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The Mansbach Hazard Index (MHI)

What is the MHI?

The *Mansbach Hazard Index (MHI)* is a validated risk management tool used to identify people who are at highly elevated risk for *self-medication errors, falls, and preventable hospitals/ED visits*. It was created by the BCAT® Research Center in 2025 to support healthcare professionals working with older patients. The index takes less than 3 minutes to complete. It can provide actionable information to inform the healthcare provider and team on how best to anticipate/mitigate risk and support those who are caring for people with cognitive deficits.

The MHI provides three key sources of information: (1) the MHI Total Hazard score; which assigns a risk value for key adverse events occurring; (2) the "Risk Triad" table, which indicates the odds ratios and probabilities of specific adverse events occurring based on the MHI score; (3) and the Caregiver Demand score, which identifies both the psychological burden caregiving places on the carer as well as the degree of residential support needed to protect a vulnerable person. After completing the MHI, one will receive a patient-specific report. This can be uploaded to an electronic record. This information can inform level of care determinations, improve discharge success, help ensure appropriate residential placement and services, and support caregivers.

Why Should I Use the MHI?

There is ample evidence that medication errors, falls, and preventable hospitalizations are the leading adverse events for decline in health quality, unnecessary healthcare costs, caregiver burden, and increased patient distress. Healthcare professionals can use the MHI to prevent or mitigate these adverse events. This is especially actionable with transitions in care and creating safe and sustainable discharges from hospitals and skilled nursing facilities. The MHI can also be used to identify caregivers' needs and potential burdens, and when a more supportive residential environment is needed.

How is the MHI Constructed?

The MHI is based on a multi-step prediction model:

1. Epidemiological research investigating odds ratios and occurrences of key adverse events based on cognitive functioning, medical chronic conditions, and residential situational variables was analyzed and entered into a predictive algorithm.
2. A metanalysis of BCAT® research was conducted, focusing on attentional skills, contextual memory, and executive control functions in predicting key adverse events.
3. The available epidemiological data and BCAT® data were entered into a mathematical predictive model.
4. Finally, the model was further refined using AI.

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References

Barber, N. D., Alldred, D. P., Raynor, D. K., et al. (2009). Care homes' use of medicines study: Prevalence, causes and potential harm of medication errors in care homes for older people. *Quality and Safety in Health Care, 18*(5), 341–346.

Chantanachai, T., Beare, R., Phan, T. G., et al. (2021). Risk factors for falls in older people with cognitive impairment: A systematic review and meta-analysis. *Maturitas, 151*, 48–60.

Elliott, R. A., & Marriott, J. L. (2015). Ability of older people with dementia or cognitive impairment to manage medicines: A systematic review. *Drugs & Aging, 32*(4), 255–267.

Estrada, L. V., Rahman, M., Mor, V., & Thomas, K. S. (2024). Potentially avoidable hospitalizations among historically marginalized nursing home residents. *JAMA Network Open, 7(5)*, e2818218.

Estrada, L., et al. (2023). Potentially avoidable hospitalizations at end of life among nursing home residents with severe cognitive impairment. *Journal of Pain and Symptom Management, 65*(6), e1–e9.

Mansbach, W. E., & Mace, R. A. (2018). Predicting functional dependence in mild cognitive impairment: differential contributions of memory and executive functions. *The Gerontologist*. doi: 10.1093/geront/gny097.

Mansbach, W. E., MacDougall, E. E., & Rosenzweig, A. S. (2012). The Brief Cognitive Assessment Tool (BCAT): A new test emphasizing contextual memory, executive functions, attentional capacity, and the prediction of instrumental activities of daily living. Journal of Clinical and Experimental Neuropsychology, 34(2),183-194. doi:10.1080/13803395.2011.630649

Powell, K. R., et al. (2024). Untangling the complex web of avoidable nursing home-to-hospital transfers of residents with Alzheimer's disease and related dementias. *Alzheimer's & Dementia: Translational Research & Clinical Interventions*. Nov;20(11):8038-8047. doi: 10.1002.

Tang, B., Espejo, E., Steinman, M. A., et al. (2024). Cognitive, physical, and sensory deficits that can affect everyday medication use among older adults: A national view. *Journal of the American Geriatrics Society, 72*(7), 2254–2257.

Trevisan, C., et al. (2021). The association between injurious falls and older adults' cognitive decline. *Frontiers in Aging Neuroscience, 13*, 699445.

Zhou, R., Zhou, B., Mei, F., et al. (2022). The association between cognitive impairment and subsequent falls among older adults: Evidence from the China Health and Retirement Longitudinal Study. *Frontiers in Public Health, 10*, 900315.