

## Hepatitis C

*Hepatitis C is a Class C Disease and must be reported to the state within one business day. Reportable cases of hepatitis C virus (HCV) infections consist of:*

*1-Acute Hepatitis C: newly infected individuals who are symptomatic and have elevated liver enzymes as an indicator of recent infection.*

*2-Hepatitis C past or present infection: Cases with serologic tests indicating HCV infection, newly reported to the Office of Public Health (OPH), without possibility of determination of date of infection. (This reporting category was added in 2003.)*

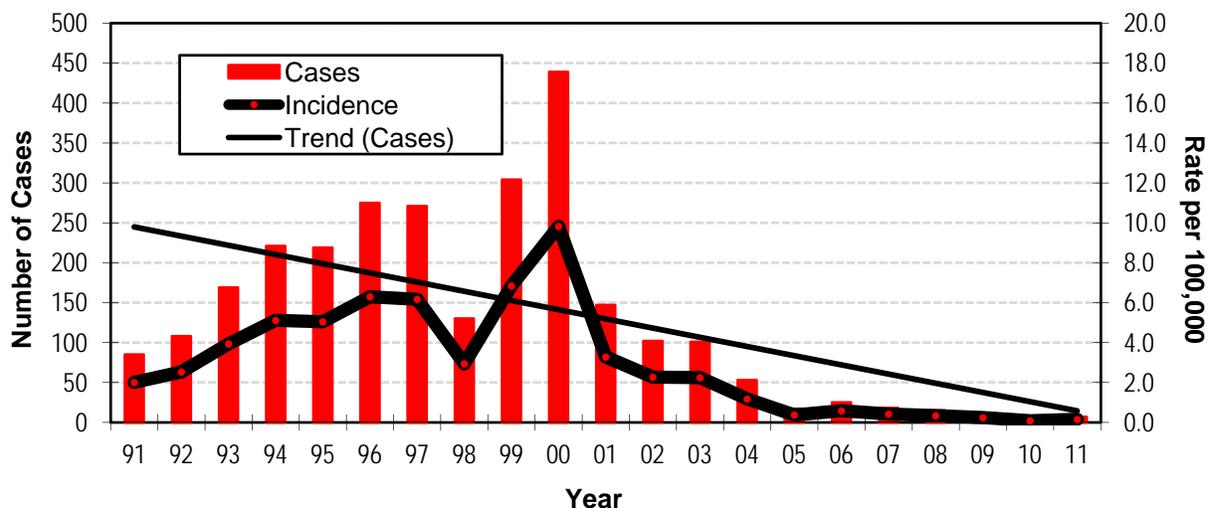
### Reported Cases of Hepatitis C

#### Acute Hepatitis C

An estimated 500 people are infected with hepatitis C each year in Louisiana. Most of these infections are asymptomatic and therefore are not diagnosed and not reported. In the past, the number of new cases reported ranged from 100 to 400. During the 1990's there was a steady increase of reported "acute" hepatitis C cases. This increase was probably due to increased awareness of hepatitis C, and screening by medical care providers. Since 2000, reports of acute infections have declined; this trend is probably an artifact of the surveillance system.

To be classified as an acute hepatitis C case, a person must have clinical symptoms, laboratory evidence of infection with the hepatitis C virus and 'elevated' liver enzymes. In 1990, the Centers for Disease Control and Prevention (CDC) defined liver enzymes as 'elevated' if they were two and a half times the upper limit of normal. In 2001, the CDC increased the required elevation level to seven times the upper limit of normal, thus excluding a large number of cases that previously would have been considered reportable. Also, in 2003, a new reporting category was established: "Hepatitis C past or present infection" (HCV-PPI). Some cases that were reported as "acute hepatitis" in the 1990s are now reported as "HCV-PPI" due to changes in case definitions (Figure 1).

