



Current Practices in Detecting Cognitive Impairment in Outpatient Settings: Implementation of a Passive Digital Marker

Deanna R. Willis MD MBA,¹ Diana Summanwar MD,¹ Dustin B. Hammers PhD MS,² Zina Ben Miled PhD,³
Emily C. Webber MD,⁴ Jared R. Brosch MD MS,² Nicole R. Fowler PhD MHSA^{5,6}

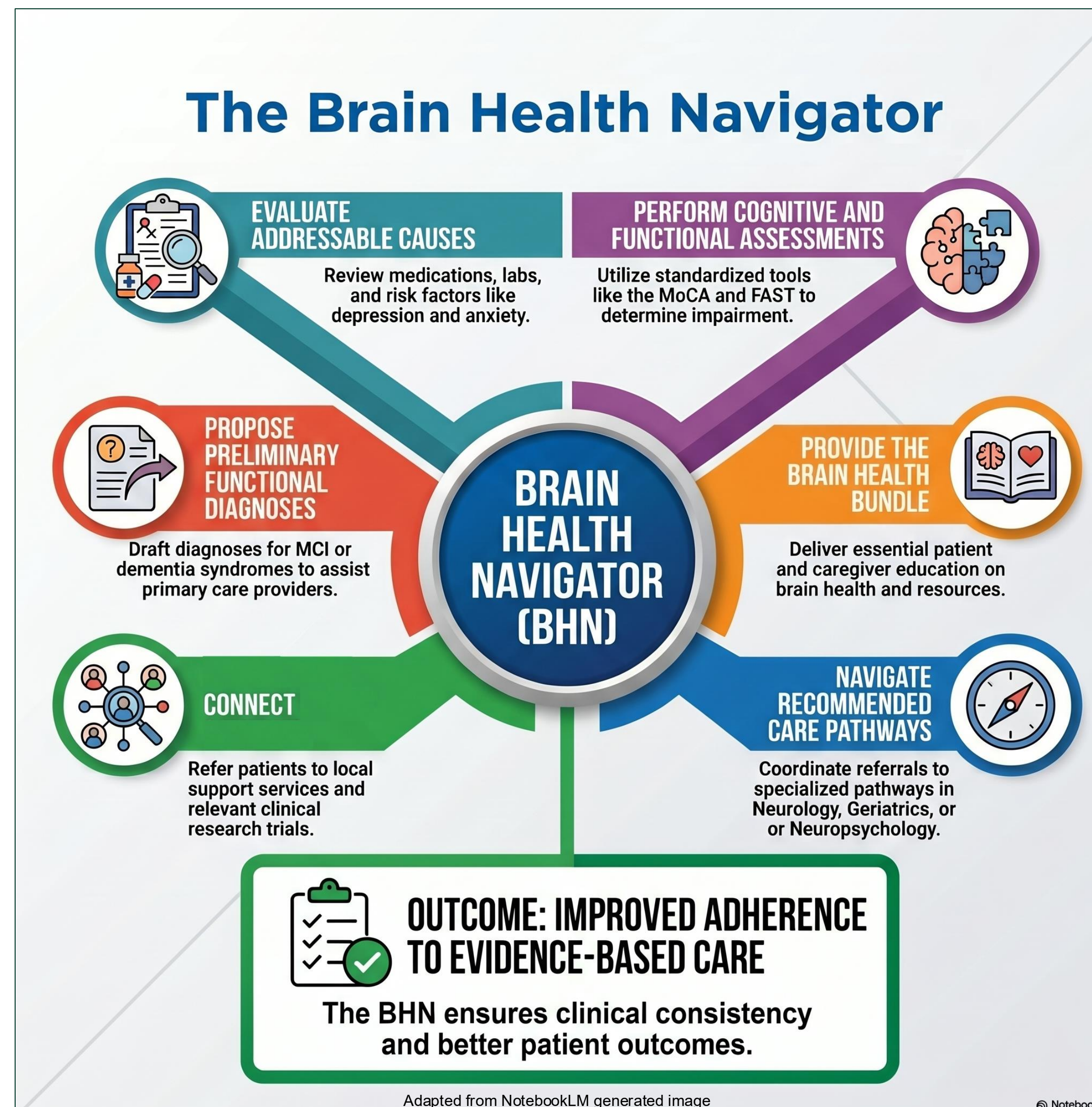
¹Department of Family Medicine, Indiana University School of Medicine, ²Department of Neurology, Indiana University School of Medicine, ³Phillip M. Drayer
Department of Electrical and Computer Engineering, Lamar University, ⁴Department of Pediatrics, Indiana University School of Medicine, ⁵Department of
Medicine, Indiana University School of Medicine, IU Center for Aging Research

BACKGROUND

- Delayed or missed diagnosis of Alzheimer's disease and related dementias (ADRD) worsens outcomes, increases caregiver burden, reduces opportunities for care planning and access to specialty evaluation.
- Although most Americans with ADRD receive care in primary care (PC), fewer than one-third of older adults report receiving a cognitive assessment in PC.
- Early detection in PC is challenged by inadequate reimbursement, time constraints, insufficient training/confidence, low awareness of early-intervention benefits, and lack of validated, scalable, EHR-integrated tools.
- Technological advancements, including machine-learning and digital cognitive assessments (DCAs), have offered new opportunities to expand early detection and case finding.
- Real-world implementation of these tools in PC, coupled with national and international efforts to increase PCP awareness, knowledge, and confidence in early detection, will enhance identification of older adults with mild cognitive impairment and early dementia in PC practices.
- Yet, scalable approaches for early detection of dementia in PC remain limited.

