

# INFECTIONOUS DISEASES

## IN CHILDREN

AGES 1-17

Tennessee Department of Health

November 2012

### INTRODUCTION

Quarterly, each hospital licensed by the Tennessee Department of Health reports, by law (Tennessee Code Annotated, Section 68-1-108), selected information on each inpatient discharged during the period for inclusion in the Tennessee Hospital Discharge Data System (HDDS). The annual number of reported inpatient records is approximately 900,000.

Hospitalizations are a major component in the provision of health care to all citizens, including the care of our younger citizens. This information is important to both public and private health researchers, but also to the general public.

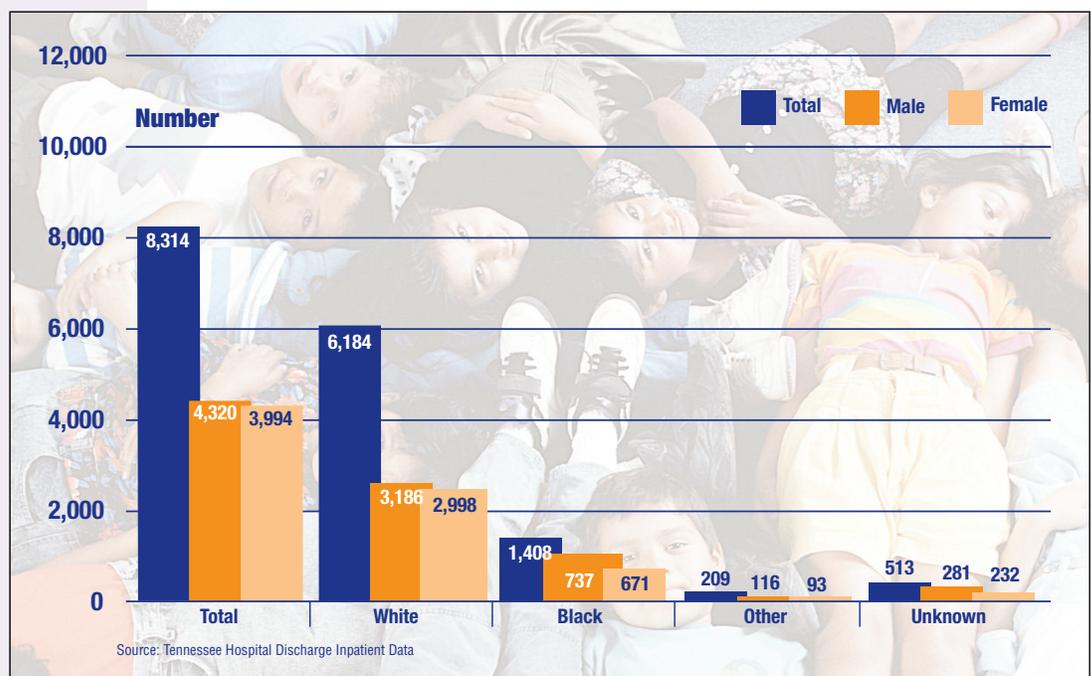
This newsletter looks at all children ages 1 through 17 hospitalized in Tennessee for infectious and parasitic diseases from 2006-2010. Basic demographic characteristics of the children are examined first, and then a detailed breakdown by disease code is examined.

Due to the special health care needs of newborns, infants in the first year of life are excluded. By age 18, individuals are leaving home, entering the workforce, or going to college. Thus ages 1 through 17 seems the most appropriate age range to represent this childhood population.