**Figure 1:** Hepatitis C reported acute cases and incidence rates - Louisiana, 1991-2011



Hepatitis C is rare among children; case rates increase after 19 years of age. The highest rates for both males and females are seen in the 45 to 54 year-old age group. In all age groups, incidence is higher among males than females. The race distribution shows the same pattern as that observed for gender distribution. The highest incidence of acute hepatitis is seen in African-American males between the ages of 45 and 54 years.

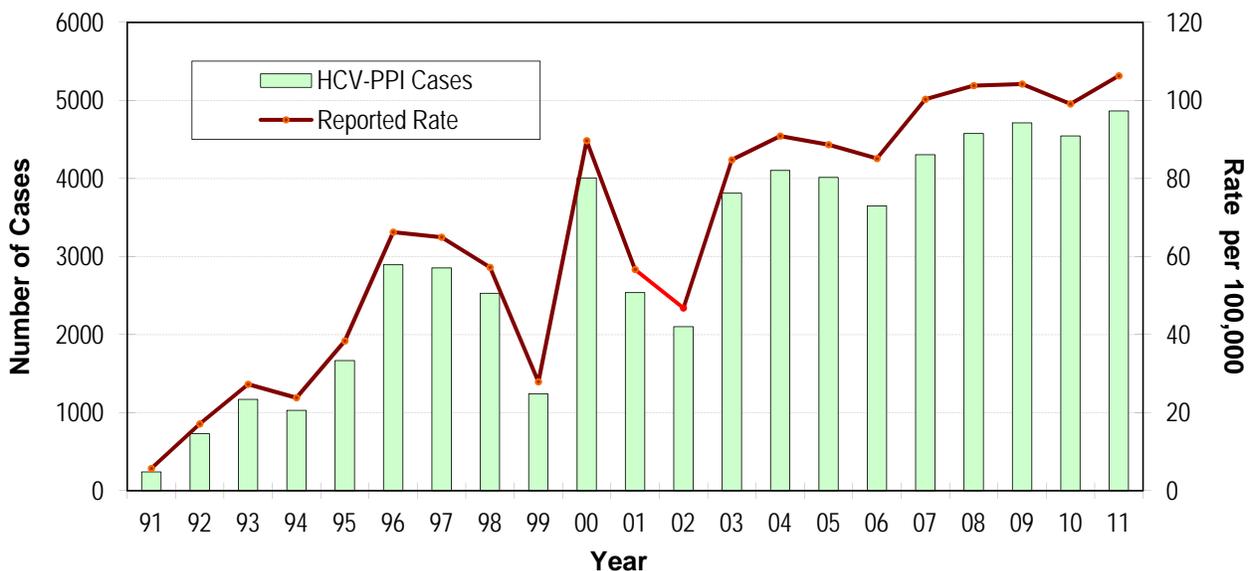
The geographical distribution of hepatitis C in Louisiana shows higher rates in urban centers (greater New Orleans, Baton Rouge, and Lafayette). West Baton Rouge and Washington parishes have the highest rates. Although some rural parishes have high infection rates, they actually have very few cases; their rates are high because their population counts are low.

### Hepatitis C Past or Present Infection

The CDC estimates that 60,000 people in Louisiana (1.3% of the population) are infected with hepatitis C. Of these people, 50,000 (85%) will go on to develop chronic hepatitis and 10,000 (17%) infected people will progress to cirrhosis which has a 25% fatality rate. Annually, 150 Louisiana residents are expected to die from hepatitis C. About 3,000 (5% of those infected by hepatitis C) are candidates for a liver transplant which costs at least \$300,000 for a non-eventful, uncomplicated procedure.

Prior to 2003, cases of hepatitis C that corresponded to the 2003 classification of C, past or HCV-PPI was entered into a hepatitis register. Figure 2 shows a summary of all cases meeting the HCV-PPI case definition, including cases from the hepatitis register and cases reported after HCV-PPI was added as a reportable disease.

