

## Hepatocellular Carcinoma Incidence Trends in North Carolina

Gary Y. Leung, Ph.D.

### Introduction

Hepatocellular Carcinoma (HCC) is a subset of liver cancer, defined by ICD-O code: C220 and Histology: 8170, 8171, 8172, 8173, 8174, 8175, 8180. The national incidence of hepatocellular cancer has been steadily increasing since 1995.<sup>1</sup> According to Surveillance, Epidemiology, and End Results (SEER) Program, the age-adjusted incidence rate between 2009 and 2013 was 7.0 cases per 100,000 in the United States.<sup>2</sup> It is usually caused by liver cirrhosis, which is in turn commonly due to alcohol abuse<sup>3,4</sup> and infections such as hepatitis B or C.<sup>5</sup> According to the Substance Abuse and Mental Health Services Administration (SAMHSA), there was a 50 percent increase in admittance to alcohol rehabilitation in North Carolina between 2004 and 2012.<sup>6</sup> The purpose of this report is to assess the most recent trends on the incidence of hepatocellular carcinoma in North Carolina.

### Data and Definitions

The most current incidence data from the North Carolina Central Cancer Registry was used. Except for incidence trend (data from diagnosis years 2004 to 2013), data from the latest five years of diagnosis, between 2009 and 2013, were employed in the analysis.

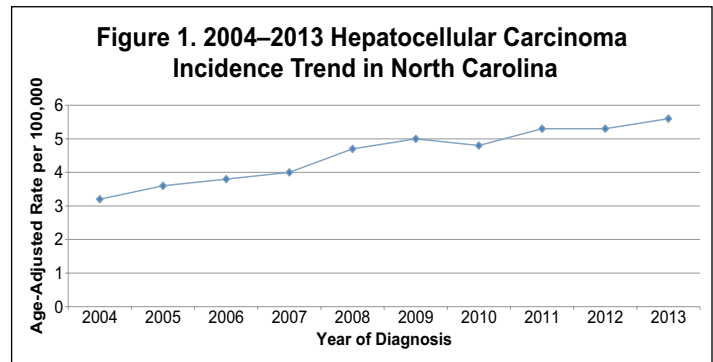
Age groups were based on age at diagnosis and divided into three groups: 1) 0–49, 2) 50–64 and 3) 65 and older.

Type of insurance coverage was categorized into four groups based on the variable, primary payer at diagnosis: 1) private insurance, 2) government (Medicare, Medicaid, Military), 3) uninsured and 4) unknown.

### Results

#### Overall Trend

Figure 1 shows that the age-adjusted rate for HCC has been steadily increasing, from 3.2 per 100,000 in 2004 to 5.6 per 100,000 in 2013.



#### Disparity in Age, Race and Ethnicity

Between 2009 and 2013, most incident cases of HCC were from individuals over 50 years of age (see Table 1). There is also racial/ethnic disparity in the incidence of HCC. The age-adjusted rates of non-Hispanic African American males (11.7 per 100,000) and Hispanic males (11.6 per 100,000) were higher than non-Hispanic white males (8.1 per 100,000), as well as females of all races and ethnicities (see Table 2).

#### Disparity at Stage of Diagnosis

A higher proportion of African Americans with HCC were diagnosed at distant stage than whites (see Figure 2).

A higher proportion of uninsured individuals with HCC were diagnosed at late stages (regional and distant: 60%) than those

**Table 1.**  
2009–2013 Hepatocellular Carcinoma Incidence in North Carolina by Age Groups Per 100,000 Population

	00 to 49		50 to 64		65+	
	Cases	Rate	Cases	Rate	Cases	Rate
Hepatocellular Carcinoma	223	0.7	1,590	17.3	1,119	17.3

with private insurance (40%) or government-provided coverage (41%)—see Figure 3.