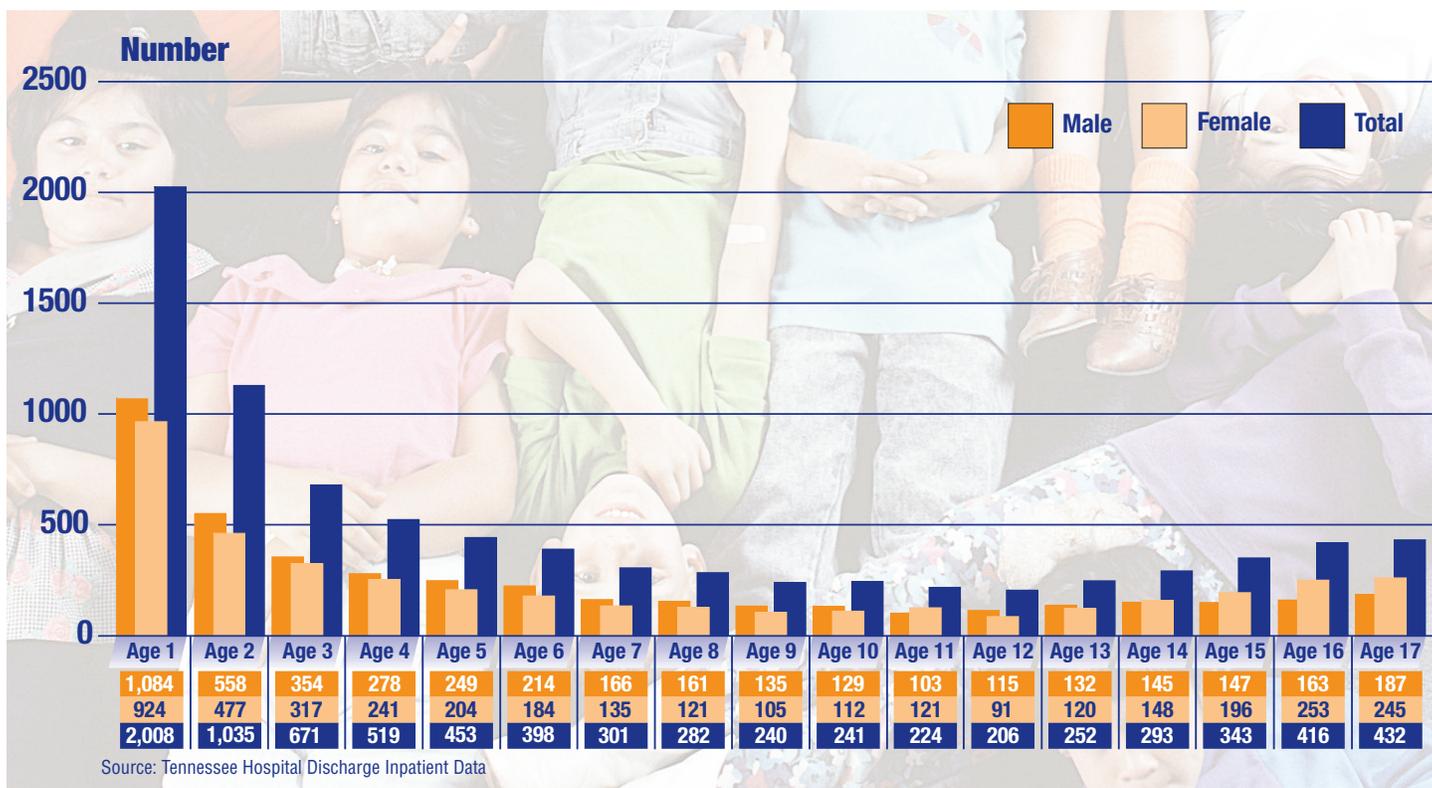
Only those children with a primary diagnosis of infectious or parasitic diseases were included in this report. This is represented by the ICD-9-CM code values of 001-139, where 8,314 children ages 1-17 were found with this primary diagnosis. Note: Certain diseases coded according to the organ or system affected are not included in this report. Also hospitalizations where these codes (001-139) are present only as other diagnostic codes are not included.

The first table is a frequency of race by gender. Slightly more males (52.0 percent) than females (48.0 percent) were hospitalized. Most of the children hospitalized were white (74.4 percent). Blacks were the second largest racial grouping (16.9 percent). These are the largest and second largest racial groups in the population, so this result would be expected.