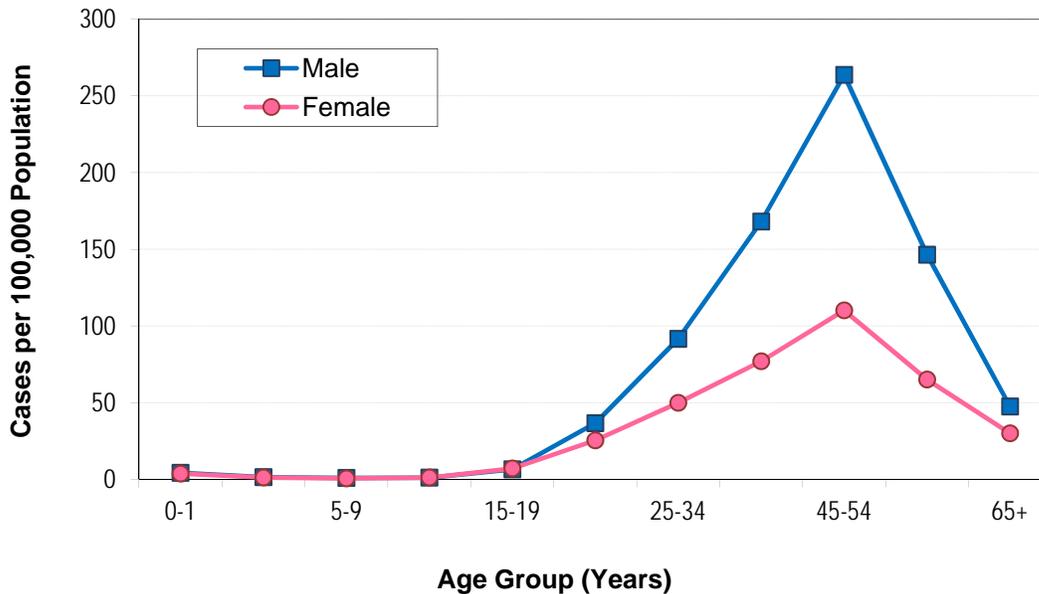
**Figure 2:** Reported cases of HCV-PPI - Louisiana, 1991-2011



The number of cases entered in the register shows some deep troughs due to surveillance artifacts. Overall, the number of cases reported each year is increasing. There is also a pool of undiagnosed HCV-PPI cases in Louisiana. As these people enter into medical care they are diagnosed and reported. The hepatitis register currently contains 60,246 reported HCV cases, representing 100.4% of the estimated 60,000 cases in Louisiana.

The age group distribution of HCV-PPI shows a pattern similar to that of acute hepatitis C. Low rates are seen in the early years reaching a peak among adults and decreasing among the elderly and are higher in males compared to females (Figure 3).

**Figure 3: HCV-PPI age group distribution - Louisiana, 1991-2011**



### Hospitalization Surveillance

Hospitalization surveillance is based on the Louisiana Inpatient Hospital Discharge Data (LaHIDD). In 1997, the Louisiana legislature mandated the reporting of hospital discharge data. LaHIDD serves as the state registry containing hospital discharge data submitted to the Department of Health and Hospitals (DHH). The Office of Public Health (OPH) is responsible for making the data available to OPH sections as needed. The data is available with a delay of two years. The Infectious Disease Epidemiology Section uses these data sets for the surveillance of infectious diseases in hospitals. LaHIDD data sets contain demographic information (names, gender, age, date of birth, address, admit diagnosis, discharge diagnoses (main plus eight more diagnoses), procedures (main plus five), charges, length of stay and hospital name. The diagnoses and procedures are coded with ICD-9 codes. Repeat hospitalizations are not included. The data are based on the years 1999 to 2010.

