

Rotavirus

Rotavirus is not a reportable disease in Louisiana. Data on surveillance is completely based on hospitalization reports.

Epidemiology

According to the Centers for Disease Control and Prevention (CDC), rotavirus is the leading cause of severe diarrhea in infants and young children worldwide. Before rotavirus vaccine was introduced for U.S. infants in 2006, rotavirus was also the leading cause of severe diarrhea in U.S. Globally, it causes more than a half a million deaths each year in children younger than five years of age. Rotaviruses are non-enveloped, RNA viruses belonging to the family Reoviridae. The clinical manifestations of the illness range from mild, watery diarrhea of limited duration to severe, dehydrating diarrhea with vomiting and fever, which can result in death. Severe illness occurs primarily among children aged three months to thirty-five months. Diarrheal illnesses are not typically tested diagnostically due to their widespread and self-limiting nature. Treatment is generally supportive.

Rotaviruses are transmitted fecal-orally; infected children shed rotavirus in high concentrations in their stools. Therefore, day care centers are often common sites for widespread infections. Rotaviruses are also an important cause of nosocomial gastroenteritis and they may also be spread by respiratory droplets. Although the role of rotavirus in diarrhea outbreaks in adults has not been well studied, there have been documented outbreaks occurring in hospitals, nursing homes, isolated communities and in travelers. Parents of children infected with rotavirus have been reported to experience acute gastroenteritis as well. In the United States, rotavirus transmission exhibits seasonal patterns; infection rates are particularly high between November and May each year.

Limited data has shown that children from disadvantaged socioeconomic backgrounds and premature infants are at an increased risk for hospitalization from diarrheal disease, including rotavirus diarrhea. Immunocompromised persons may experience more severe, prolonged and sometimes fatal rotavirus diarrhea as well.

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.

Records of patients with Rotavirus were extracted using the following ICD9 codes whether in the main diagnosis or in the eight additional secondary diagnoses.