### INFECTIONOUS DISEASES IN CHILDREN AGES 1-17 By RACE AND GENDER, 2006-2010



## INFECTIOUS DISEASES IN CHILDREN AGES 1-17 By AGE AND GENDER, 2006-2010



The younger age groups were hospitalized far more often than the older. The frequency of hospitalizations dropped to a low point at age 12, then rose slowly among older children.

The largest total number of children were paid by TennCare, Tennessee's Medicaid waiver plan. This is true for all racial groups except white. For the white population group, the majority of hospitalizations were paid by "Other Insurance," i.e. by private insurance.



## INFECTIOUS DISEASES IN CHILDREN AGES 1-17 By RACE AND PAYER, 2006-2010

RACE	PAYER							Total Cases
	TennCare	Medicare	Self Pay	Other Insurance	Free Care	Cover Kids/TN	Other/Unknown	
White	2,778	11	152	3,123	1	18	101	6,184
Black	967	2	37	392	0	1	9	1,408
Other	126	1	16	61	0	1	4	209
Unknown	269	2	24	215	0	1	2	513
<b>Total</b>	<b>4,140</b>	<b>16</b>	<b>229</b>	<b>3,791</b>	<b>1</b>	<b>21</b>	<b>116</b>	<b>8,314</b>

Source: Tennessee Hospital Discharge Inpatient Data

## INFECTIOUS DISEASES IN CHILDREN AGES 1-17 By YEAR AND PAYER, 2006-2010

YEAR	PAYER							Total Cases
	Frequency	TennCare	Medicare	Self Pay	Other Insurance	Free Care	Cover Kids/TN	
2006	1,050	5	50	996	1	-	53	2,155
2007	883	2	59	895	-	2	17	1,858
2008	779	1	47	665	-	6	15	1,513
2009	750	2	46	668	-	10	21	1,497
2010	678	6	27	567	-	3	10	1,291
<b>Total</b>	4,140	16	229	3,791	1	21	116	8,314

Source: Tennessee Hospital Discharge Inpatient Data

The table above shows a consistent decrease in the number of hospitalizations by year. Whether this represents a true change or is due to random variation is not clear. Infectious diseases are much more variable from year to year than are most other types such as injuries or chronic diseases.



CASES, WHITE, and BLACK are frequencies given in previous tables, but the other columns in the next two tables represent different information. MEAN LENGTH OF STAY is the average time a patient was in the hospital for that particular hospitalization.

MEDIAN CHARGE is the middle charge for that category; half the patients were charged more, half were charged less. TOTAL CHARGE is the sum of all the charges for that category. (Note that charge is the nominal charge. Most actual payments are lower.)

The table below presents this information by payer. "Other Insurance," i.e. private insurance, and TennCare had the vast majority of cases and thus the largest TOTAL CHARGES. However, the handful of Medicare cases had the longest MEAN LENGTH OF STAY and the highest MEDIAN CHARGE.



## INFECTIOUS DISEASES IN CHILDREN AGES 1-17 By PAYER, 2006-2010

PAYER	Mean Length of Stay	Median Charge	Total Charge	Total Cases
<b>Total</b>	3.7	\$6,486.23	\$141,341,092.62	8,314
<b>TennCare</b>	4.0	\$6,542.81	\$76,293,222.56	4,140
<b>Medicare</b>	5.9	\$13,000.15	\$609,398.82	16
<b>Self Pay</b>	3.2	\$6,998.20	\$2,823,787.72	229
<b>Other Insurance</b>	3.6	\$6,459.94	\$60,325,466.93	3,791
<b>Free Care</b>	2.0	\$2,325.79	\$2,325.79	1
<b>Cover Kids/TN</b>	4.3	\$6,109.32	\$387,320.10	21
<b>Other/Unknown</b>	2.4	\$4,659.86	\$899,570.70	116