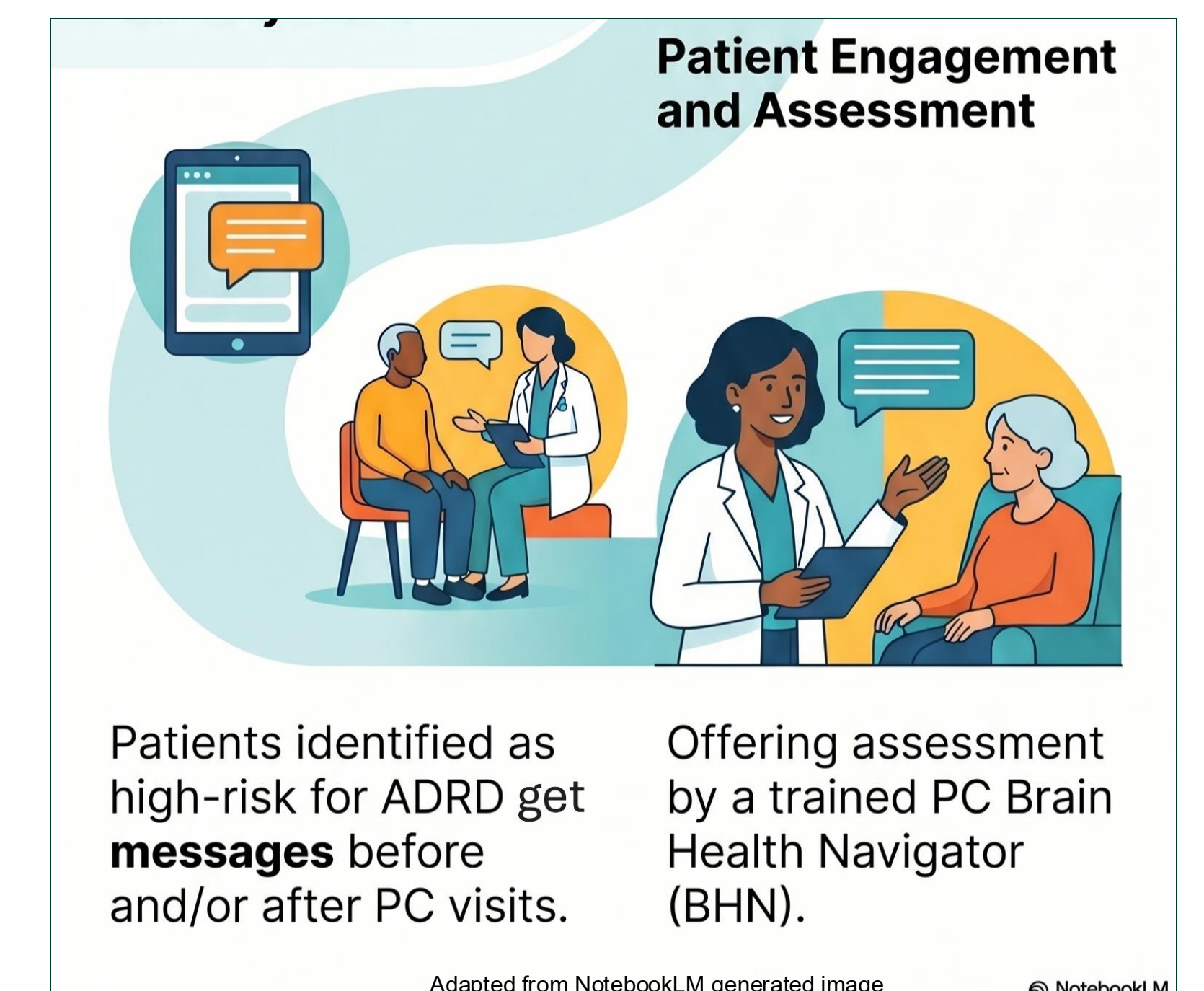
CONCLUSIONS

- PC early-detection innovation requires operationally integrated, scalable approaches.
- Avoiding clinical burden and engaging patients in team-based clinical pathways is important with innovative technological approaches in PC, such as DCAs and PDMs.
- Such approaches may expand access to cognitive assessment and support PC capacity for early ADRD detection.
- The feasibility, acceptability, and effectiveness of scalable models need to be determined.



IMPLEMENTATION

- The Passive Digital Marker (PDM) for dementia¹ is a machine-learning model that leverages multimodal electronic health record data to estimate ADRD risk without adding clinician burden.
- Pairing a PDM with PC-based secure messaging outreach offers a scalable strategy to engage high-risk patients in early detection and diagnostic care pathways.
- We deployed a validated PDM¹ among adults aged 65 and older across 12 primary care clinics in a single health system between October 2025 and January 2026.
- Patients identified as high-risk for ADRD received secure messages before and/or after primary care visits offering assessment by a trained primary care Brain Health Navigator (BHN).²



REFERENCES

- Boustani, M., Perkins, A. J., Khandker, R. K., Duong, S., Dexter, P. R., Lipton, R., ... & Monahan, P. (2020). Passive digital signature for early identification of Alzheimer's disease and related dementia. *Journal of the American Geriatrics Society*, 68(3), 511-518.
- Brosch, J. R., Summanwar, D., Fowler, N. R., Hammers, D. B., Perkins, A. J., Higbie, A., ... & Willis, D. R. (2025). An innovative health systems approach to support early detection of cognitive impairment in primary care—the brain health navigator. *BMC Primary Care*, 26(1), 271.

PDM is a machine-learning model that leverages multimodal electronic health record data to estimate ADRD risk.

