

Hepatitis A Among Men who Have Sex with Men

Summary

The pattern of the hepatitis A cases reported in the first five months of 2002 is suggestive of increasing rates among men who have sex with men (MSM). In 1995, the Advisory Committee on Immunization Practices recommended that MSM receive hepatitis A vaccination. The extent to which this recommendation has been implemented in NC is unknown. However, all sexually active gay and bisexual men should consider getting the vaccine.

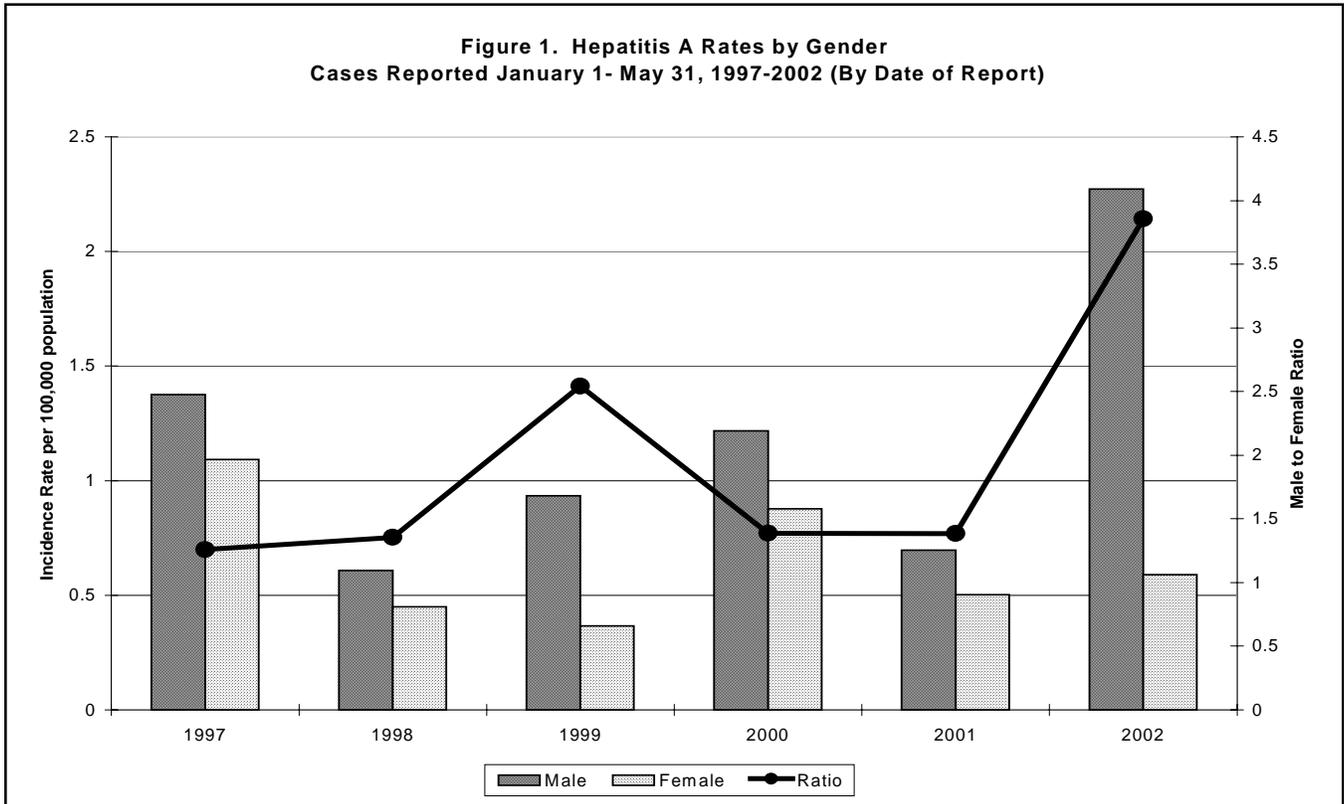
Hepatitis A

Hepatitis A virus (HAV) is the most common cause of acute hepatitis and is one of the most commonly reported vaccine-preventable diseases in North Carolina (NC). HAV is spread through person-to-person contact or through water or food that has been contaminated with the feces of an infected individual. The infection typically causes an abrupt onset of fever, malaise, loss of appetite, nausea and abdominal discomfort. These symptoms are often followed by jaundice (yellowing of the skin and white of the eyes) within a few days. However, not everyone infected with hepatitis A becomes jaundiced, and children often do not have any symptoms of infection.

The average time between infection and onset of symptoms is one month. The virus is most transmissible during the two weeks prior to and for a few days after the onset of jaundice.

