



General Assessment Series

Best Practices in Nursing Care to Older Adults

Fall Risk Assessment for Adults: The Hendrich II Fall Risk Model[®]

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WHY: Falls are the leading cause of injury in adults aged 65 or older. In 2018, 27.5% of older adults reported at least one fall in the past year, resulting in 8.4 million fall-related injuries and 32,000 deaths (Moreland et al., 2020). Falls among older adults tend to have a multifactorial etiology related to risk factors intrinsic to the person. The value of a scientifically validated fall risk assessment tool is to identify the risk factors that matter so that the care team can work with the person to address the underlying conditions that put the person at risk of falling. It's important to reject the ageism bias that people fall simply because they are older; underlying fall risk factors such as depression, polypharmacy, or gait/balance issues can be mitigated to support safe mobility and independence for adults as they age. Fall risk assessment tools are often used only on hospital admission or infrequently during an illness or in the primary care management of an individual. Repeated and regular assessment, in both inpatient and outpatient settings, population health management, and across the care continuum, will alert the interprofessional team to changes in condition that signal fall risk and assist the team in selecting interventions to promote a holistic, preventative approach as part of a comprehensive exam.

BEST PRACTICE APPROACH: The Hendrich II Fall Risk Model (HIIFRM) is the centerpiece of a best practice approach that is on the leading edge of a new era in fall prevention and safe mobility, captured by the acronym ERA:

- **Electronic health record integration:** The HIIFRM can be built into the electronic health record to automate and auto-populate the patient's fall risk factors into the nursing assessment form and to link to customizable, evidence-based care plans and interventions. This functionality is also featured in the [Epic App Market](#).
- **Risk factors that matter:** The HIIFRM assesses eight fall risk factors that were scientifically identified as necessary to predict falls.
- **Assessment and care plans:** A fall risk assessment provides an opportunity to diagnose the root causes of fall risk and add these to the medical problem list so that they become part of the comprehensive, cross-continuum care plan.

TARGET POPULATION: The HIIFRM is intended to be used in the adult acute care, ambulatory, assisted living, long-term care, and population health settings.

VALIDITY AND RELIABILITY: The Hendrich research team recently published a large, electronic health record validation study of the HIIFRM, based on a sample of 214,358 adult inpatients (625 falls) admitted consecutively over a 3-year period to nine acute-care sites and across all departments (Hendrich et al., 2020). The study sites had patient populations that were diverse in terms of race, gender, age, ethnicity, case-mix, and length of stay and included hospitals of various sizes, in both urban and rural locations, and academic and nonacademic settings. The duration of this study, the large sample size, and the representative diversity of the study population supports the generalizability of the findings and set this study apart from other studies of fall risk assessment tools, which have tended to rely on relatively small samples of inpatients from a single institution.

The 2020 study confirmed the sensitivity (78.72%) and specificity (64.07%) of the HIIFRM, with area under the receiver operating characteristic curve of 0.765, indicating very good performance in predicting falls. It should be borne in mind that the study hospitals have long-standing fall reduction programs and are known to have low injurious fall rates; thus, the study results will underestimate the true diagnostic accuracy of the HIIFRM. These results align with the original HIIFRM validation study, which found a sensitivity of 74.9% and a specificity of 73.9% in an acute care tertiary facility using a case/control design (Hendrich et al., 2003). Numerous national and international studies have tested the HIIFRM in diverse settings (see, for example, Cho et al., 2020). The [Hendrich Fall Risk Model website](#) provides detailed information about these studies.

Importantly, studies have also found that inpatient scores on the HIIFRM predict post-discharge risk of 30-day readmission and death, supporting the use of the HIIFRM in a cross-continuum approach (Manemann et al., 2018; Ravi et al., 2017).

STRENGTHS AND LIMITATIONS: The major strengths of the HIIFRM are its brevity; its focus on scientifically validated intrinsic risk factors shown to predict falls in large, well-designed studies; and its focus on interventions for specific areas of risk, rather than on a single, summed general risk score or broad descriptive terms such as age, history of falls, secondary diagnosis, or intravenous lines. The tool has been built into electronic health records to facilitate its use by nurses and interprofessional care teams to reduce rework, increase frequency and accuracy of assessments, detect changes in condition based on patient data already collected, and support the creation of holistic, cross-continuum care plans to foster safe mobility and independence in older adults.

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HENDRICH II FALL RISK MODEL®

RISK FACTOR		RISK POINTS	SCORE
Confusion/Disorientation/Impulsivity		4	
Symptomatic Depression		2	
Altered Elimination		1	
Dizziness/Vertigo		1	
Gender (Born male and/or self-identify as male.)		1	
Any Administered Antiepileptics (Anticonvulsants) ¹	Carbamazepine, Divalproex Sodium, Ethoin, Ethosuximide, Felbamate, Fosphenytoin, Gabapentin, Lacosamide, Lamotrigine, Levetiracetam, Methsuximide, Oxcarbazepine, Phenobarbital, Phenytoin, Pregabalin, Primidone, Topiramate, Trimethadione, Valproic Acid, Zonisamide	2	
Any Administered Benzodiazepines ²	Alprazolam, Chlordiazepoxide, Clobazam, Clonazepam, Clorazepate, Diazepam, Estazolam, Eszopiclone, Flurazepam, Halazepam ³ , Lorazepam, Midazolam, Oxazepam, Quazepam, Ramelteon, Temazepam, Triazolam, Zaleplon, Zolpidem	1	
Get-Up-and-Go Test: "Rising From a Chair"			
<i>NOTE: If unable to assess, monitor for change in activity level, assess other risk factors, document both on patient chart with date and time.</i>			
Ability to rise in a single movement - no loss of balance with steps		0	
Pushes up, successful in one attempt		1	
Multiple attempts, but successful		3	
Unable to rise without assistance during test		4	
A TOTAL SCORE OF 5 OR GREATER = HIGH RISK		TOTAL SCORE:	

ONGOING MEDICATION REVIEW UPDATES:

¹ Kepra (levetiracetam) was not assessed during the original research conducted to create the Hendrich Fall Risk Model. As an antiepileptic, levetiracetam does have a side effect of somnolence and dizziness which contributes to its fall risk and should be scored (June 2010, June 2020). Banzel (rufinamide), Sabril (vigabatrin), Gabitril (tiagabine) were not included in the study and are not commonly seen in practice, however, they are currently available and could be seen on patient medication lists (September 2018). Vimpat (lacosamide), Trileptal (oxcarbazepine), Lyrica (pregabalin) and Zonegran (zonisamide) are not included in the list above because they were not assessed during the original Hendrich research but were included in the 2020 validation study. These medications can cause documented CNS effects and should be scored if administered (February 2019, June 2020). Mesantoin (mephenytoin) was included in the study but is no longer available in the United States (November 2020).

² The study did not include the effect of benzodiazepine-like drugs since they were not on the market at the time. However, due to their similarity in drug structure, mechanism of action and drug effects, they should also be scored. They are Lunesta (eszopiclone), Rozerem (ramelteon), Sonata (zaleplon), and Ambien, Intermezza (zolpidem). (June 2010, February 2019, June 2020). Prosom (Estazolam), Doral (Quazepam), Onfi (Clobazam) were not included in the study and are not commonly seen in practice, however, they are currently available and could be seen on patient medication lists (September 2018, June 2020).

³ Halazepam was included in the study but is no longer available in the United States. (June 2010)

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More information on the Hendrich II Fall Risk Model: www.hendrichfallriskmodel.com

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