Beyond the Score: Key Predictors of Inpatient Falls Using the Morse Fall Scale

Kate Oppegaard, PhD, APRN[1,2]
Clinical Nuse Specialist – Nurse Scientist
Jennifer Kime, MSN, APRN[1]
Clinical Nuse Specialist – Inpatient and Emergency Service Division
Khalilah Seid, MSN, APRN[1]
Clinical Nuse Specialist – Rehabilitation and Long-term Care

Nathan F. Dieckmann, PhD[2]; Lisa Morse, MS, APRN[3,4]; Clare O'Geary, DNP, RN[1]; Toby Granger, MBA, BSN, RN[1]; Christine Miaskowski, PhD, RN[4]; Lindsey Wooliscroft, MD[1,5]

[1]VA Portland Health Care System, Portland, OR, USA

[2]Oregon Health & Science University, School of Nursing, Portland, OR, USA

[3]Department of Veterans Affairs, Veterans Health Administration, San Francisco, CA, USA

[4]University of California San Francisco, School of Nursing, San Francisco, CA, USA

[5]Oregon Health & Science University, Department of Neurology, Portland, OR, USA

Funding and Disclosures

- **Funding:** This material is the result of work supported with resources at the VA Portland Health Care System. Ms. Morse is supported by the University of California, San Francisco, School of Nursing graduate fellowship and the Department of Veterans Affairs, Veterans Health Administration, Office of Academic Affiliations VA Quality Scholars Advanced Fellowship Program (Program Award Number: 3Q082019C).
- **Contents do not represent the views of the United States Department of Veterans Affairs or the United States Government**
- **Conflicts of interest disclosure:** None

Audience poll – scan to participate!

(we will review results at the end of the presentation)

Audience poll

- **How long have been using the Morse Fall Scale for fall-risk assessment?**

A. I am not familiar with this tool

B. I primarily use a different fall-risk assessment tool

C. All or most of my nursing career

D. Too long 🦕

Audience poll

- **If your patient scores as high risk for falling, how do you decide what to do next?**

A. Apply every fall-prevention intervention available

B. Implement bedrest for all high-risk patients

C. Develop an individualized care plan

D. Transfer the patient to a higher level of care

Fall is the hospital – a challenging problem

- About 3 in 100 patients fall while hospitalized[1]
- 1 in 4 of those falls lead to injury[1]
- Average cost of a fall is $62,521 (even without injury)[2]
- Falls cause emotional, physical, and financial burdens for patients, staff, and healthcare organizations
- Evidence suggests Veterans are at higher risk for falls compared to non-Veterans independent of care setting[3]

1. PMID: 23143749 2. PMID: 36662505 3. PMID: 32274955

Morse Fall Scale (MFS) – an oldie but goodie? *Maybe not.*

- Among the most widely used fall risk assessment tools
  - Came out in late 1980s
  - In the years following, MFS was widely adopted
- Assigns weighted scores to six categories of risk factors:
  - History of falling
  - Secondary diagnosis
  - Use of an ambulatory aid
  - Intravenous (IV) access
  - Gait
  - Mental status
- Total scores range from 0 to 125, with a score of ≥45 considered the standard cutoff for high fall risk
- **Evidence gap**: Few recent studies have reported on MFS scores in hospitalized adults, and no studies have evaluated the scale's use in VA-specific samples

PMID: 2928815

Study purpose

- In a large sample of hospitalized United States military Veterans, evaluate whether the MFS total score or any individual scale categories differed between patients who did and did not fall across 24 months

Sample and setting

- **Retrospective** cohort study
- Data were extracted from the **electronic health record**
- Included patients were admitted to a single VA Medical Center between June 1, 2022, and May 31, 2024
- Had a **complete MFS admission assessment** and demographic data
- Fall was defined as the presence of a **post-fall clinical progress note** documented anytime between admission and discharge
- Study was reviewed by the VA Portland Health Care System Institutional Review Board and determined to be exempt human subjects research

Analyses

- Descriptive statistics were used to characterize the sample
- Average (mean) MFS total scores were calculated
- Six MFS categories were coded as categorical variables
- Group differences were assessed using independent samples *t*-tests, chi-square, Fisher's exact tests, effect sizes were calculated using Cohen's *d*
- Fall occurrence (yes/no) was used as the outcome for a multivariable logistic regression analysis that included significant covariates
- Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. Model fit was evaluated using likelihood ratio chi-square and pseudo R^2 statistics
- A p-value of $< .05$ was considered significant
- Data were analyzed using Stata version 18

Main findings

- **5,004 patients** had complete data and were included in study
- Sample was approximately 94% male, majority white, older
- **3.5% (n=175) of patients fell**
- **61% scored 45 of higher** on MFS admission assessment
  - Mean score for patients who **did not fall was 51.3 (SD 23.2)**
  - Mean score for patients who **fell was 65.1 (SD 22.9)**
- **No differences were found** in terms of secondary diagnosis or IV access between those who did and did not fall
- **<0.01** of sample had **furniture** as ambulatory aid selected

