



# Race as a Risk Factor for Provider Delays in a Public Healthcare Setting



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## Abstract

**Objectives:** Although African American race is recognized as a poor prognostic factor for head and neck cancer (HNC), little is known about the mechanism. In this study, the effect of race on provider delays for patients in a public healthcare setting was investigated.

**Study Design:** A retrospective review of 100 consecutive patients with squamous cell carcinoma of the head and neck between 2012 and 2014 in a public healthcare setting was completed. Racial and demographic characteristics, as well as provider delay (time from presentation to the healthcare system to treatment recommendation) were obtained.

**Methods:** Subgroup analysis was used to calculate the relative risk (RR) of provider delay at 14, 21, and 28-day time points.

**Results:** African Americans were determined to have a greater risk of provider delay at the 14-day ( $p < 0.05$ ; RR 1.29; 95% CI 1.09-1.5) and 21-day time points ( $p < 0.005$ ; RR 1.43; 95% CI 1.11-1.84) than non-African American patients. However, there was no statistically significant greater risk seen at 28 days ( $p$  of 0.688; RR 1.13; 95% CI 0.75-1.6).

**Conclusions:** African American patients are at an increased risk of experiencing provider delays at 14 and 21-day time points when compared to non-African American patients. This risk disappears at 28 days, suggesting provider delay may not be a significant contributing factor for worse outcomes for African Americans in HNC. This suggests that other biologic or non-biologic factors may be the culprit.

## Introduction

African Americans with head and neck cancer (HNC) are more likely to initially present with metastatic disease, less likely to receive definitive treatment, and are more likely to die from HNC.<sup>1</sup> Even when controlled for smoking, alcohol use, and other confounders such as insurance and socioeconomic status, African American are more likely to be diagnosed with advanced stage disease.<sup>2</sup>

Studies have shown that the survival benefit associated with human papilloma virus (HPV)-positive tumors and lower HPV prevalence among African Americans explains the lower overall survival faced by African Americans.<sup>3</sup> Others, however, have shown survival disparities in African Americans despite HPV prevalence similar to that of the Caucasian patient population.<sup>4</sup>

Our group believes that the disparity in overall HNC survival faced by African American patients is a combination of social/financial, biologic factors, and diagnostic and treatment delays caused by health system issues. In this study, we focus on the time it takes for a patient in a public healthcare setting to be diagnosed and to receive a diagnosis and treatment recommendation and investigate if differences in provider delay are seen between races.

## Methods and Materials

We identified 100 consecutive patients who were diagnosed with primary squamous cell carcinoma of the head and neck between 2012 and 2014 at Interim Louisiana State University (LSU) Hospital (ILH). Inclusion criteria consisted of new patients presenting for evaluation of a neck mass or other symptoms related to HNC such as dysphagia or hoarseness. Patients with disease recurrence, benign tumors, or tumors of the thyroid or parotid glands were excluded.

Demographic data including race, age, sex, insurance type, tobacco use, primary tumor site, and stage were collected. Staging was according to National Comprehensive Cancer Network guidelines. Temporal data was collected including date of initial presentation to the ILH HNC Clinic, date of tissue diagnosis, and date of treatment recommendation formulation. This temporal data was used to determine provider delay (time from presentation to the ILH HNC Clinic to treatment recommendation).

Subgroup analysis was then used to calculate the relative risk (RR) of provider delay at 14, 21, and 28-day time points for African American patients and non-African American patients.  $P < .05$  was considered to be statistically significant. Data and statistical analysis were performed using SAS, version 9.4 (SAS Institute) and Prism, version 6 (GraphPad Software).

**Table 1.** Study Population Demographic Characteristics and Mean Provider Delay

	Value (n=100)	Mean Provider Delay, d (SD)	P Value
Age, Mean (SD)	55.7 (6.1)		
Tobacco Use, No.	85		
Race, No.			
African American	46	41.5 (26.5)	0.13
Non-African American	54	33.1 (27.9)	
Sex, No.			
Male	86	36.6 (27.3)	0.62
Female	14	39.4 (29.3)	

## Results

The study population presenting to the ILH HNC Clinic reflects national demographic trends (age, race, and gender) for HNC.<sup>5,6</sup> Overall analysis revealed no significant difference between the provider delay experienced by African Americans and non-African American patients.

On sub-group analysis, however, African Americans were determined to have a greater risk of provider delay at the 14-day ( $p < 0.05$ ; RR 1.29; 95% CI 1.09-1.5) and 21-day time points ( $p < 0.005$ ; RR 1.43; 95% CI 1.11-1.84) than non-African American patients. However, no statistically significant greater risk seen at 28 days ( $p = 0.688$ ; RR 1.13; 95% CI 0.75-1.6).

**Table 2.** Sub-Group Analysis for Provider Delay in African American Patients

Time Point	Relative Risk (RR)	95% Confidence Interval (CI)	P Value
14-day	1.29	1.09 – 1.50	< 0.05
21-day	1.43	1.11–1.84	< 0.005
28-day	1.13	0.75–1.60	0.688

## Discussion

The three-year mortality rate for HNC in African Americans is 47% versus 27% for non-African Americans. Even when cofounders such as socioeconomic factors, tumor characteristics, and treatment regimen are controlled for, African Americans have a higher risk of HNC-specific mortality (adjusted hazard ratio [AHR] of 1.19).<sup>1</sup>

We have a moral imperative as a field to investigate the causes of this disparity and to counteract them. Our group believes that there is no single cause but is more a combination of social/financial, biologic factors, and diagnostic and treatment delays caused by health system issues. The purpose of this study was to investigate one of these causes, provider delay, to determine if our health system should focus efforts here in an effort to reduce the disparity experienced by African Americans.

## Conclusions

African American patients are at an increased risk of experiencing provider delays at 14 and 21-day time points when compared to non-African American patients. This risk disappears at 28 days, suggesting provider delay may not be a significant contributing factor for worse outcomes for African Americans in HNC. This suggests that other biologic or non-biologic factors may be the culprit.

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