Repeat hospitalizations are not included. Records of patients with hepatitis C were extracted using the following ICD-9 codes whether in the main diagnosis or in the eight additional secondary diagnoses:

<u>CODE</u>	<u>DISEASE</u>
07041	OTHER SPECIFIED VIRAL HEPATITIS WITH HEPATIC COMA, HEPATITIS C
07051	OTHER SPECIFIED VIRAL HEPATITIS WITHOUT MENTION OF HEPATIC COMA, HEPATITIS C

07044	CHRONIC HEPATITIS C WITH HEPATIC COMA
07054	CHRONIC HEPATITIS WITHOUT HEPATIC COMA
07070	HEPATITIS C WITHOUT HEPATIC COMA NOS
07071	HEPATITIS C WITH HEPATIC COMA NOS
V0262	HEPATITIS C CARRIER

**Hospitalization Numbers, Rates and Trends**

The following statistics are based on unduplicated patients.

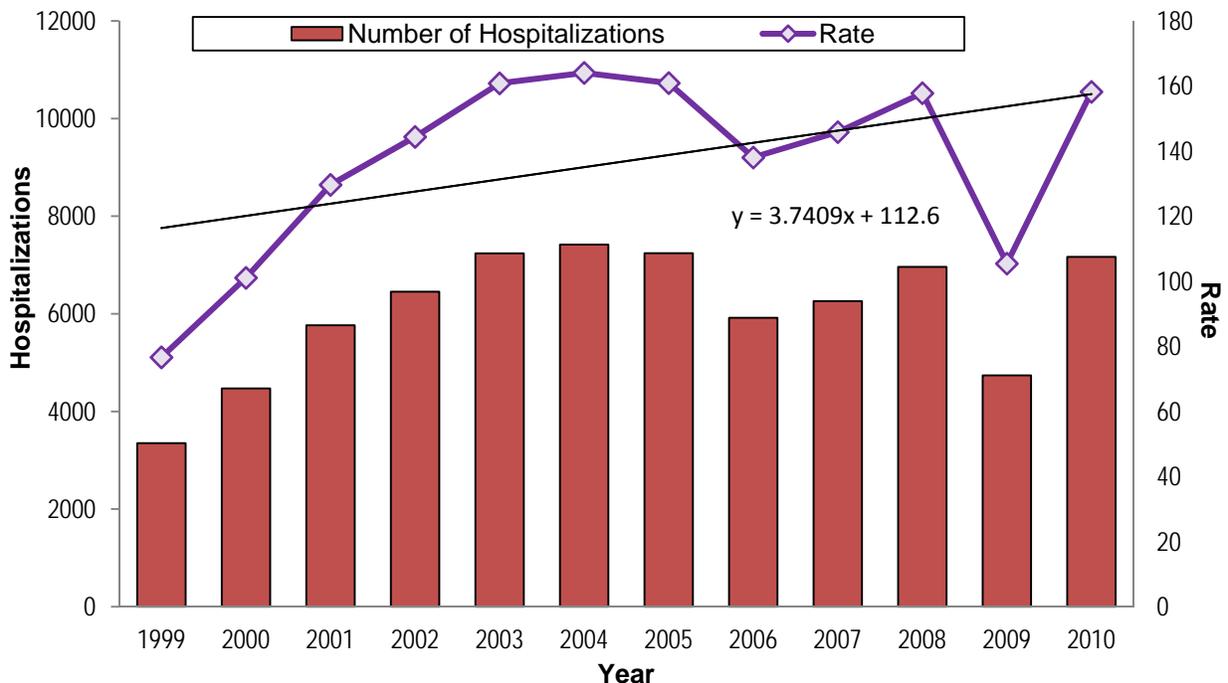
The number of hepatitis C hospitalizations increased progressively from 3350 in 1999 to almost 7,167 in 2010. The hospitalization rates ranged from 77 per 100,000 to 158 per 100,000 hospitalizations.

Although there are some variations from year to year, there is a definite trend toward increasing proportion of hospitalizations. The regression line shows a slope of increasing rate of 3.74 per 100,000 per year.

