

## Clinical Prediction Rule for Prolonged Nursing Home Residence Following a Hip Fracture

Overview: Some patients who have had a hip fracture will require a prolonged recovery in a nursing home. Steiner et al developed a rule to identify patients at risk for a prolonged disability using clinical factors available around the time of injury. The authors are from the University of Colorado.

Patient selection:

- (1) age  $\geq$  65 years
- (2) not a resident of a nursing home prior to the fracture
- (3) discharged to a nursing home after the fracture

Parameters:

- (1) marital status
- (2) continence
- (3) walking ability
- (4) cognitive ability as measured in the Mini-Mental State Exam (MMSE with scores from 0 to 30; see Chapter on Psychiatry)

Parameters	Finding	Points
marital status	married	0
	unmarried	1
continence	continent in stool and urine	0
	incontinent in stool and/or urine	1
walking ability	independent in ambulation	0
	dependent in ambulation	1
cognitive ability	not impaired (MMSE $\geq$ 24)	0
	cognitively impaired (MMSE $<$ 24)	1

Risk Factor	Adjusted Odds Ratio in the Development Group (95% CI)	Adjusted Odds Ratio in the Validation Group (95% CI)
unmarried	6.7 (2.4 – 19.0)	3.4 (0.7 – 17.0)
incontinent	2.3 (1.2 – 4.7)	5.1 (1.5 – 17.9)
dependent in ambulation	5.0 (2.1 – 12.3)	4.4 (1.1 – 17.1)

cognitively impaired	6.6 (3.3 – 13.2)	3.3 (1.0 – 11.0)
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from Table 2 page 1513)

number of risk factors =

= SUM(points for the 4 parameters

Interpretation:

- minimum risk score: 0
- maximum risk score: 4
- The greater the number of risk factors the greater the likelihood that the patient would still be in a nursing home 6 months after the hip fracture.

<b>Number of Risk Factors</b>	<b>Percent of Patients from the Development Group in a Nursing Home</b>	<b>Percent of Patients from the Validation Group in a Nursing Home</b>
0	0%	0%
1	3.7%	2.4%
2	11.3%	2.6%
3	30.4%	15.4%
4	73.2%	50%

Performance:

- The area under the ROC curve was 0.84 +/- 0.03 in the development group.

References:

Steiner JF Kramer AM et al. Development and validation of a clinical prediction rule for prolonged nursing home residence after hip fracture. J Am Geriatr Soc. 1997; 45: 1510-1514.