Hepatitis A in North Carolina, 2002

During the first five months of 2002, 118 cases of hepatitis A were reported. A large majority of the reported cases, 79%, occurred in men. Figure 1 shows the incidence rates of HAV infection in men and women in NC during the first 5 months of 2002 and the preceding 5 years. The figure demonstrates the dramatic increase in the male-to-female ratio of Hepatitis A this year compared to previous years.



Of the male cases, 65% were in the young and middle adult age groups, while only 24% of the female cases were in this age range. Male homosexual contact was reported in a higher proportion of the 2002 cases as compared to earlier years. Among cases reported during the first 5 months of this year, one-third of the male patients self-reported recent sexual contact with men. Table 1 summarizes the total number of hepatitis A cases, the percent of cases in men and the stated sexual preferences of the male patients with hepatitis A during the first 5 months of 1997 to 2002.

Table 1. Distribution of Cases Among Males by Self-Identified Sexual Preference, January 1 – May 31, 1997-2002 (By Date of Report)

Year	Total number of cases	Male (% of total cases)	Heterosexual (% of male cases)*	Homosexual or Bisexual (% of male cases)*
1997	94	51 (54)	21 (55)	8 (21)
1998	41	23 (56)	11 (68)	4 (25)
1999	51	36 (71)	15 (51)	9 (31)
2000	84	48 (57)	12 (34)	6 (17)
2001	49	28 (57)	14 (63)	2 (9)
2002	118	93 (79)	30 (38)	26 (33)

* Percentages do not add up to 100% because not all case reports included sexual orientation of the patient

Hepatitis A in North Carolina, 1997-2001

The demographic characteristics of patients with hepatitis A during the years of 1997-2001 are summarized in Table 2. The case numbers in Table 2 are by date of onset of hepatitis A, not by date of report, and include all cases reported for the years shown.

Gender

In all years except 2000, males constituted a greater proportion of HAV cases than did females. The proportion of males in 1999 and in 2001 (73% both years) is higher than that in other years. The absolute case number in males was highest in 2001, while the number in females was highest in 1997.

Race

The majority of HAV cases in all years were in whites (73-80%). The next highest proportion of cases was in blacks (9-18%), followed by Asians (2-4%), American Indians (0-3%), and other or unknown race (2-5%). The case distribution by race remained relatively stable over the five year period.

Ethnicity

The proportion of cases and number of cases of HAV in Hispanic patients has varied slightly over the past five years (11-36 cases; 8-26%). In about half of the cases in Hispanics, the patient had been in Latin America during the 6 weeks prior to onset of HAV symptoms. Most of the infections in the Hispanic patients who had been outside of the US were likely acquired in the foreign country.