CODE DISEASE

00861 ENTERITIS DUE TO ROTAVIRUS

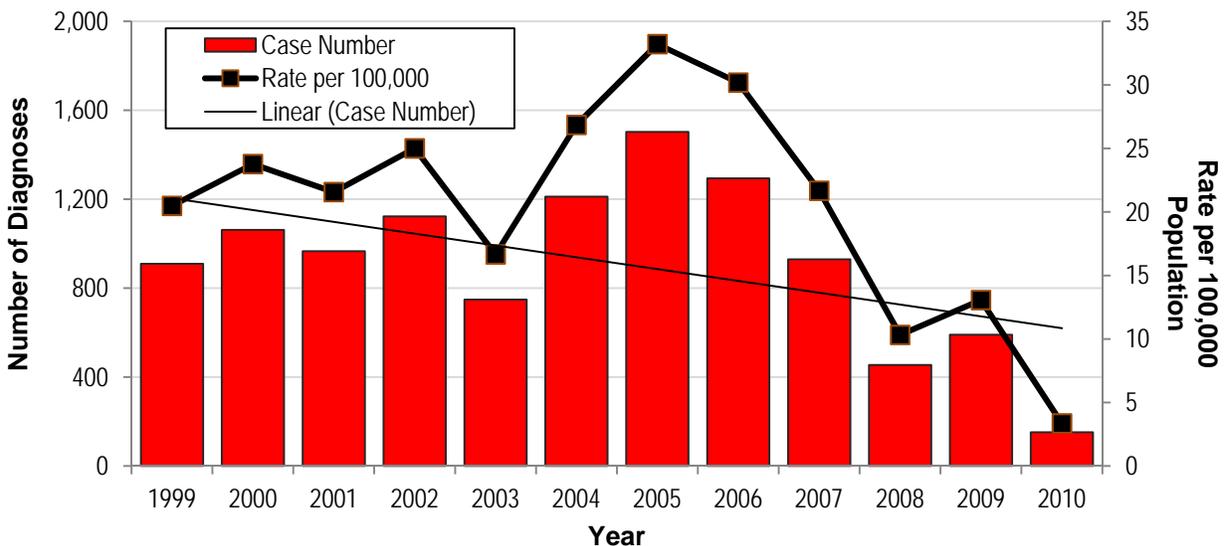
Rotavirus-Associated Hospitalizations

The following statistics are based on unduplicated patients. The majority of hospitalized patients with rotaviral infections had primary diagnoses of rotavirus; 59% of primary diagnoses were specified as rotaviral infections and an additional 33% of primary diagnoses were related (volume depletion and dehydration). The remaining primary diagnoses were due to other various conditions and infections.

Incidence

There have been approximately 912 diagnosed cases of rotavirus per year on average among hospitalized patients between 1999 and 2010. Since the rotavirus vaccine became available in 2006, the average number of cases per year reduced by 25% to approximately 684 cases. In 2010, only 152 cases were hospitalized due to rotavirus (Figure 1).

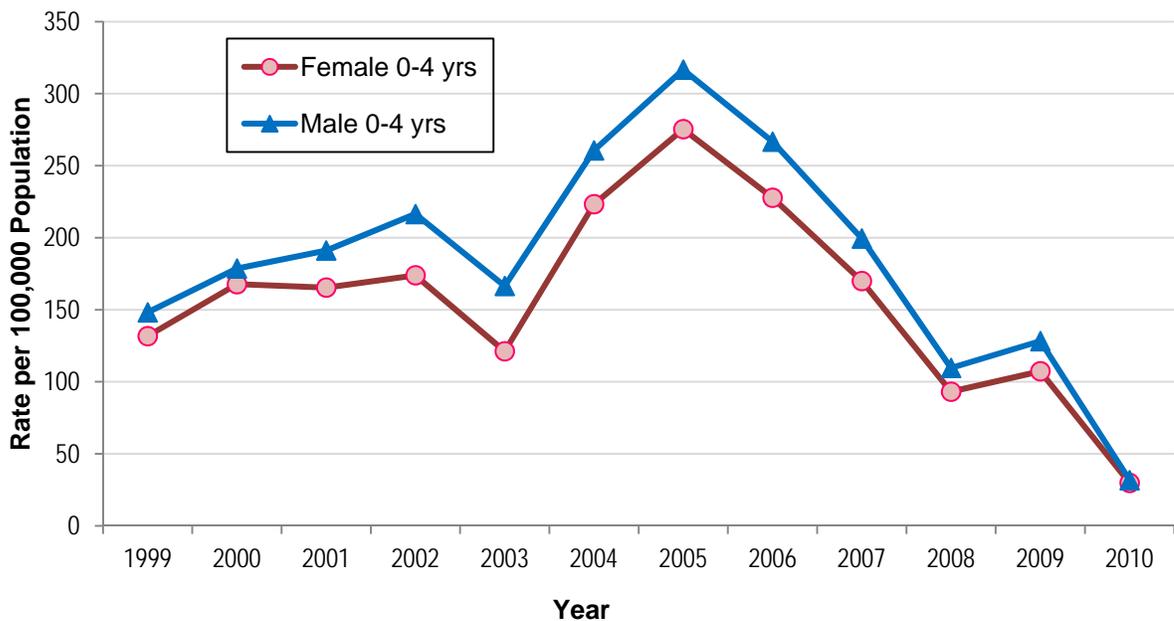
Figure 1: Incidence of rotaviral infections among hospitalized patients - Louisiana, 1999-2010



Sex

Although both genders have experienced similar trends of rotavirus diagnoses, the incidence rates for males are on average 17% higher than females in the newborn to four year-old age group. There is an average yearly incidence rate of 157.2 and 184.5 cases per 100,000 population for females and males, respectively (Figure 2).