Source: Tennessee Hospital Discharge Inpatient Data

## INFECTIOUS DISEASES IN CHILDREN AGES 1-17

### By DIAGNOSIS, 2006-2010

DX	DIAGNOSIS	Mean Length of Stay	Median Charge	Total Charge	Cases	White	Black
	All infectious & parasitic	3.7	\$6,486.23	\$141,341,092.62	8,314	6,184	1,408
002-	Typhoid & paratyphoid	8.3	\$21,862.00	\$53,633.40	3	0	1
003-	Other salmonella	3.5	\$7,528.56	\$1,605,960.57	168	118	36
004-	Shigellosis	2.9	\$7,031.65	\$671,119.74	78	45	28
005-	Other food poisoning	3.0	\$5,142.22	\$207,190.93	17	15	0
007-	Other protozoal intestinal	3.1	\$5,347.95	\$194,253.07	25	22	2
008-	Other intestinal	2.7	\$4,894.40	\$25,696,651.59	3,466	2,784	399
008.0	E. coli	5.1	\$9,160.20	\$860,772.98	51	41	3
008.4	Other specified bacteria	5.3	\$9,215.30	\$7,394,080.17	400	316	53
008.5	Bacterial enteritis, unspecified	3.8	\$6,995.10	\$226,637.45	17	15	1
008.6	Enteritis due to specified virus	2.4	\$4,166.32	\$8,059,916.89	1,608	1,341	155
008.8	Other organism, NEC	2.3	\$5,245.88	\$9,155,244.10	1,390	1,071	187
009-	Ill-defined intestinal	2.8	\$7,253.00	\$1,161,048.34	131	108	11
010-	Primary tuberculosis infection	6.3	\$19,090.30	\$55,775.10	3	0	2
011-	Pulmonary tuberculosis	5.9	\$8,619.30	\$417,198.03	25	3	14
013-	TB of meninges & CNS	71.0	\$720,743.31	\$720,743.31	1	0	0
017-	Tuberculosis of other organs	14.0	\$72,583.83	\$72,583.83	1	0	1
018-	Miliary tuberculosis	46.0	\$106,275.05	\$106,275.05	1	0	1
023-	Brucellosis	8.0	\$46,311.90	\$46,311.90	1	0	1
026-	Rat-bite fever	4.5	\$13,561.51	\$27,123.01	2	2	0
031-	Due to other mycobacteria	10.8	\$27,420.51	\$974,890.15	12	6	6
033-	Whooping cough	3.2	\$6,776.21	\$141,455.00	13	10	2
034-	Strep sore throat & scarlet fever	2.2	\$5,009.57	\$2,948,893.76	467	347	83
034.0	Streptococcal sore throat	2.2	\$4,999.79	\$2,735,254.43	438	327	77
034.1	Scarlet fever	2.4	\$5,012.60	\$213,639.33	29	20	6
035-	Erysipelas	2.8	\$6,753.00	\$116,712.73	13	12	0
036-	Meningococcal infection	13.2	\$18,181.53	\$2,178,529.02	30	20	7
036.0	Meningococcal meningitis	4.8	\$16,148.39	\$279,307.99	18	13	4
036.1	Meningococcal encephalitis	7.5	\$23,063.50	\$46,127.00	2	2	0
036.2	Meningococemia	32.3	\$77,308.00	\$1,840,641.79	9	4	3
036.9	Unspecified meningococcal	4.0	\$12,452.24	\$12,452.24	1	1	0
038-	Septicemia	9.1	\$26,317.88	\$51,807,595.71	728	492	144
038.0	Streptococcal septicemia	10.4	\$42,673.00	\$4,768,215.88	47	32	13
038.1	Staphylococcal septicemia	14.4	\$53,100.99	\$17,101,500.43	125	81	28
038.2	Pneumococcal septicemia	10.0	\$21,175.56	\$4,017,449.63	44	29	11
038.3	Due to anaerobes	19.4	\$117,378.23	\$611,515.82	5	4	1
038.4	Due to other gram-negative organisms	10.1	\$37,897.00	\$5,608,690.69	97	62	17
038.8	Other specified septicemias	9.3	\$30,786.12	\$1,724,559.77	28	15	6
038.9	Unspecified septicemia	6.7	\$15,890.96	\$17,975,663.49	382	269	68
039-	Actinomycotic infections	5.0	\$16,427.80	\$32,855.59	2	2	0
040-	Other bacterial	6.3	\$29,826.37	\$4,235,727.48	61	38	16
041-	Bacterial in conditions classified elsewhere & of unspecified site	6.4	\$8,710.45	\$1,399,713.82	31	21	4
042-	HIV	8.8	\$21,713.33	\$649,285.82	18	4	13
046-	Slow virus & prion of CNS	20.0	\$108,702.39	\$217,404.78	2	0	0
047-	Meningitis due to enterovirus	2.7	\$8,530.00	\$5,699,491.18	555	390	122
047.0	Coxsackie virus	5.0	\$29,373.72	\$29,373.72	1	1	0
047.8	Other specified viral meningitis	2.4	\$9,943.05	\$820,134.41	70	45	23
047.9	Unspecified viral meningitis	2.8	\$8,313.35	\$4,849,983.05	484	344	99
048-	Other enterovirus of CNS	4.9	\$17,624.55	\$1,072,322.60	38	29	7
049-	Other non-arthropod-borne viral of CNS	6.9	\$21,706.60	\$2,209,017.34	65	40	14
052-	Chickenpox	4.8	\$10,026.44	\$1,013,610.50	48	35	6
053-	Herpes zoster	4.7	\$12,711.12	\$1,526,402.25	88	62	23
054-	Herpes simplex	4.2	\$7,419.00	\$3,397,445.74	259	162	75