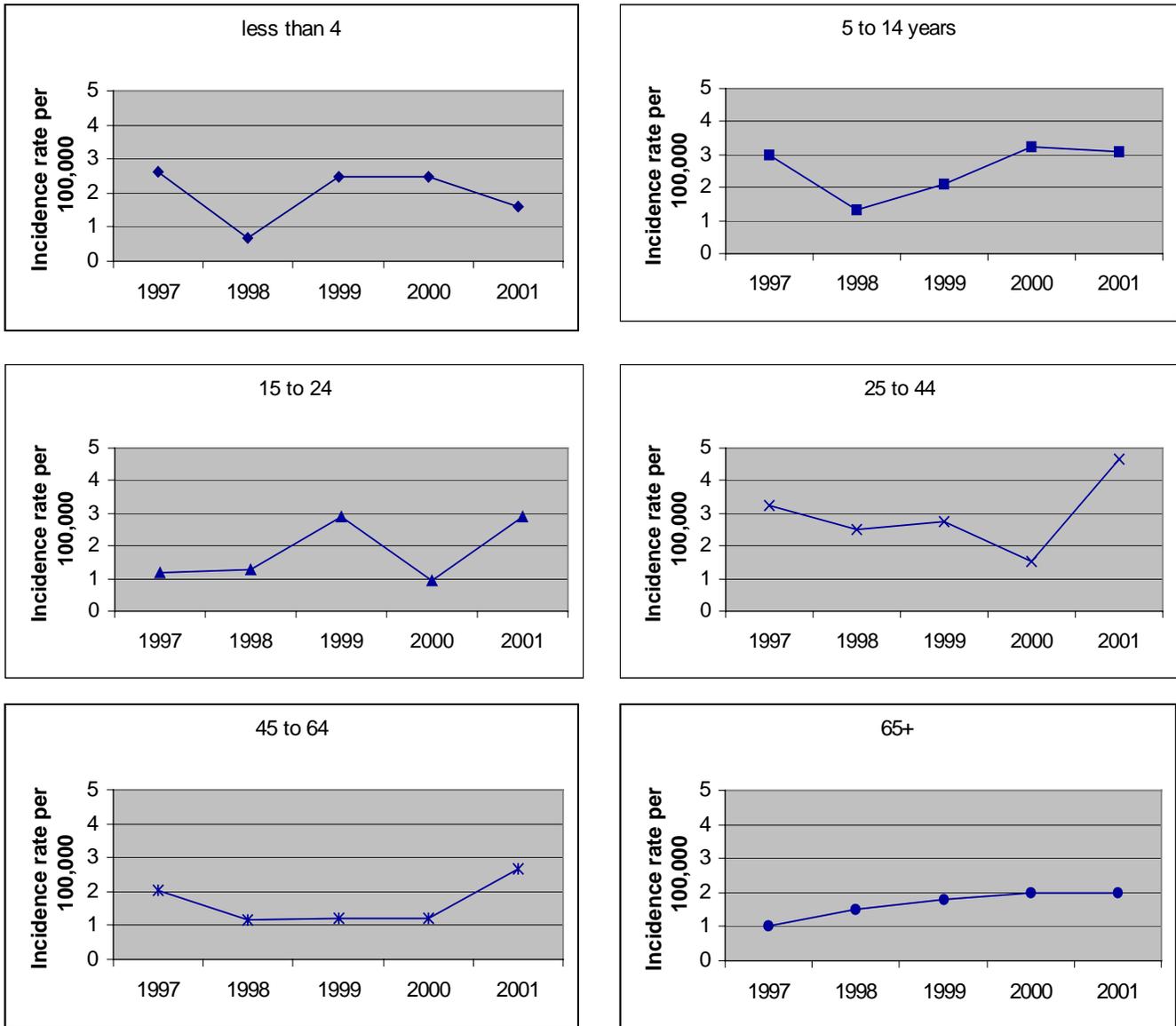
Age

The age distribution of hepatitis A cases varied widely during the 1997-2001 period. In 2000, more than one-quarter of the cases were in children 14 or younger, and 15% of cases were in elderly adults. In 2001, only 24% of cases were among those age groups. Figure 2 shows the incidence rates of hepatitis A by age group. While the rates in children less than 14 declined, the rates in the 15 to 24 and 25 to 44 year age groups increased substantially. The rates among 25 to 44 year-olds were higher in 2001 than they had been any time during the previous 4 years. Rates in 45 to 64 year-olds increased in 2001 as well, while the rates in elderly adults (>65) remained relatively steady over the entire time period.

Table 2. Demographic Characteristics of Hepatitis A cases, 1997-2001, By Year of Onset

	1997	1998	1999	2000	2001
Total cases	194	135	183	139	266
Sex					
Male cases (%)	112 (58)	83 (62)	133 (73)	64 (46)	194 (73)
Female cases (%)	82 (42)	42 (39)	50 (27)	75 (54)	72 (27)
Race					
White (%)	154 (79)	107 (79)	153 (84)	103 (74)	195 (73)
Black (%)	24 (12)	22 (16)	16 (9)	24 (17)	49 (18)
Asian (%)	3 (2)	4 (3)	7 (4)	3 (2)	4 (2)
American Indian (%)	5 (3)	0	0	2 (1)	5 (2)
Other/Unknown (%)	8 (4)	2 (2)	7 (4)	7 (5)	13 (5)
Ethnicity					
Hispanic (%)	23 (12)	11 (8)	22 (12)	36 (26)	32 (12)
Non-hispanic (%)	140 (72)	109 (81)	143 (78)	90 (65)	206 (77)
Unknown (%)	31 (16)	15 (11)	18 (10)	13 (9)	28 (11)

**Figure 2. Rates of Hepatitis A in North Carolina by Age Group, 1997-2001
(By Date of Onset)**



Hepatitis A in NC Counties, 1997-2002

Hepatitis A case numbers for each county, by date of onset and sex are summarized in Table 3. The total number of cases and incidence rates for each county are reported in Table 4. The 5 counties with the highest average number of cases from 1997-2001 (in order of decreasing average case number) were Mecklenburg, Wake, Forsyth, Guilford and Buncombe. Average yearly case numbers per 100,000 population (incidence rates) in those counties were as follows: Mecklenburg, 3; Wake, 3 ; Forsyth, 5; Guilford, 12; Buncombe 4. In the first 5 months of 2002, the highest cases numbers were reported from Wake, Forsyth, Guilford, Mecklenburg and Robeson. Wake, Forsyth, and Guilford counties showed the steepest increases in case numbers. Average case numbers for those counties during the first 5 months of 1997-2001 were 5, 3 and 3 cases, respectively. Through May 31st, 2002, 20 cases each were reported from Wake and Forsyth counties, while 9 were reported from Guilford.