Figure 2: Yearly trend of rotavirus diagnoses among patients aged newborn to four years, by gender - Louisiana, 1999-2010

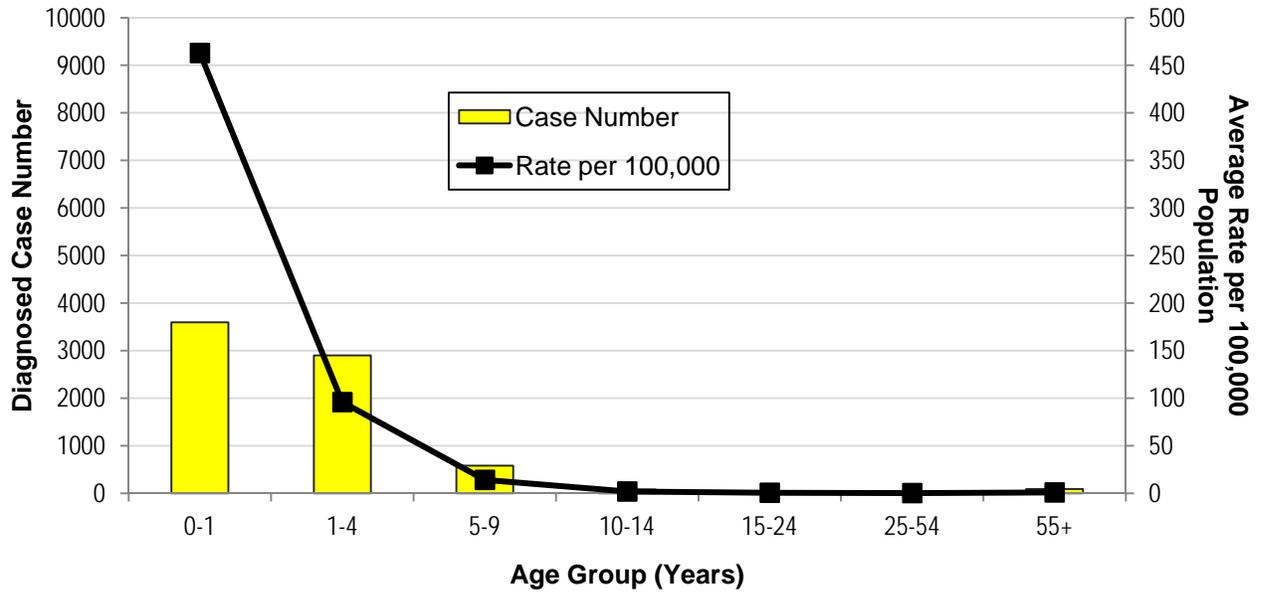


In comparison, the average yearly incidence rates in the five-year old and older age group are 1.8 cases per 100,000 population for both females and males; there is no significant gender difference in this age group.

