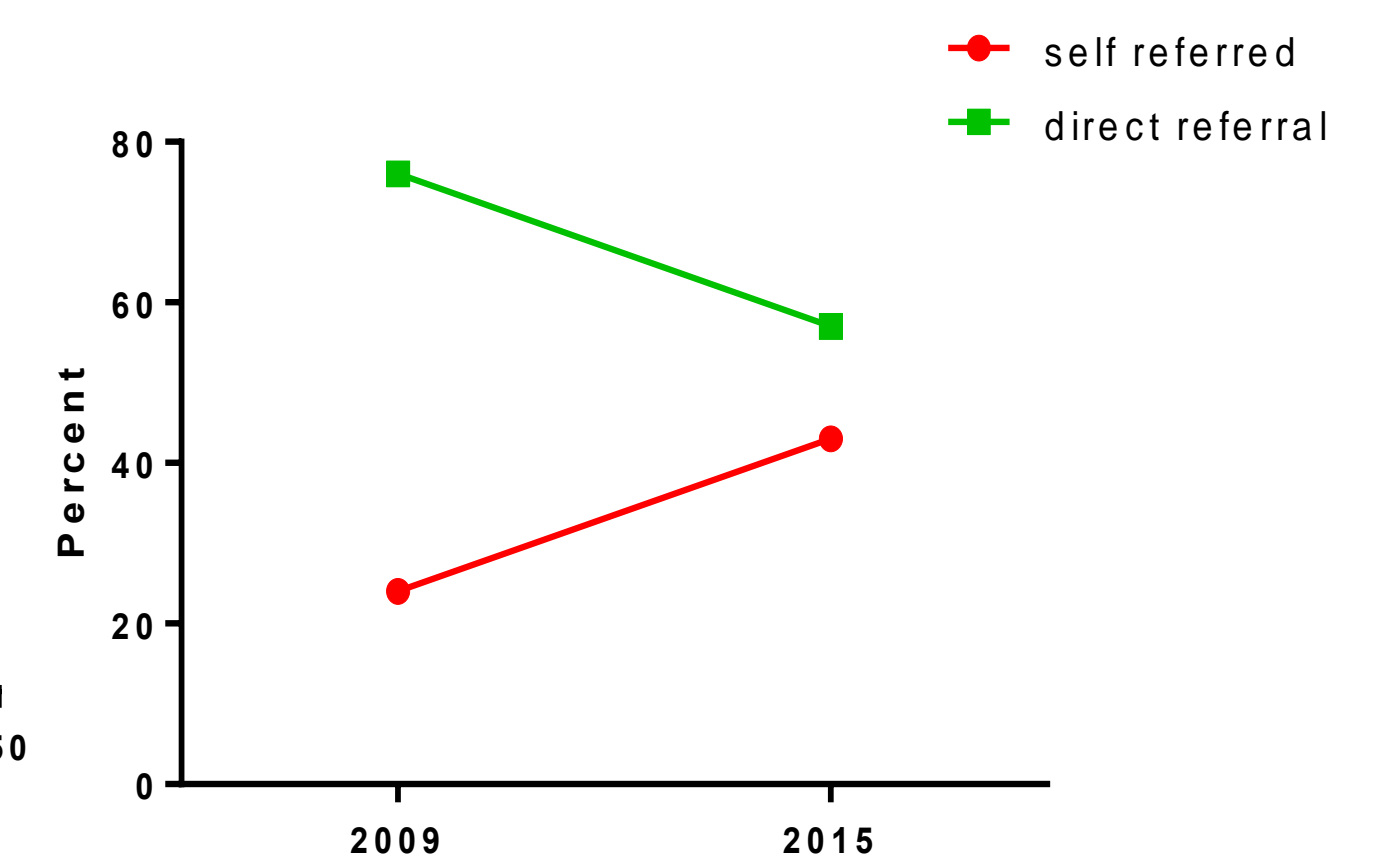


Figure 2. Self Referrals vs. Direct Referrals



## Discussion

Epidemiological studies have suggested that head and neck cancer is more prevalent in the lower socioeconomic population<sup>6</sup>; however, our study revealed that the majority of the participants evaluated in MDC had private insurance, were retired—indicating prior employment—and had median income per household greater than \$60,000, a level more than two times greater than the 2015 poverty threshold in the U.S.<sup>5</sup>. This data suggests that the MDC model, through direct referrals or self referrals, may not be including the individuals at higher risk for head and neck cancer. The number of self-referrals per year had a statistically significant increase over 7 years, suggesting that patients are drawn to the MDC model offered at this institution. Though difficult to determine a single causation of this increase, likely reasons include patients' perception of improved communication and decision-making by a group of health care providers from different departments and the ease of coordinating a single initial appointment for evaluation rather than up to three or more appointments with various specialties<sup>8</sup>. Furthermore, the process of self-referrals has been potentially made easier over the years with the increasing accessibility of requesting a consultation online or via phone.

## Conclusions

The MDC model encourages multidisciplinary collaboration and care for head and neck cancer patients. Analysis of MDC participants over seven years provides insight into the demographics, disease characteristics, and treatment decisions of patients that the model attracts and evaluates. The observed steadily upward trend in self-referrals to MDC suggests that patients increasingly value the MDC model.

## Contact

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