Conclusion

Surveillance data from the first 5 months of 2002 indicate that the rate of hepatitis A among MSM in North Carolina is elevated. Several outbreaks of hepatitis A among this population have been reported from cities in the US, Europe, and Australia in recent years. Vaccination against HAV is the most effective way to prevent hepatitis A. Due to a higher risk of acquiring the disease, it is recommended that all men who have sex with men receive HAV vaccine.

TABLE 3. Hepatitis A Reported Cases, North Carolina, 1997-2001
Case Number Per County By Sex
(By Date Of Onset)

SEX = MALE

SEX = FEMALE

COUNTY	1997	1998	1999	2000	2001	Total	COUNTY	1997	1998	1999	2000	2001	Total
ALAMANCE	0	0	4	0	2	6	ALAMANCE	1	0	8	6	0	15
ALEXANDER	0	0	0	0	4	4	ALEXANDER	0	0	0	2	0	2
ALLEGHANY	0	1	0	0	0	1	ALLEGHANY	0	0	0	0	0	0
ANSON	0	0	0	0	1	1	ANSON	0	0	0	0	0	0
ASHE	0	0	0	0	1	1	ASHE	2	0	0	0	1	3
AVERY	0	0	0	0	0	0	AVERY	1	0	0	0	0	1
BEAUFORT	0	0	1	1	1	3	BEAUFORT	1	0	0	1	0	2
BERTIE	0	0	0	1	1	2	BERTIE	0	0	0	0	0	0
BLADEN	0	0	0	0	1	1	BLADEN	0	1	0	0	0	1
BRUNSWICK	0	0	0	0	0	0	BRUNSWICK	0	0	0	1	0	1
BUNCOMBE	5	4	12	5	5	31	BUNCOMBE	3	0	2	1	0	6
BURKE	0	0	1	0	0	1	BURKE	0	0	0	1	0	1
CABARRUS	3	1	6	5	2	17	CABARRUS	0	1	5	4	3	13
CALDWELL	0	0	1	0	1	2	CALDWELL	0	0	0	0	1	1
CAMDEN	0	0	0	0	0	0	CAMDEN	0	0	0	0	0	0
CARTERET	3	1	1	0	0	5	CARTERET	0	0	0	2	0	2
CASWELL	0	0	0	0	0	0	CASWELL	0	0	0	1	0	1
CATAWBA	2	2	0	0	2	6	CATAWBA	0	1	0	2	1	4
CHATHAM	0	0	4	0	1	5	CHATHAM	0	0	0	2	0	2
CHEROKEE	0	0	0	0	2	2	CHEROKEE	0	0	0	1	1	2
CLEVELAND	2	1	2	1	1	7	CHOWAN	0	0	0	0	0	0
CHOWAN	0	0	0	0	0	0	CLAY	0	0	0	0	0	0
CLAY	0	0	0	0	0	0	CLEVELAND	1	2	0	1	1	5
COLUMBUS	8	0	0	0	0	8	COLUMBUS	10	0	0	0	0	10
CRAVEN	0	0	0	0	0	0	CRAVEN	1	1	0	1	1	4
CUMBERLAND	5	1	1	0	4	11	CUMBERLAND	4	2	2	0	1	9
CURRITUCK	0	0	0	0	0	0	CURRITUCK	0	1	0	0	0	1
DARE	1	0	0	1	0	2	DARE	0	0	0	0	0	0
DAVIDSON	1	1	1	2	7	12	DAVIDSON	0	0	0	1	0	1
DAVIE	0	1	0	0	1	2	DAVIE	1	0	0	0	0	1
DUPLIN	0	2	0	1	0	3	DUPLIN	1	0	0	1	0	2
DURHAM	4	3	5	2	8	22	DURHAM	1	2	4	2	2	11
EDGECOMBE	0	0	0	0	0	0	EDGECOMBE	0	0	0	0	1	1
FORSYTH	5	2	6	5	27	45	FORSYTH	3	2	0	13	6	24
FRANKLIN	0	1	1	0	1	3	FRANKLIN	0	0	2	0	0	2
GASTON	3	2	1	0	3	9	GASTON	2	0	0	0	1	3
GATES	0	0	0	0	0	0	GATES	0	0	0	0	0	0
GRAHAM	0	0	0	0	0	0	GRAHAM	0	0	0	0	0	0
GRANVILLE	1	0	1	0	1	3	GRANVILLE	0	1	0	1	2	4
GREENE	0	0	0	0	0	0	GREENE	0	3	0	0	2	5
GUILFORD	10	7	0	4	12	33	GUILFORD	6	2	1	5	3	17
HALIFAX	0	0	2	0	1	3	HALIFAX	0	0	0	0	2	2
HARNETT	1	0	1	1	2	5	HARNETT	1	0	0	1	2	4
HAYWOOD	0	1	1	1	1	4	HAYWOOD	0	0	1	0	0	1
HENDERSON	1	2	3	0	3	9	HENDERSON	0	2	1	2	1	6
HERTFORD	0	0	0	0	4	4	HERTFORD	0	0	0	0	2	2
HOKE	1	0	0	0	0	1	HOKE	0	0	0	0	0	0
HYDE	1	0	0	0	0	1	HYDE	0	0	1	0	0	0
IREDELL	1	1	0	0	3	5	IREDELL	0	0	0	2	3	5
JACKSON	0	1	0	0	1	2	JACKSON	0	0	0	0	0	0
JOHNSTON	1	0	3	2	2	8	JOHNSTON	0	2	0	3	1	6
JONES	0	0	0	0	0	0	JONES	0	0	0	0	0	0
LEE	0	1	0	0	0	1	LEE	0	3	1	1	0	5
LENOIR	1	0	0	0	0	1	LENOIR	0	0	0	0	0	0
LINCOLN	0	0	1	0	0	1	LINCOLN	0	0	0	0	0	0
MACON	0	0	1	0	0	1	MACON	1	0	0	0	0	1
MADISON	0	0	0	0	0	0	MADISON	0	0	0	0	0	0
MARTIN	0	0	0	0	0	0	MARTIN	0	0	0	0	0	0
MCDOWELL	1	0	0	0	0	1	MCDOWELL	2	0	1	0	0	3
MECKLENBURG	9	13	17	5	38	82	MECKLENBURG	10	6	3	3	11	33
MITCHELL	0	0	0	0	0	0	MITCHELL	0	0	0	0	0	0
MONTGOMERY	0	0	2	0	0	2	MONTGOMERY	1	0	0	0	0	1
MOORE	0	2	0	0	0	2	MOORE	1	2	0	0	0	3
NASH	1	1	1	1	1	5	NASH	1	0	1	0	0	2
NEW HANOVER	1	0	0	2	2	5	NEW HANOVER	3	2	1	0	0	6
NORTHAMPTON	0	0	0	0	3	3	NORTHAMPTON	0	0	0	0	3	3
ONSLow	2	0	0	2	0	4	ONSLow	2	0	1	0	0	3
ORANGE	3	2	5	1	2	13	ORANGE	1	2	4	0	0	7
PAMLICO	0	0	0	0	0	0	PAMLICO	0	0	0	0	0	0
PASQUOTANK	0	1	0	0	0	1	PASQUOTANK	0	0	0	0	0	0