Age group

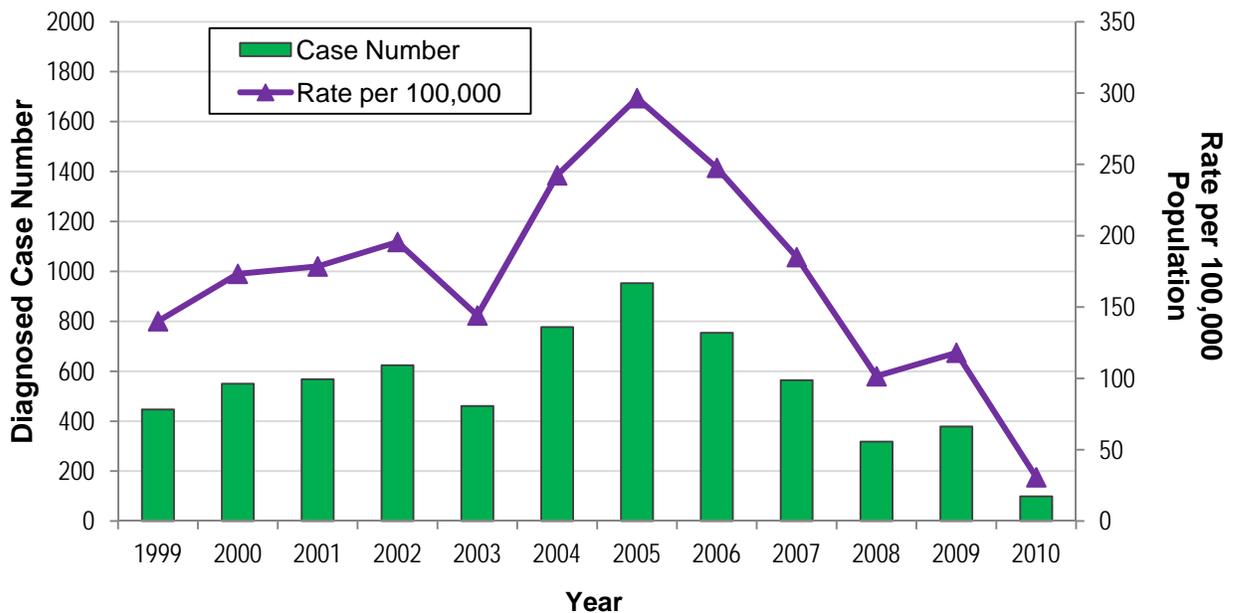
Young children are the most vulnerable for acquiring more severe cases of enteric disease and rotavirus is a prime example. Children aged newborn to one year of age constitute 34% of all diagnosed cases of rotavirus between 1999 and 2010 in Louisiana; children one to four years of age accounted for 58% of all diagnosed cases. Among persons aged five years and older, the average number of diagnosed cases was 69.4 per year with an average rate of 1.7 cases per 100,000 population per year (Figure 3).

Figure 3: Diagnosed cases among hospitalized patients, by age group - Louisiana, 1999-2010



There was a yearly average of 541.2 diagnosed cases of rotavirus among children in the newborn to four year old age group between 1999 and 2010 in Louisiana and an average rate of 171.1 cases per 100,000 population per year (Figure 4).

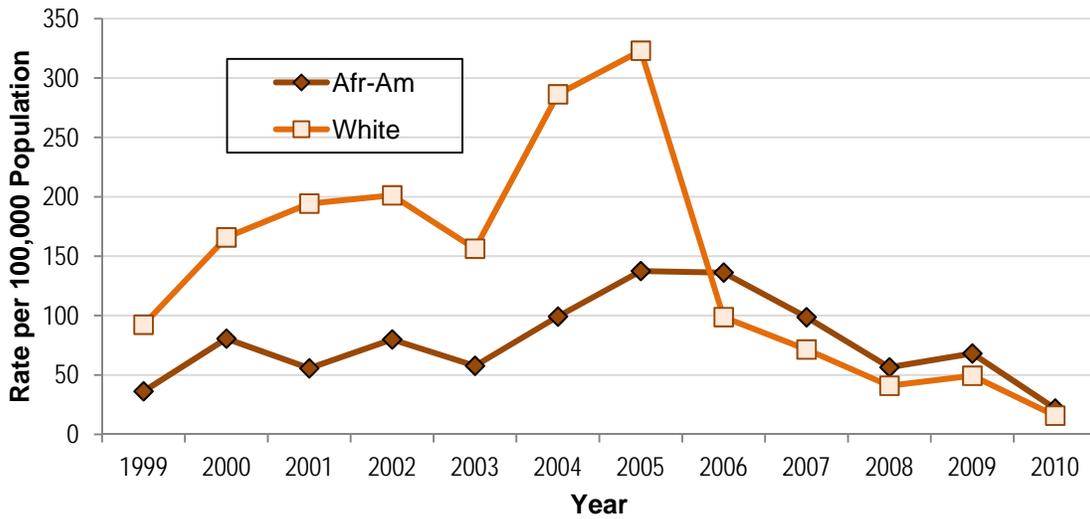
Figure 4: Yearly trend of diagnosed cases of rotavirus among patients in high-risk age group (0 to 4 years) - Louisiana, 1999-2010