Since these data represent all the hospitalization occurring in Louisiana, it is reasonable to assume that these are population-based data and rates can be calculated for the entire Louisiana population.

The hospitalization rates were calculated per 100,000 population. They ranged from 76.6 to 164.1. There is also a similar increasing trend in rate (Figure 4).

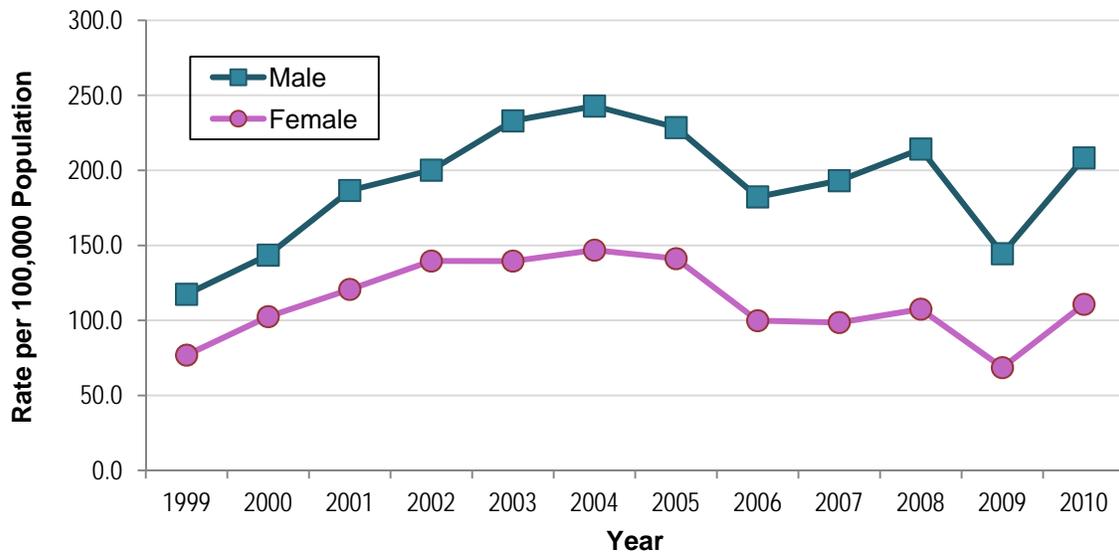
**Figure 4:** Trend in hospitalization rates for hepatitis C per 100,000 population Louisiana, 1999-2010



### Gender Distribution

The overall rates of hepatitis C hospitalization were 191.2 per 100,000 population for males and 112.7 per 100,000 population for females. An increased rate of disease among males is shown as well (Figure 5).

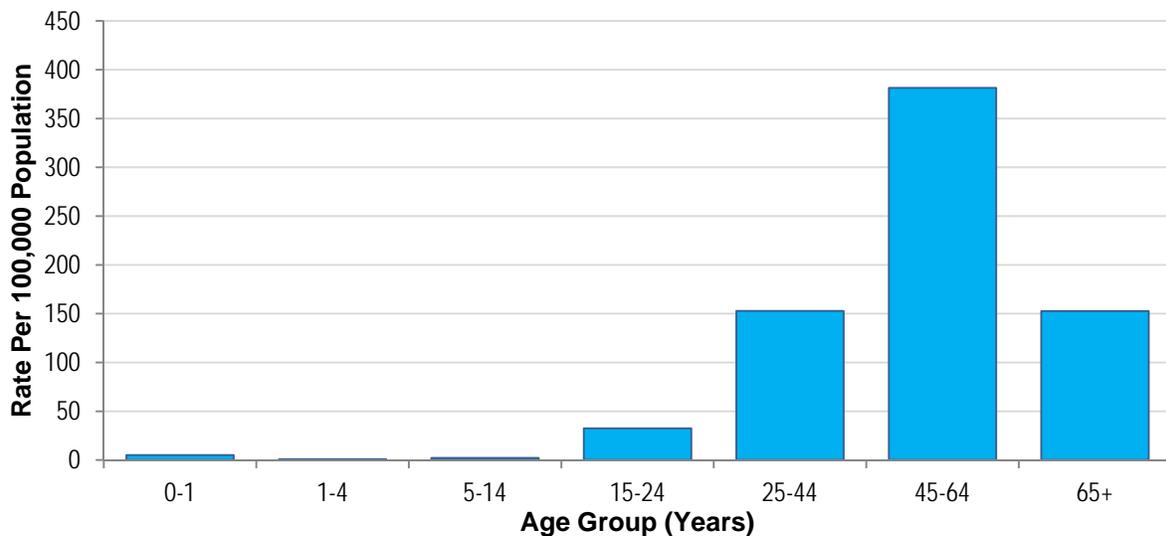
**Figure 5:** Hospitalization rates for hepatitis C per 100,000 population by gender Louisiana, 1999-2010