**TABLE 3. Hepatitis A Reported Cases, North Carolina, 1997-2001
Case Number Per County By Sex
(By Date Of Onset)**

SEX = MALE

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COUNTY	1997	1998	1999	2000	2001	Total	COUNTY	1997	1998	1999	2000	2001	Total
PENDER	1	0	0	1	0	2	PENDER	0	1	0	0	0	1
PERQUIMANS	0	0	0	0	0	0	PERQUIMANS	0	0	0	0	0	0
PERSON	0	1	0	0	0	1	PERSON	0	0	0	0	0	0
PITT	3	1	1	2	3	10	PITT	1	0	1	2	0	4
POLK	0	0	0	0	1	1	POLK	0	0	0	0	1	1
RANDOLPH	2	2	2	2	3	11	RANDOLPH	0	0	3	2	0	5
RICHMOND	1	0	1	1	0	3	RICHMOND	4	0	0	1	0	5
ROBESON	3	1	2	2	5	13	ROBESON	4	1	1	2	4	12
ROCKINGHAM	1	0	2	0	3	6	ROCKINGHAM	1	1	2	1	0	5
ROWAN	2	1	0	0	2	5	ROWAN	2	1	0	0	0	3
RUTHERFORD	0	1	0	0	0	1	RUTHERFORD	2	0	0	0	0	2
SAMPSON	0	0	1	3	0	4	SAMPSON	0	0	0	0	2	2
SCOTLAND	0	0	2	0	0	2	SCOTLAND	0	0	0	0	0	0
STANLY	0	0	0	0	0	0	STANLY	0	0	0	0	0	0
STOKES	0	0	0	1	1	2	STOKES	0	0	0	0	1	1
SURRY	0	1	1	0	0	2	SURRY	1	1	0	0	0	2
SWAIN	0	0	0	0	0	0	SWAIN	0	1	0	0	0	1
TRANSYLVANIA	0	0	0	0	1	1	TRANSYLVANIA	0	0	0	0	0	0
TYRRELL	0	0	0	0	0	0	TYRRELL	0	0	0	0	0	0
UNION	4	0	0	1	3	8	UNION	1	0	0	0	2	3
VANCE	0	0	0	0	0	0	VANCE	1	0	1	0	0	2
WAKE	13	19	31	2	14	79	WAKE	4	5	2	5	5	21
WARREN	0	0	0	0	0	0	WARREN	0	0	0	0	0	0
WASHINGTON	0	0	0	0	0	0	WASHINGTON	0	0	0	0	0	0
WATAUGA	0	0	0	0	2	2	WATAUGA	0	0	0	0	1	1
WAYNE	0	1	2	3	0	6	WAYNE	0	0	1	0	1	2
WILKES	0	0	2	1	1	4	WILKES	0	0	1	0	3	4
WILSON	2	0	0	1	3	6	WILSON	0	2	0	0	0	2
YADKIN	3	0	1	1	0	5	YADKIN	0	1	0	1	0	2
YANCEY	0	0	0	0	0	0	YANCEY	0	0	0	0	0	0
NORTH CAROLINA	112	83	133	64	194	586	NORTH CAROLINA	82	52	50	75	72	331

N.C. Department of Health and Human Services - Division of Public Health
General Communicable Disease Control - June 2002

Table 4. Hepatitis A Reported Cases, North Carolina 1997-2001
Case Number and Rate
(By Date of Onset)

