CHASING CLINICAL UTILITY

Clinician challenges evaluating the use of artificial intelligence in every day practice in older adult care

Kelly A. Kay, PhD[1,2] • Justin Kim, MD, CCFP[3] • Asghar Khan, BHSc[4] • Daniel Yacoub, MD, CCFP[3] • Sai-Amrit Maharaj, MHSc[5] • Nihal Haque, MD, FRCPC[3,6]

[1]Provincial Geriatrics Leadership Ontario • [2]Ontario Tech University • [3]University of Toronto • [4]Western University • [5]McMaster University • [6]Scarborough Health Network

BOTTOM LINE

AI research is accelerating faster than clinicians can assess real-world clinical utility.

530%

Increase in related search results, 2023–2026

WHY THIS REVIEW?

Artificial intelligence is increasingly studied in dementia, falls, frailty, homecare use and polypharmacy, but practical evidence for near-term use remains difficult to judge.

OBJECTIVE: Map the volume and breadth of evidence relevant to current and near-term clinical utility across five geriatric domains.

METHODS

Scoping review using Arksey & O'Malley[i] and reported with PRISMA-ScR[ii].

- Databases: Ovid MEDLINE, CINAHL, PsycINFO and EMBASE
- Publication window: 2020 to August 2023
- Older adults aged 55+
- Five clinical domains: Dementia, Falls, Frailty, Polypharmacy, Homecare
- Outcomes included intervention type, setting, design and clinical performance measures

STUDY FLOW

1,816	records identified
↓	
1,698	records screened
↓	
442	full texts reviewed
↓	
97	studies included

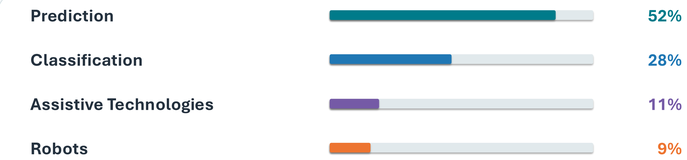
REVIEW PROFILE

24	3.8M	9%
countries	patient records	randomized trials

Settings were diverse: Hospital 28.8% • Home 19.5% • Long-term care 18.5% • Outpatient 15.4% • Primary care 8.2%

Ethnicity less often reported: Only 23.7% of studies reported participant ethnicity; no included studies reported Indigenous participants.

WHAT WAS AI USED FOR?



WHERE STUDY WAS ACTIVITY CONCENTRATED?

PREDICTION

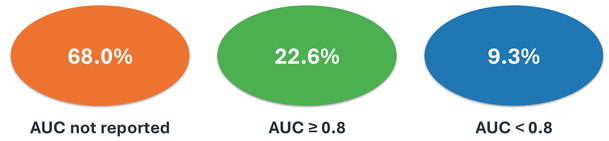
Falls 21.6% • Dementia 15.4% • Frailty 5.1% • Homecare 4.1%

CLASSIFICATION

Dementia 17.5% • Frailty 4.1% • Polypharmacy 3.1%

Assistive technologies and robots showed varied applications, with most robot studies focused on dementia care.

CLINICAL UTILITY: A REPORTING GAP



AUC combines sensitivity and specificity and can support comparison, but should be reported with confidence intervals and other measures.

PROMISING NEAR-TERM DIRECTIONS

Natural language processing

Uses existing unstructured clinical notes and appeared most adjacent to clinical workflows.

Voice and audio applications

May support detection of outcomes such as delirium using widely available devices.

Clinical comparison

AI models should be compared with established non-AI tools and standards of care.

WHAT SHOULD CHANGE?

1. **Start with a real clinical need**
   Develop AI in response to problems identified by older adults, care partners and clinicians.
2. **Test implementation, not just performance**
   Use rigorous designs, implementation trials and clinically meaningful outcomes.
3. **Compare against current care**
   Benchmark AI against validated clinical assessments and non-AI approaches.
4. **Co-create and validate equitably**
   Include older adults and populations currently underrepresented in AI research.

IMPLICATIONS FOR PRACTICE: A PRACTICAL CLINICIAN CHECK

Before adopting an AI intervention, ask:

- ✓ Does it address a clearly defined clinical care problem?
- ✓ Was it tested in a population like mine?
- ✓ Was it evaluated in real clinical workflows?
- ✓ How does it compare with existing care or tools?
- ✓ Are AUC, sensitivity, specificity, predictive values, confidence intervals or other meaningful measures reported?
- ✓ Do the benefits justify implementation burden, cost and risk?

CONCLUSION

The evidence base is broad, heterogeneous and expanding rapidly.

Yet few randomized trials and inconsistent reporting of clinical utility limit adoption decisions.

Validated, clinician-friendly evaluation frameworks are needed to identify which AI technologies are sufficiently useful, equitable and implementation-ready for older adult care.

TAKE-HOME MESSAGE

Clinical value, not technological novelty, should drive AI development and adoption in geriatric care.

Stronger implementation evidence • Transparent performance reporting • Co-creation with diverse older adults • Equitable validation

Learn More

CONTACT Nihal Haque, MD, FRCPC
nihal.haque@utoronto.ca

SELECTED REFERENCES

[i]Arksey H, O'Malley L. Int J Soc Res Methodol. 2005. | [ii]Tricco AC et al. Ann Intern Med. 2018.
Full reference list available.

GENERATIVE AI DISCLOSURE: Microsoft 365 Copilot was used to assist in transforming the authors' existing abstract and manuscript into an initial poster structure, including content organization, text condensation and visual layout. AI was not used to conduct the review, analyze study data or generate research findings. The authors reviewed, revised and approved all poster content and take responsibility for its accuracy.