

COLD SPELLS AND HOSPITALIZATIONS DUE TO HYPOTHERMIA: UNRECOGNIZED THREATS FOR ELDERLY WITH DIABETES

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Background and Aims: Climate variability has the potential to substantially increase the number and intensity of extreme weather events worldwide. Extreme cold spells are causing hypothermia, a relatively common but preventable condition, resulting in significant morbidity. This presents an important socio-economic problem for vulnerable populations. We describe functional relations with meteorological conditions and spatial-temporal patterns of hospitalizations due to hypothermia in the older adults residing in the USA.

Methods: 10,522 hospitalization records due to hypothermia (95%) and frostbites (ICD-9M:991,E9583,E9883,E901) in patients aged 65+y.o. were abstracted from MEDPAR files maintained by the Center of Medical Services for 2005-2006. Each record includes patient's age, sex, race, residence, 10 diagnostic codes, and total hospitalization charges. Daily meteorological parameters were abstracted from 1,979 stations nationwide and windchill indexes were estimated. Age- and zipcode-specific rates of hospitalizations were calculated for 3 age groups (65-74, 75-84, and ≥85y.o.), 5 racial groups, and 7 climatic areas based on the modified Köppen classification system. Relative risks (RR) associated with low temperature and windchill indexes were estimated using non-linear regression models, considering effect modification by age, race, and climatic conditions.

Results: The rate of hypothermia was increasing with age from 4.09 [95%CI: 3.08,5.44] to 8.48 [95%CI: 7.03,10.23] and 24.78 [95%CI: 22.12,27.75] in older adults. Patients with diabetes, Black and Native American males, residents of polar tundra and areas with wet winters have the highest rates. Irrespective of age, RR of hypothermia associated with 5°C was 1.22 [95%CI:1.26;1.15]. Median cost of a hospitalization event was \$13,260 [IQR:\$7,240,\$25,276].

Conclusions: Patient's age, race, place of residence, and co-morbidity (most notable the diabetes) have substantial impacts on frequency, duration, and costs associated with treating hypothermia. Preventive efforts targeted at vulnerable populations and regions are needed to reduce hypothermia hospitalizations. Allocation of resources to a growing segment of elderly with diabetes is warranted.