Predictors that matter most…

- Both a **history of falling and impaired gait more than doubled the odds of falling**
- Non-intact mental status, use of crutches/cane/walker, and weak gait were associated with an approximately 1.5 times increased odds of falling
- **Both groups had mean MFS scores above the cutoff for high risk**

Implications for nursing

- When the majority patients are classified as high risk, the label stops being useful because it makes it harder to know who needs the most urgent attention and which interventions are most appropriate
- Categories **secondary diagnosis and IV access** are likely more representative of **medical complexity** than of fall risk
- If a patient reports a **previous fall** – learn more!
- More recent guidelines also recommend against the use of scored fall risk assessment tools[1,2,3]

1. PMID: 36178003 2. PMID: 35262271 3. PMID: 39023234

Limitations

- Majority male, white, older sample at one facility, which may limit generalizability
- Morse Fall Scale admission scored was used, score may have changed throughout stay
- Interventions put in place to prevent falls were not captured

Implications for future research

- Studies suggest that **removing** scored fall risk assessment tools from clinical practice does not increase and may have helped decrease fall rates[1,2]
  - Future research within VA's inpatient settings needs to confirm or refute these findings specific to the MFS
- Future research should evaluate fall risk assessment approaches that **streamline personalized prevention strategies into routine workflows**

1. PMID: 32945020 2. PMID: 33834490

Most important takeaways

- Assigning a risk score does not provide sufficient information to direct care planning
- **The better fall risk assessment includes identifying patient's specific risk factors and how to address those specific risks factors with evidence-based interventions**

Review the audience poll answers ☺

Audience poll

- **How long have been using the Morse Fall Scale for fall-risk assessment?**

A. I am not familiar with this tool

B. I primarily use a different fall-risk assessment tool

C. All or most of my nursing career

D. Too long 🦕

Audience poll

- **If your patient scores as high risk for falling, how do you decide what to do next?**

A. Apply every fall-prevention intervention available

B. Implement bedrest for all high-risk patients

C. Develop an individualized care plan

D. Transfer the patient to a higher level of care

References

- Bouldin EL, Andresen EM, Dunton NE, Simon M, Waters TM, Liu M, Daniels MJ, Mion LC, Shorr RI. Falls among adult patients hospitalized in the United States: prevalence and trends. J Patient Saf. 2013 Mar;9(1):13-7. doi: 10.1097/PTS.0b013e3182699b64.
- Dykes PC, Curtin-Bowen M, Lipsitz S, et al. Cost of Inpatient Falls and Cost-Benefit Analysis of Implementation of an Evidence-Based Fall Prevention Program. *JAMA Health Forum*. 2023;4(1):e225125. doi:10.1001/jamahealthforum.2022.5125
- Marciniak D, Alexander NB, Hoffman GJ. Physical Activity and Falls Among a National Cohort of Older Veterans. *J Appl Gerontol*. 2021;40(3):310-319. doi:10.1177/0733464820915807
- Morse JM, Black C, Oberle K, Donahue P. A prospective study to identify the fall-prone patient. Soc Sci Med. 1989;28(1):81-6. doi: 10.1016/0277-9536(89)90309-2.
- McKercher JP, Peiris CL, Hill AM, et al. Hospital falls clinical practice guidelines: a global analysis and systematic review. Age Ageing. 2024;53(7). doi:10.1093/ageing/afae149
- Montero-Odasso M, van der Velde N, Martin FC, et al. World guidelines for falls prevention and management for older adults: a global initiative. Age and Ageing. 2022;51(9):afac205. doi:10.1093/ageing/afac205
- Schoberer D, Breimaier HE, Zuschnegg J, Findling T, Schaffer S, Archan T. Fall prevention in hospitals and nursing homes: Clinical practice guideline. Worldviews Evid Based Nurs. 2022;19(2):86-93. doi:10.1111/wvn.12571
- Vespa J. Aging veterans: America's veteran population in later life. American Community Survey Reports; United States Census Bureau: Suitland, MD, USA. Published online 2023.
- Jellett J, Williams C, Clayton D, Plummer V, Haines T. Falls risk score removal does not impact inpatient falls: A stepped-wedge, cluster-randomised trial. J Clin Nurs. 2020;29(23-24):4505-4513. doi:10.1111/jocn.15471
- Morris ME, Haines T, Hill AM, et al. Divesting from a Scored Hospital Fall Risk Assessment Tool (FRAT): A Cluster Randomized Non-Inferiority Trial. J Am Geriatr Soc. 2021;69(9):2598-2604. doi:10.1111/jgs.17125

Thank you!

Our nation’s Veterans

VA Portland Health Care System Staff

OHSU Biostatistics and Design Program

Members of the study team

ONRQC