

Running the Numbers

*A Periodic Feature to Inform North Carolina Healthcare Professionals
About Current Topics in Health Statistics*

From the State Center for Health Statistics, North Carolina Department of Health and Human Services
www.schs.state.nc.us/SCHS

Potentially Avoidable Hospitalizations in North Carolina

While many inpatient hospitalizations are for trauma emergencies or elective procedures, some hospitalizations might be avoided if satisfactory primary care were used or if the conditions were diagnosed earlier. Research suggests that certain hospital diagnoses in particular are often associated with problems in access to or use of primary care. Using diagnostic criteria established in previous research,^{1,2} we examine potentially avoidable inpatient hospital discharges in North Carolina (sometimes called ambulatory sensitive conditions) based on selected principal or first-listed diagnoses.

We used the principal ICD-9-CM (International Classification of Diseases, 9th Revision, Clinical Modification) diagnosis codes from the 2002 North Carolina hospital discharge data base to identify potentially avoidable hospitalizations. Discharges for newborns and deliveries were excluded from the analysis, as were records for residents of other states. North Carolina residents discharged from out-of-state hospitals are not included in the North Carolina hospital discharge data base.

The following table presents potentially avoidable hospitalizations in 2002 by diagnostic category, showing the total number of discharges, the average length of stay, total hospital charges, and average charges per hospital stay.

Potentially Avoidable Hospitalizations in North Carolina, 2002

Primary Diagnosis	Total Discharges	Avg. Length of Stay (days)	Total Hospital Charges	Average Charges Per Stay
Pneumonia	32,900	6.0	\$423,612,729	\$12,876
Congestive heart failure	29,193	5.4	\$395,333,009	\$13,542
Asthma	11,280	3.4	\$74,265,930	\$6,584
Cellulitis	8,186	5.1	\$71,943,189	\$8,789
Diabetes with ketoacidosis or coma	4,560	3.8	\$39,720,703	\$8,711
Pyelonephritis	3,652	3.9	\$27,182,354	\$7,443
Perforated or bleeding ulcer	3,584	5.1	\$51,015,899	\$14,234
Ruptured appendix	1,874	5.9	\$33,267,109	\$17,752
Malignant hypertension	1,458	4.2	\$16,442,232	\$11,277
Hypokalemia	743	4.3	\$6,357,782	\$8,557
Gangrene	163	7.2	\$2,608,125	\$16,001
Immunizable conditions	39	6.6	\$423,887	\$10,869
Total	97,632	5.2	\$1,142,172,948	\$11,699

These 97,632 discharges represent 11% of the total of 855,268 hospital discharges in North Carolina in 2002 (with the exclusions mentioned above). These hospitalizations accounted for \$1.14 billion in hospital charges. Charges indicate the amount billed by the hospital to the patient or the patient's insurance company, not what was actually paid to the hospital. Pneumonia and congestive heart failure were the most common primary diagnoses, accounting for 64% of all potentially avoidable hospitalizations. The rate of potentially avoidable hospitalization was 1172.6 per 100,000 North Carolina resident population, which is only a slight decline from the 1997 rate of 1182.5.

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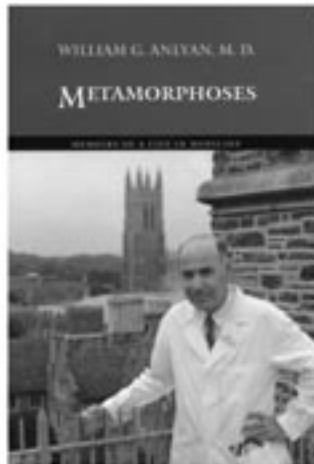
Persons on Medicare accounted for 57% of all potentially avoidable hospitalizations (data not shown in table). Rural counties and counties with the lowest per capita income levels have potentially avoidable hospitalization rates (per 100,000 population) substantially higher than the state average.

There could be some debate about exactly which diagnoses are used to indicate “potentially avoidable” hospitalizations, and certainly not all hospitalizations for conditions such as pneumonia and congestive heart failure can be prevented, especially among older persons. Nevertheless, the results here indicate that many hospitalizations in North Carolina could be prevented if the seriousness of the diseases were reduced through better primary care services.

An earlier report of the State Center for Health Statistics on this topic by Kathleen Jones-Vessey can be accessed at <http://www.schs.state.nc.us/SCHS/pdf/schs118.pdf>.

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- 1 Weissman J, Gatsonis C, Epstein A. Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. *JAMA* 1992; 268: 2388-2394.
 - 2 Pappas G, Hadden W, Kozak Z, Fisher G. Potentially avoidable hospitalizations: inequalities in rates between US socioeconomic groups. *American Journal of Public Health* 1997; 87:811-816.
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