COUNTY	1997	1998	1999	2000	2001	Total	COUNTY	RATE97	RATE98	RATE99	RATE00	RATE01
ALAMANCE	1	0	12	6	2	21	ALAMANCE	0.81	0	9.30	4.59	1.50
ALEXANDER	0	0	0	2	4	6	ALEXANDER	0.00	0	0.00	5.95	11.78
ALLEGHANY	0	1	0	0	0	1	ALLEGHANY	0.00	9.60	0.00	0.00	0.00
ANSON	0	0	0	0	1	1	ANSON	0.00	0.00	0.00	0.00	3.95
ASHE	2	0	0	0	2	4	ASHE	8.43	0.00	0.00	0.00	8.06
AVERY	1	0	0	0	0	1	AVERY	6.29	0.00	0.00	0.00	0.00
BEAUFORT	1	0	1	2	1	5	BEAUFORT	2.28	0.00	2.23	4.45	2.21
BERTIE	0	0	0	1	1	2	BERTIE	0.00	0.00	0.00	5.06	5.04
BLADEN	0	1	0	0	1	2	BLADEN	0.00	3.14	0.00	0.00	3.08
BRUNSWICK	0	0	0	1	0	1	BRUNSWICK	0.00	0.00	0.00	1.37	0.00
BUNCOMBE	8	4	14	6	5	37	BUNCOMBE	4.04	1.99	6.87	2.91	2.40
BURKE	0	0	1	1	0	2	BURKE	0.00	0.00	1.13	1.12	0.00
CABARRUS	3	2	11	9	5	30	CABARRUS	2.52	1.61	8.55	6.87	3.67
CALDWELL	0	0	1	0	2	3	CALDWELL	0.00	0.00	1.30	0.00	2.58
CAMDEN	0	0	0	0	0	0	CAMDEN	0.00	0.00	0.00	0.00	0.00
CARTERET	3	1	1	2	0	7	CARTERET	5.13	1.70	1.70	3.37	0.00
CASWELL	0	0	0	1	0	1	CASWELL	0.00	0.00	0.00	4.26	0.00
CATAWBA	2	3	0	2	3	10	CATAWBA	1.49	2.20	0.00	1.41	2.07
CHATHAM	0	0	4	2	1	7	CHATHAM	0.00	0.00	8.24	4.05	1.96
CHEROKEE	0	0	0	1	3	4	CHEROKEE	0.00	0.00	0.00	4.12	12.14
CHOWAN	0	0	0	0	0	0	CHOWAN	0.00	0.00	0.00	0.00	0.00
CLAY	0	0	0	0	0	0	CLAY	0.00	0.00	0.00	0.00	0.00
CLEVELAND	3	3	2	2	2	12	CLEVELAND	3.22	3.17	2.10	2.08	2.07
COLUMBUS	18	0	0	0	0	18	COLUMBUS	33.73	0.00	0.00	0.00	0.00
CRAVEN	1	1	0	1	1	4	CRAVEN	1.12	1.11	0.00	1.09	1.09
CUMBERLAND	9	3	3	0	5	20	CUMBERLAND	2.98	1.00	1.00	0.00	1.66
CURRITUCK	0	1	0	0	0	1	CURRITUCK	0.00	5.72	0.00	0.00	0.00
DARE	1	0	0	1	0	2	DARE	3.59	0.00	0.00	3.34	0.00
DAVIDSON	1	1	1	3	7	13	DAVIDSON	0.70	0.70	0.69	2.04	4.69
DAVIE	1	1	0	0	1	3	DAVIE	3.11	3.00	0.00	0.00	2.76
DUPLIN	1	2	0	2	0	5	DUPLIN	2.14	4.20	0.00	4.08	0.00
DURHAM	5	5	9	4	10	33	DURHAM	2.38	2.32	4.09	1.79	4.38
EDGECOMBE	0	0	0	0	1	1	EDGECOMBE	0.00	0.00	0.00	0.00	1.83
FORSYTH	8	4	6	18	33	69	FORSYTH	2.70	1.33	1.98	5.88	10.63
