

# Aging and Disability

**Applicability of Sensor Technologies data to Enhance Accuracy of Comprehensive Geriatric Assessment System** A. Panahi, S. Freeman, S. Jia, P. Jackson, W. Haque, R. Richard, S. Ebihara, H. Sato, S. Amirkhani Ardeh, H. Fournier. *Gerontechnology* 25(s)

**Purpose** Global demographic shifts, particularly the rapid growth of the older adult population, are creating significant strain on healthcare systems and driving demand for new approaches that support health, independence, and quality of life in later years. One response to this challenge is the emphasis on enabling older individuals to remain in their own homes and communities for as long as possible, often referred to as “aging in place” (1). In Canada, the interRAI Home Care (RAI-HC) assessment is widely used to guide care planning for individuals receiving home-based services (2). However, barriers such as limited staffing, administrative demands, and variability in data collection can hinder frequent reassessment, delaying necessary care adjustments. Incorporating sensor technologies and artificial intelligence (AI) into the assessment process offers a promising solution to enhance accuracy, reduce burden on clinical staff, and enable real-time updates between formal interRAI assessment intervals (3). The employment of technologies can potentially assist in reaching the full capacity of CGAs and overcome the constraints of data transfer between settings and stakeholders. Digital Comprehensive Geriatric Assessment system (D-CGA) could fill this gap by offering a coordinated, sensor-informed platform to support proactive, person-centered care planning. The aim of this study is to evaluate the usability and applicability of data generated by commercially available and AGE-WELL-affiliated sensor technologies in supporting digitizing the RAI-HC assessment instrument. We investigated how sensor-based data can inform RAI-HC assessment items and described the potential for the identified sensor-based data to contribute to a D-CGA system. **Methods** A five-stage methodology was applied which included: 1. Identifying relevant technologies through market scans and AGE-WELL databases; 2. Developing a classification matrix to document the functionality of each product, the data characteristics they record, and interoperability capability; 3. Mapping technologies to geriatric health domains based on relevant gathered data (4). We used the current RAI-HC Version 10.0 Standard Edition; 4. Aligning literature-informed domains and data types with RAI-HC assessment sub-domains and questions (5); and 5. Consulting a clinical expert experienced in RAI-HC to assess applicability. **Results and Discussion** Eighty-three sensor technologies (49 commercial and 34 from AGE-WELL) were identified based on the data they collected and their integration capabilities. These devices captured diverse data, including medication adherence (e.g., pill dispenser alarms, missed dose alerts), activity and mobility patterns (e.g., motion, posture, steps, fall events), cognitive and social engagement (e.g., session attendance, voice call logs, app interactions), and environmental interactions (e.g., door sensors, location triggers). Literature-based mapping showed that sensor data could potentially support fifteen RAI-HC questions. Expert validation indicated that five sections can be directly assessed with sensor data; five can be partially supported, and five still require clinical judgment. These findings highlight both the promise and the current limitations of sensor-based data assessments. While sensors cannot replace a clinician’s expertise, they can play an important role in supporting the assessment process and improving the accuracy and timeliness of data useful to inform care planning. Findings serve as an early step to inform the development of a D-CGA system.

## References

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