Clinical prediction guide

An algorithm had moderate sensitivity for identifying older women in nursing homes at risk of fracture


QUESTION: Does an algorithm composed of routinely collected baseline data identify older women in nursing homes at increased risk of fracture?

Design
18 month follow up of a cohort of nursing home residents divided into derivation and validation samples.

Setting
A stratified random sample of 47 long term nursing facilities in Maryland, USA.

Patients
1427 white women living in nursing homes who were ≥ 65 years of age (mean age 85 yrs), had no terminal cancer or bone metastases, were not comatose, had ≥ 1 wrist or forearm free of prosthetic implants and open skin lesions, were not admitted for rehabilitation only, and were able to have bone mineral density (BMD) measurements.

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COMMENTARY
Injurious falls are a major problem in long term care facilities. The interaction of both intrinsic and extrinsic factors contributes to the risk of falls. The study by Girman et al focuses exclusively on intrinsic risk factors. A clinical algorithm to identify those at risk of fractures offers the possibility of allocating preventive efforts to those most in need. The study approach is intuitively appealing because it involves using routinely collected MDS data.

The algorithm did predict risk better than chance, but many women were still misclassified in terms of their level of risk. Several study limitations may have introduced “noise”, limiting the precision of the proposed algorithm. Patients admitted to long term care may experience rapid functional decline. Thus, risk factors such as weight, transfer independence, and cognition may have shifted from the timing of the MDS assessment. Some important risk factors for fractures, such as the use of benzodiazepines and environmental characteristics, were excluded. Finally, the circumstances culminating in a fracture were not disclosed, but it is reasonable to assume that they often involved an interaction of MDS characteristics with environmental factors.

In an earlier report of this study, the risk of fracture was found to be higher among women with low BMD and transfer independence but not among those with low BMD and transfer dependence. This raises the question of which preventive measures should be routinely used for patients who are able to transfer independently in order to safely support their mobility independence and physical and social functioning. Characteristics of the physical environment (eg, night lighting, transfer boards, distance to bathroom for patients with urge incontinence, and use of physical restraints) and workload environment (eg, ratio of staff to patients and availability of staff) are critical areas for intervention.

It would be premature to adopt the use of the algorithm for the assessment of women at high risk of fracture in nursing homes. Further research is required to unravel the means by which transfer independence affects the risk of falls and consequently risk of fractures.

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