

Open Call for Ideas

AI-Assisted Home Environment Assessment

(Use Case by SGH)

1. Background

A safe and successful discharge from the hospital depends not only on a patient's clinical condition but also on the suitability of their home environment. Healthcare professionals frequently need to assess whether patients can safely navigate their homes, use necessary equipment, and receive adequate support from caregivers after discharge. Today, this assessment is largely based on descriptions provided by patients and caregivers, often supplemented by photos or videos. However, such information may not always provide an accurate picture of the actual living environment, creating challenges for discharge planning and continuity of care.

As healthcare increasingly shifts towards community-based care, there is an opportunity to leverage innovative ideas that enable more objective, consistent and scalable ways of assessing home environments. Such innovations could help clinicians make better-informed decisions while reducing the burden on patients, caregivers and healthcare teams.

2. Challenge Statement

How might we enable healthcare teams to objectively assess patients' home environments before discharge, so that potential safety risks, functional barriers and caregiver challenges can be identified and addressed early?

3. Current State

Currently, the vast majority of home environment assessments depend on self-reported information from patients and caregivers. Important environmental risks may only be discovered after the patient has returned home, where difficulties with mobility, transfers, caregiving activities or equipment use become more apparent.

For example, some homes may have narrow passageways that cannot accommodate a wheelchair, bathrooms that are unsuitable for safe transfers, cluttered spaces that increase fall risk, or insufficient room for recommended equipment. In many cases, these issues are not fully identified until after discharge, potentially resulting in additional follow-up assessments, home visits, caregiver stress, delayed interventions and avoidable healthcare utilisation.

4. Desired Future State

We are seeking innovative ideas that can help healthcare teams gain a more accurate understanding of a patient's home environment before discharge, enabling better planning and safer transitions from hospital to home.

We envision a future where patients and caregivers can easily provide information about their home environment through simple digital means, and where technology can help identify potential risks, functional barriers and care needs before discharge.

In this future state, clinicians would have access to objective insights that support discharge planning, equipment recommendations and caregiver preparation. This would enable environmental risks to be identified earlier, interventions be initiated sooner, and in-person home assessments to be prioritised for patients who need them most. Ultimately, patients would return home with greater confidence, safety and readiness for recovery in the community.

5. Key Design Requirements

Proposed ideas should:

- a) Enable remote assessment of home environments using photos, videos, scans or other digital methods.
- b) Support objective identification of environmental hazards and functional barriers.
- c) Provide actionable insights that assist clinical decision-making and discharge planning.
- d) Consider both patient and caregiver needs, including mobility, safety and equipment requirements.
- e) Be simple and intuitive for patients and caregivers to use.
- f) Integrate seamlessly into existing healthcare workflows where possible.
- g) Automate analysis and risk stratification.
- h) Ensure that appropriate standards for privacy, security and data governance are maintained.

6. Expected Outcomes

a. Better Patient and Caregiver Experience

- Safer and more confident transitions from hospital to home.
- Improved identification of environmental risks before discharge.
- Greater caregiver preparedness and support.

b. Enhanced Clinical Decision-Making

- More objective and standardised home environment assessments.
- Reduced reliance on self-reported information.
- Better-informed discharge planning and equipment recommendations.

c. Improved Healthcare System Efficiency

- More targeted use of in-person home assessments.
- Reduced downstream interventions arising from unidentified home hazards.

- Improved utilisation of healthcare resources and potentially reduce avoidable readmissions.

7. Invitation to Pitch

We welcome ideas from startups, technology providers, healthcare innovators, and multidisciplinary teams that can transform the way home environments are assessed and enable safer, smarter discharge planning for patients and caregivers. This challenge is intentionally solution-agnostic, providing participants with the flexibility to propose a wide range of innovative ideas, approaches and technologies. We encourage innovative and scalable ideas that support more objective home environment assessments, enhance clinical decision-making, and improve the safety, confidence, and readiness of patients transitioning from hospital to home.