
How representative are emergency department data for injuries: Influence of health insurance status

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Background

- Emergency department (ED) data are increasingly being used for injury surveillance.
- Often assumed that they provide useful data on less-serious injuries not captured by hospital discharge or fatality data.
 - Few studies however question how representative ED data are of all medically treated injuries
 - Earlier commentary suggested data may be biased by factors such as age, gender, socioeconomic status

Acute confusional syndrome: How well do ED patients represent all medically treated injuries



Objectives

- To estimate the percentage of people who use the ED for care of medically treated injuries.
- To determine the extent to which types of health insurance coverage (private, public, or uninsured) influence whether injured persons with similar injuries seek treatment in an ED or other ambulatory care settings

Objectives

- To determine if the effect of health insurance on place of treatment is modified by demographics and other variables?
- To evaluate representativeness of emergency department (ED) data for estimating incidence of medically treated injuries

Methods

- We analyzed the 7,834 medically-treated injuries from the 2000-2003 National Health Interview Survey (NHIS)
 - NHIS is an in-person household survey using a multistage, stratified, clustered sample design representing the US civilian, non-institutionalized population
- Survey weights used to calculate national estimates
- Analysis conducted using SAS and SUDAAN to account for complex sample design

Methods

- Treatment location defined hierarchically such that any visit to an ED was considered the highest level of care
 - Other locations in hierarchical order were
 - outpatient department or clinic,
 - doctor's office, or
 - phone call to doctor
- Multiple imputation methods used to impute income
 - Logistic regression models fitted to account for 22% of injured with missing income.

Methods

- Weighted logistic regression modeled the relationship between place of treatment and covariates
 - health insurance status,
 - private, public, uninsured
 - age,
 - gender,
 - race/ethnicity,
 - region of country,
 - nature of injury,
 - cause of injury,
 - work status, and
 - Income
 - household poverty status (% of poverty level)

Results

- An estimated 23.1 million persons suffered 24.5 million medically-treated injury episodes annually
 - 55% sought treatment for their injuries at an ED as their highest level of care
 - 11% in clinics,
 - 28% in doctors offices,
 - 3% sought only telephone advice
- Privately insured persons used ED for 50% of episodes vs. 65% for uninsured.
 - Persons with public health insurance similar to the uninsured with respect to where they seek care for injuries

Results

- Of the estimated 98.0 million injuries over 4 years we subsequently analyzed the 92.4 million first medically-treated injury episodes using weighted logistic regression
- Those with private health insurance were 35% less likely to seek care at an ED than the uninsured (95% CI: 0.54-0.77) controlling for demographics and other variables related to determinants of treatment
 - Persons with public health insurance remained similar to the uninsured

Table 1. Odds ratios from weighted logistic regression for the ED as place of treatment for medically treated injuries.

Characteristics	OR (95% CI)
Health insurance status (unadjusted)	
Uninsured	1.00
Private	0.53 (0.46, 0.62)
Public	1.03 (0.84, 1.24)
Health insurance status (adjusted ¹)	
Uninsured	1.00
Private	0.65 (0.54, 0.77)
Public	1.00 (0.80, 1.24)

¹Adjusted for age, gender, race/ethnicity, region, nature and cause of injury, work, and income.

Results

- Injured males were 1.13 times more likely to seek care at the ED (95% CI: 1.01 – 1.27)
- Non-Hispanic Blacks were 1.44 times as likely to visit an ED for an injury as non-Hispanic Whites (95% CI: 1.16-1.79)
- Persons with crushing injuries, amputation, open wounds, fractures or poisonings more likely to seek care at the ED than those with sprains or strains

Results

- Significant regional variation
 - higher ED use among injured persons from the Northeast, Midwest, and South as compared to the West
- Variation by income
 - Highest level of threshold income (300% or more of poverty level) 30% less likely to visit an ED for care as those with 200-399% of the threshold income (95% CI: 0.61-0.81)

Discussion

- ED data may not be representative of all medically treated injuries.
 - Privately insured persons are significantly less likely to use the ED for treatment of similar injuries compared to those with public or no insurance: This may affect issues such as quality of and access to care, and costs of treatment
 - The likelihood of using the ED for medical treatment also varies by age, gender, race/ethnicity, region of the country, income, and by the nature and cause of injury

Discussion

- When making national injury estimates based on ED databases consideration must be given to potential biases in the data such as regional differences in place of treatment patterns, and the influence of health insurance status.
- Variations in place of treatment by age, gender, race/ethnicity and nature and cause of injury also need to be considered.

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Questions?



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