INFECTIOUS DISEASES IN CHILDREN AGES 1-17 By Diagnosis, 2006-2010 (CONT.)

		Mean Length of Stay	Median Charge	Total Charge	Cases	White	Black
057-	Other viral exanthemata	2.3	\$5,921.81	\$264,520.77	44	33	5
058-	Other human herpesvirus	6.3	\$10,090.70	\$69,580.82	3	1	2
061-	Dengue	2.0	\$13,913.27	\$13,913.27	1	0	0
062-	Mosquito-borne viral encephalitis	8.3	\$27,410.47	\$514,756.04	12	11	0
063-	Tick-borne viral encephalitis	31.0	\$233,083.85	\$233,083.85	1	0	1
064-	Viral encephalitis transmitted by other & unspecified arthropods	4.0	\$21,033.24	\$42,066.48	2	2	0
066-	Other arthropod-borne viral	4.1	\$9,131.53	\$706,266.87	42	36	4
070-	Viral hepatitis	3.6	\$11,113.70	\$662,404.39	50	38	8
072-	Mumps	5.3	\$10,264.25	\$83,002.15	4	2	2
073-	Ornithosis	11.0	\$28,394.00	\$28,394.00	1	1	0
074-	Due to coxsackie virus	2.6	\$4,189.00	\$163,017.85	29	18	5
075-	Infectious mononucleosis	2.8	\$6,544.10	\$4,420,542.79	477	347	95
077-	Other diseases of conjunctiva due to viruses & Chlamydiae	2.4	\$5,525.65	\$54,600.15	8	6	1
078-	Other due to viruses & chlamydiae	4.3	\$10,313.44	\$2,007,567.83	92	61	22
078.0	Molluscum contagiosum	3.3	\$15,811.11	\$39,317.18	3	1	2
078.1	Viral warts	2.0	\$11,167.38	\$22,334.76	2	1	1
078.3	Cat-scratch disease	4.0	\$9,094.67	\$405,728.08	30	25	3
078.5	Cytomegaloviral disease	8.0	\$23,426.65	\$1,247,182.32	25	11	12
078.8	Other specified diseases due to viruses & Chlamydiae	1.9	\$6,843.96	\$293,005.49	32	23	4
079-	Viral & chlamydial--unspecified site	2.5	\$6,246.95	\$6,579,407.07	787	612	119
079.0	Adenovirus	2.8	\$7,879.73	\$458,978.35	45	39	4
079.2	Coxsackie virus	3.0	\$8,354.54	\$16,709.07	2	2	0
079.6	Respiratory syncytial virus	2.5	\$6,224.90	\$309,160.18	36	30	3
079.8	Other specified viral & chlamydial	3.3	\$8,208.98	\$669,239.80	55	38	13
079.9	Unspecified viral & chlamydial	2.4	\$6,092.42	\$5,125,319.67	649	503	99
082-	Tick-borne Rickettsioses	3.9	\$9,303.00	\$2,042,733.66	123	93	22
082.0	Spotted fevers	3.8	\$8,479.30	\$1,139,068.84	86	68	12
082.4	Ehrlichiosis	4.2	\$14,407.72	\$796,391.41	29	20	7
082.8	Other specified tick-borne	4.7	\$8,553.82	\$35,669.32	3	1	2
082.9	Unspecified tick-borne	3.2	\$14,389.56	\$71,604.09	5	4	1
083-	Other rickettsioses	3.8	\$10,773.35	\$143,107.84	12	9	2
084-	Malaria	4.2	\$10,396.50	\$315,921.15	11	1	6