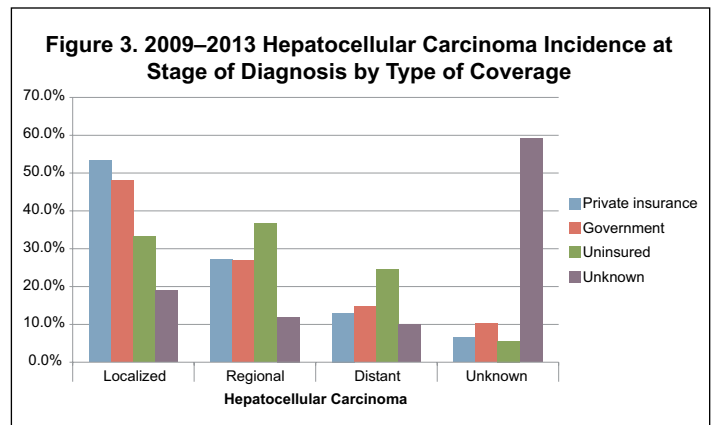
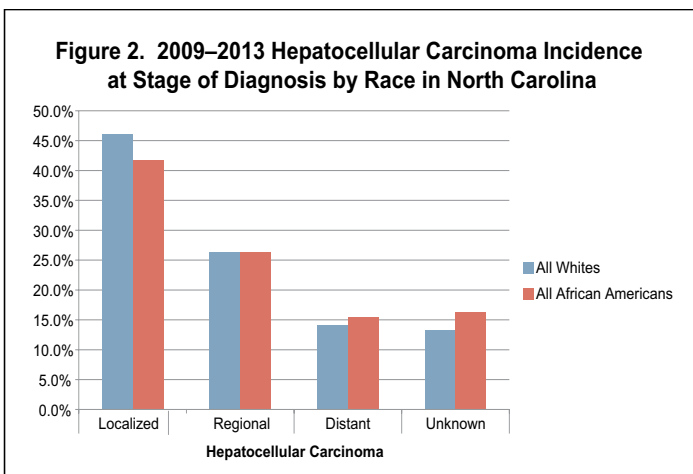
## Discussion

Disparities exist in the incidence of hepatocellular carcinoma. The incidence was substantially higher among racial and ethnic

**Table 2.**  
**2009-2013 Hepatocellular Carcinoma Incidence by Race/Ethnicity in North Carolina per 100,000 Population Age-adjusted to the U.S. 2000 Census**

Race/Ethnicity	Hepatocellular Carcinoma	
	Cases	Rate
White Non-Hispanic Males	1,586	8.1
White Non-Hispanic Females	388	1.7
Non-Hispanic Whites	1,974	4.7
Non-Hispanic African American Males	578	11.7
Non-Hispanic African American Females	146	2.4
Non-Hispanic African Americans	724	6.4
Hispanic Males	88	11.6
Hispanic Females	22	4.3
Hispanics	110	8.0

Produced by the North Carolina Central Cancer Registry, 06/2016.  
Numbers are subject to change as files are updated.  
Cases may not sum to totals due to unknown or other values.  
Rates based on counts fewer than 16 are unstable. Use with caution.  
Cancers of the urinary bladder and female breast include in situ cases.  
Hispanic ethnicity is independent of race. Hispanic ethnicity is determined by self-report and the National Hispanic Identification Algorithm ([www.naacr.org/LinkClick.aspx?fileticket=iTvqbzLrx8I%3d&tabid=118&mid=458](http://www.naacr.org/LinkClick.aspx?fileticket=iTvqbzLrx8I%3d&tabid=118&mid=458)).  
Vintage 2013 bridged-race postcensal population estimates were obtained from the National Center for Health Statistics ([www.cdc.gov/nchs/nvss/bridged\\_race/data\\_documentation.htm#vintage2013](http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2013)).



minorities. They were also more likely to be diagnosed at later stages of the disease.

The analysis of stage at diagnosis and coverage type indicated that individuals with health coverage were more likely to be diagnosed early. However, there is limitation with this result because the data for payer at diagnosis are not complete in the registry database.

Another limitation is that the analysis only uses data up to 2013. The Affordable Care Act (ACA) was enacted in 2014.<sup>7</sup> Further analysis will be helpful to examine whether expanded health coverage from ACA improve health care access, as indicated by diagnosis at earlier stages.

## References

- SEER Stat Fact Sheets: Liver and Intrahepatic Bile Duct Cancer. *Surveillance, Epidemiology, and End Results (SEER) Program*. <http://seer.cancer.gov/statfacts/html/livibd.html>.
- 2009-2013 Hepatocellular Cancer Incidence in the US. Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Incidence - SEER 18 Regs Research Data + Hurricane Katrina Impacted Louisiana Cases, Nov 2015 Sub (2000–2013) <Katrina/Rita Population Adjustment> - Linked To County Attributes - Total U.S., 1969–2014 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, Surveillance Systems Branch, released April 2016, based on the November 2015 submission.
- Lieber CS. Alcohol and the liver: 1994 update. *Gastroenterology*. 1994;106:1085–105.
- Alcohol drinking. *IARC monographs on the evaluation of carcinogenic risks to humans*. Vol 44. Lyon, France: International Agency for Research on Cancer, 1988.
- El-Serag H. Epidemiology of Viral Hepatitis and Hepatocellular Carcinoma. *Gastroenterology*. 2012 May;142(6):1264–1273.
- Data from [www.samhsa.gov](http://www.samhsa.gov).
- Affordable Care Act. <https://www.medicaid.gov/affordablecareact/affordable-care-act.html>.