### Age Group Distribution

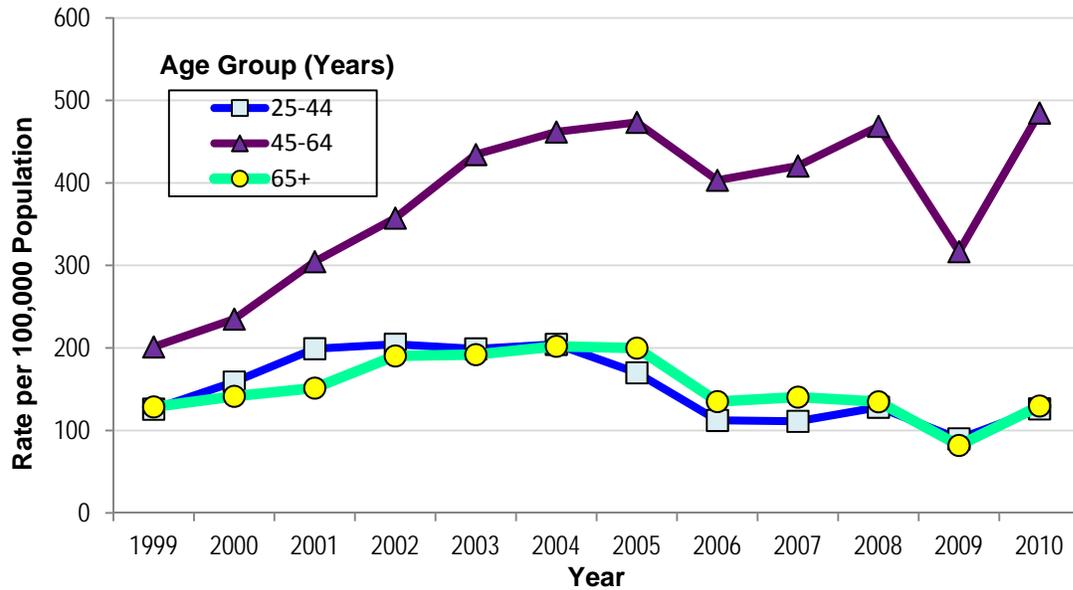
The highest rates of hepatitis C hospitalizations are seen among adults within the 45 to 64-year old age group (Figure 6).

**Figure 6:** Overall hospitalization rate per 100,000 population for hepatitis C by age group Louisiana, 1999-2010



Hepatitis C hospitalizations occur most commonly in adults over the age of 25 years. There is an increasing trend in the 45 to 64-year old age group (Figure 7).