Race

Rotavirus diagnoses among White patients and African-American patients in the newborn to four year-old age group followed the same trend during the 1999 to 2005 period. However, there were a greater number of diagnoses among White patients than African-Americans during that period, which may be due to differences in the ease of access to health care services. A sharp decline in cases following the introduction of the rotavirus vaccine in 2006 was seen in the White age group, while the Black age group experienced a less severe decline. Since 2006, the rate of rotavirus hospitalizations has been slightly higher among Black patients in this age group, which may be explained by a lack of access to immunization services (Figure 5).

Figure 5: Yearly trend of rotavirus diagnoses among patients aged newborn to four years, by race - Louisiana, 1999-2010



Mortality

Deaths due to rotavirus are relatively uncommon in Louisiana. Out of 10,947 diagnosed cases of rotavirus between 1999 and 2010, there were four deaths; two of these cases had primary diagnoses other than rotavirus infection.

Geographical Distribution

Table: Number of Cases reported Rotavirus by Parish, Before and after the vaccine was introduced in 2006 - Louisiana, 2001-2010

Region	Parish	2001-2005	2006-2010	% change	Region	Parish	2001-2005	2006-2010	% change
1	Orleans	206	56	-73	6	Concordia	0	3	-
1	Jefferson	376	146	-61	6	Grant	71	43	-39
1	Plaquemines	48	9	-81	6	La Salle	18	17	-6
1	St. Bernard	39	18	-54	6	Rapides	333	245	-26
2	E. Baton Rouge	441	261	-41	6	Vernon	56	18	-68
2	W. Baton Rouge	26	11	-58	6	Winn	20	20	0

2	E. Feliciana	101	61	-40
2	W. Feliciana	28	9	-68
2	Ascension	28	11	-61
2	Iberville	26	7	-73
2	Pointe Coupee	9	3	-67
3	Assumption	32	5	-84
3	Lafourche	128	48	-63
3	St. Mary	26	10	-62
3	St. John	33	8	-76
3	St. Charles	33	22	-33
3	St. James	16	10	-38
3	Terrebonne	243	57	-77
4	Acadia	256	279	9
4	Evangeline	51	48	-6
4	Iberia	132	88	-33
4	Lafayette	417	275	-34
4	St. Landry	258	172	-33
4	St. Martin	88	78	-11
4	Vermilion	151	86	-43
5	Allen	10	5	-50
5	Beauregard	0	1	-
5	Calcasieu	6	11	83
5	Cameron	0	3	-
5	Jefferson Davis	16	31	94
6	Avoyelles	78	51	-35
6	Catahoula	17	4	-76

7	Bienville	10	12	20
7	Bossier	140	224	60
7	Caddo	251	27	-89
7	Claiborne	10	2	-80
7	De Soto	34	18	-47
7	Natchitoches	131	71	-46
7	Red River	5	4	-20
7	Sabine	20	12	-40
7	Webster	29	12	-59
8	Caldwell	17	7	-59
8	E. Carroll	0	1	-
8	W. Carroll	4	5	25
8	Franklin	16	15	-6
8	Jackson	37	44	19
8	Lincoln	81	33	-59
8	Madison	3	6	100
8	Morehouse	29	20	-31
8	Ouachita	293	194	-34
8	Richland	26	9	-65
8	Union	33	16	-52
8	Tensas	6	3	-50
9	Livingston	112	62	-45
9	St. Helena	27	7	-74
9	St. Tammany	295	227	-23
9	Tangipahoa	40	39	-3
9	Washington	56	42	-25

Seasonality

Nationwide, rotavirus infections occur primarily in the winter and spring months between November and May. In Louisiana, cases of rotavirus were reported most often during February, March and April (Figure 6).

Figure 6: Reported Cases of Rotavirus by Month of the Year
Louisiana, 1990-2010