087-	Relapsing fever	2.5	\$7,049.76	\$36,971.22	4	3	1
088-	Other arthropod-borne	7.5	\$9,496.50	\$190,451.48	11	9	1
094-	Neurosyphilis	18.0	\$60,673.00	\$60,673.00	1	0	1
098-	Gonococcal	2.3	\$10,279.00	\$109,808.36	9	2	7
099-	Other venereal	4.0	\$9,599.10	\$136,886.22	9	1	8
100-	Leptospirosis	4.0	\$12,477.19	\$12,477.19	1	1	0
101-	Vincent's angina	4.0	\$10,055.50	\$10,055.50	1	0	1
110-	Dermatophytosis	2.0	\$5,490.30	\$58,117.00	9	4	5
111-	Dermatomycosis, other and unspecified	3.0	\$14,498.35	\$14,498.35	1	1	0
112-	Candidiasis	8.3	\$11,738.33	\$2,603,784.24	50	31	11
114-	Coccidioidomycosis	2.0	\$12,746.10	\$12,746.10	1	0	1
115-	Histoplasmosis	7.1	\$29,776.73	\$1,548,882.26	38	10	25
116-	Blastomycotic infection	12.1	\$79,186.85	\$752,640.09	11	2	9
117-	Other mycoses	11.7	\$36,019.99	\$3,105,669.21	39	32	6
118-	Opportunistic mycoses	54.0	\$151,016.35	\$151,016.35	1	1	0
123-	Other cestode infection	7.0	\$8,667.53	\$164,133.43	4	4	0
127-	Other intestinal helminthiases	2.5	\$12,162.57	\$52,011.44	4	4	0
129-	Intestinal parasitism, unspecified	4.5	\$21,960.68	\$43,921.36	2	1	0
131-	Trichomoniasis	2.3	\$7,372.30	\$63,780.64	7	1	6
133-	Acariasis	1.7	\$5,329.29	\$12,819.87	3	3	0
135-	Sarcoidosis	36.5	\$163,359.81	\$326,719.62	2	0	2
136-	Other infectious & parasitic	8.4	\$25,819.71	\$2,870,921.37	55	36	12

Source: Tennessee Hospital Discharge Inpatient Data

For all the included diagnoses all cases are shown by the appropriate three-digit ICD-9-CM code. Certain diagnoses were selected for a more detailed breakdown. For these diagnoses information is presented for the fourth digit of the ICD-9-CM code. For example, 008- represents the three digit grouping of other intestinal diseases, but more detail is given for this disease grouping, e.g. 008.0 presents information on the subcategory of those diagnosed with E. Coli. When any three digit grouping is selected for a more detailed breakdown, all cases in that grouping are presented in the four-digit detailed breakdown.

A high TOTAL CHARGE is mostly reflective of disease categories with a large number of cases. But certain, generally less common, diseases had a long MEAN LENGTH OF STAY with its associated high MEDIAN CHARGE. For example 013- TB of meninges & CNS was high in both measures.

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