

Formula predicts emergency admissions in adults older than 40

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Using data from clinical encounters and drug prescriptions over three years, researchers have devised a model to predict emergency hospital admissions in the following year in individuals age 40 and older, according to a report in the July 14 issue of *Archives of Internal Medicine*.

Stratifying individuals by risk to target health care may help reverse the trend of increasing emergency hospital admissions, according to background information in the article. Several models have been previously developed to identify those at risk. However, most have focused on those older than 65 years or those who have already experienced multiple emergency admissions.

"These algorithms clearly leave out of consideration the important group of people at high risk who are younger than 65 years and those who have never experienced an emergency admission but are likely to experience an emergency admission in the future," the authors write.

Peter T. Donnan, Ph.D., of the University of Dundee, Scotland, and colleagues studied 90,522 residents of Tayside, Scotland, where each individual who visits a general practitioner is given a 10-digit identifier. Participants were at least 40 years old when they entered the study between 1996 and 2004, had at least three years of data available on hospital use and drug prescribing and were followed for at least one year.

A total of 6,793 (7.5 percent) of the participants experienced an

emergency hospital admission within one year of enrolling in the study. Those who were hospitalized tended to:

- Be older and male
- Live in an area with high social deprivation
- Have received more respiratory medications
- Have had previous emergency admissions, with average total days in the hospital six times greater than those who were not admitted on an emergency basis
- Have been prescribed analgesics (pain medications), antibacterials, nitrates and diuretics

The researchers identified 35 such parameters that were used to derive the probability of emergency admission within the next year, expressed as a percentage. "As an example, consider a man aged 72 years and is from a highly deprived area; has previous emergency admissions, eight previous admissions and 106 total bed-days in the previous three years; and is in receipt of hypertension and heart failure drugs, nitrates and calcium channel blockers, respiratory drugs, anxiolytics, antidepressants, analgesics and antibacterials: the absolute risk of admission in the next year is 52.8 percent," the authors write.

On the other hand, a 50-year-old woman from an affluent area with no previous emergency admissions and one previous hospital admission with a one-day stay who takes ulcer-healing drugs, diuretics and antibiotics would have a 2.4 percent risk of emergency admission in the next year.

Source: JAMA and Archives Journals

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