FRANKLIN	0	1	3	0	1	5	FRANKLIN	0.00	2.21	6.47	0.00	2.05
GASTON	5	2	1	0	4	12	GASTON	2.70	1.07	0.53	0.00	2.09
GATES	0	0	0	0	0	0	GATES	0.00	0.00	0.00	0.00	0.00
GRAHAM	0	0	0	0	0	0	GRAHAM	0.00	0.00	0.00	0.00	0.00
GRANVILLE	1	1	1	1	3	7	GRANVILLE	2.24	2.14	2.09	2.06	6.04
GREENE	0	3	0	0	2	5	GREENE	0.00	15.97	0.00	0.00	10.52
GUILFORD	16	9	1	9	15	50	GUILFORD	4.00	2.21	0.24	2.14	3.54
HALIFAX	0	0	2	0	3	5	HALIFAX	0.00	0.00	3.49	0.00	5.25
HARNETT	2	0	1	2	4	9	HARNETT	2.38	0.00	1.12	2.20	4.27
HAYWOOD	0	1	2	1	1	5	HAYWOOD	0.00	1.89	3.74	1.85	1.83
HENDERSON	1	4	4	2	4	15	HENDERSON	1.19	4.65	4.57	2.24	4.37
HERTFORD	0	0	0	0	6	6	HERTFORD	0.00	0.00	0.00	0.00	27.05
HOKE	1	0	0	0	0	1	HOKE	3.32	0.00	0.00	0.00	0.00
HYDE	1	0	0	0	0	1	HYDE	18.37	0.00	0.00	0.00	0.00
IREDELL	1	1	0	2	6	10	IREDELL	0.90	0.86	0.00	1.63	4.69
JACKSON	0	1	0	0	1	2	JACKSON	0.00	3.13	0.00	0.00	2.97
JOHNSTON	1	2	3	5	3	14	JOHNSTON	0.93	1.76	2.53	4.10	2.35
JONES	0	0	0	0	0	0	JONES	0.00	0.00	0.00	0.00	0.00
LEE	0	4	1	1	0	6	LEE	0.00	8.32	2.06	2.04	0.00
LENOIR	1	0	0	0	0	1	LENOIR	1.67	0.00	0.00	0.00	0.00
LINCOLN	0	0	1	0	0	1	LINCOLN	0.00	0.00	1.59	0.00	0.00
MACON	1	0	1	0	0	2	MACON	3.54	0.00	3.41	0.00	0.00
MADISON	0	0	0	0	0	0	MADISON	0.00	0.00	0.00	0.00	0.00
MARTIN	0	0	0	0	0	0	MARTIN	0.00	0.00	0.00	0.00	0.00
MCDOWELL	3	0	1	0	0	4	MCDOWELL	7.42	0.00	2.38	0.00	0.00
MECKLENBURG	19	19	20	8	49	115	MECKLENBURG	2.98	2.89	2.94	1.15	6.87
MITCHELL	0	0	0	0	0	0	MITCHELL	0.00	0.00	0.00	0.00	0.00
MONTGOMERY	1	0	2	0	0	3	MONTGOMERY	3.92	0.00	7.54	0.00	0.00
MOORE	1	4	0	0	0	5	MOORE	1.42	5.55	0.00	0.00	0.00
NASH	2	1	2	1	1	7	NASH	2.35	1.16	2.31	1.14	1.13
NEW HANOVER	4	2	1	2	2	11	NEW HANOVER	2.62	1.28	0.64	1.25	1.22
NORTHAMPTON	0	0	0	0	6	6	NORTHAMPTON	0.00	0.00	0.00	0.00	27.25
ONslow	4	0	1	2	0	7	ONslow	2.69	0.00	0.67	1.33	0.00
ORANGE	4	4	9	1	2	20	ORANGE	3.58	3.49	7.76	0.85	1.65
PAMLICO	0	0	0	0	0	0	PAMLICO	0.00	0.00	0.00	0.00	0.00