**Figure 7:** Hospitalization rate for hepatitis C per 100,000 population by age group Louisiana, 1999-2008

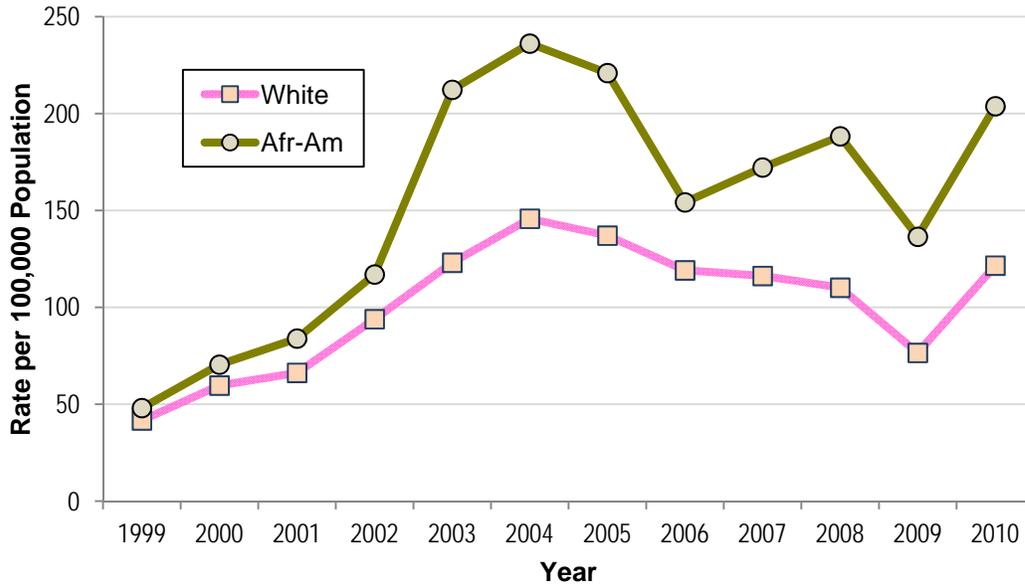


**Race Distribution**

Rates were calculated for Whites and African-Americans only. Numbers for other race and ethnic groups are small and the populations are often inaccurate. Rates based on race are underestimates of real rates since a good proportion of cases do not have race reported.

The overall rates of hepatitis C hospitalizations were 100.9 per 100,000 population for Whites and 153.6 per 100,000 for African-Americans. There is an increasing trend with a higher rate among African-Americans (Figure 8).

**Figure 8:** Hepatitis C hospitalization rate by race per 100,000 population Louisiana, 1999-2010



**Admit Diagnosis**

The most common admit diagnoses for patients hospitalized with hepatitis C are: digestive, circulatory, and Musculoskeletal/Connective Tissue diagnoses related to complications of hepatitis (Table 1).

**Table 1:** Hepatitis C hospitalizations and admit diagnoses – Louisiana, 1999-2010

Admit Diagnosis (Groups)	Total Hospitalizations	Percent Hospitalizations
Blood	1986	2.4
Cancer	2900	2.2
Circulatory	10591	12.2
CNS /Sensory	1262	2.7
Digestive	14432	14.8
Endocrine/Metabolic/Immune	3337	3.6
Genital/Uro	3033	3.5
Infectious Diseases	8697	6.0
Ill Defined/Misc.	2199	11.9
Injury/Poisonings	4947	4.7

Mental Health	4480	16.4
Musculo/Skeletal/Connective	10586	3.8
Pregnancy/Neonatal	2369	2.9
Respiratory	5736	9.4
Skin	2686	3.4

## Mortality

From 1999 to 2010, there was an average of 234 deaths per year among patients hospitalized with hepatitis C (Table 2).

**Table 2:** Hepatitis C hospitalizations and mortality – Louisiana, 1999-2010

Year	Hospitalizations	Deaths	Percent Deaths
1999	3351	205	6.1
2000	4472	245	5.5
2001	5765	264	4.6
2002	6453	296	4.6
2003	7238	288	4.0
2004	7419	303	4.1
2005	7242	314	4.3
2006	5920	210	3.5
2007	6262	176	2.8
2008	6961	180	2.6
2009	4737	113	2.4
2010	7176	213	2.4