**Table 4. Hepatitis A Reported Cases, North Carolina 1997-2001
Case Number and Rate
(By Date of Onset)**

COUNTY	1997	1998	1999	2000	2001	Total	COUNTY	RATE97	RATE98	RATE99	RATE00	RATE01
PASQUOTANK	0	1	0	0	0	1	PASQUOTANK	0.00	2.86	0.00	0.00	0.00
PENDER	1	1	0	1	0	3	PENDER	2.63	2.55	0.00	2.43	0.00
PERQUIMANS	0	0	0	0	0	0	PERQUIMANS	0.00	0.00	0.00	0.00	0.00
PERSON	0	1	0	0	0	1	PERSON	0.00	2.89	0.00	0.00	0.00
PITT	4	1	2	4	3	14	PITT	3.22	0.79	1.53	2.99	2.22
POLK	0	0	0	0	2	2	POLK	0.00	0.00	0.00	0.00	10.62
RANDOLPH	2	2	5	4	3	16	RANDOLPH	1.62	1.58	3.89	3.07	2.27
RICHMOND	5	0	1	2	0	8	RICHMOND	10.78	0.00	2.15	4.30	0.00
ROBESON	7	2	3	4	9	25	ROBESON	5.95	1.66	2.46	3.24	7.25
ROCKINGHAM	2	1	4	1	3	11	ROCKINGHAM	2.21	1.10	4.37	1.09	3.27
ROWAN	4	2	0	0	2	8	ROWAN	3.20	1.57	0.00	0.00	1.52
RUTHERFORD	2	1	0	0	0	3	RUTHERFORD	3.27	1.62	0.00	0.00	0.00
SAMPSON	0	0	1	3	2	6	SAMPSON	0.00	0.00	1.69	4.99	3.28
SCOTLAND	0	0	2	0	0	2	SCOTLAND	0.00	0.00	5.58	0.00	0.00
STANLY	0	0	0	0	0	0	STANLY	0.00	0.00	0.00	0.00	0.00
STOKES	0	0	0	1	2	3	STOKES	0.00	0.00	0.00	2.24	4.42
SURRY	1	2	1	0	0	4	SURRY	1.47	2.88	1.42	0.00	0.00
SWAIN	0	1	0	0	0	1	SWAIN	0.00	7.93	0.00	0.00	0.00
TRANSYLVANIA	0	0	0	0	1	1	TRANSYLVANIA	0.00	0.00	0.00	0.00	3.41
TYRRELL	0	0	0	0	0	0	TYRRELL	0.00	0.00	0.00	0.00	0.00
UNION	5	0	0	1	5	11	UNION	4.55	0.00	0.00	0.81	3.79
VANCE	1	0	1	0	0	2	VANCE	2.42	0.00	2.35	0.00	0.00
WAKE	17	24	33	7	19	100	WAKE	2.97	4.05	5.39	1.11	2.89
WARREN	0	0	0	0	0	0	WARREN	0.00	0.00	0.00	0.00	0.00
WASHINGTON	0	0	0	0	0	0	WASHINGTON	0.00	0.00	0.00	0.00	0.00
WATAUGA	0	0	0	0	3	3	WATAUGA	0.00	0.00	0.00	0.00	7.03
WAYNE	0	1	3	3	1	8	WAYNE	0.00	0.88	2.66	2.65	0.88
WILKES	0	0	3	1	4	8	WILKES	0.00	0.00	4.60	1.52	6.05
WILSON	2	2	0	1	3	8	WILSON	2.80	2.76	0.00	1.35	4.03
YADKIN	3	1	1	2	0	7	YADKIN	8.56	2.82	2.78	5.50	0.00
YANCEY	0	0	0	0	0	0	YANCEY	0.00	0.00	0.00	0.00	0.00
NORTH CAROLINA	194	135	183	139	266	917	NORTH CAROLINA	2.54	1.73	2.31	1.73	3.25

N.C. Department of Health and Human Services - Division of Public Health
General Communicable Disease Control - June 2002