A proposed system for the home-based ambient monitoring and enablement of older adults with dementia.

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Background

- With the worldwide increase in dementia prevalence, more than ever we need to focus on developing an acceptable, cost-effective home-based solution to support individuals living in the community with dementia, and to delay institutionalisation.
- Ambient assistive technologies can support independent living and prolong community-based living[1].

3 Themes of Dem@Care

Lab: Diagnostics

Home: Enablement and support

Nursing home: Safety

2 Loops of Care

Home-based loop
Between person with dementia and their family caregivers
Sensor-based
Context-sensitive, evolving, personalised

Clinician loop
Creates a faithful log of health related information
Warns clinician about deteriorations & trends
Supports care decisions

Principles of Dementia Design[2,3]

- Keep user interaction to a minimum[2,3,4]
- Appear familiar to the person with dementia[2,3,4]
- Be empowering and encourage the person with dementia to solve problems[2,3,4]
- Be reassuring[2,3,4]
- Algorithmic applications should be based on a large dataset, because human performance Is highly variable[3,5]
- Be fiddle-proof, and robust[2,3,6]
- Have an aesthetic[5]
- Be person-centred and not carer-centred[4,7]
- Provide the person with dementia with a feeling of independence[4]
- Acknowledge the person with dementia as a person with abilities[4]
- Engage carers with the first stage of development, before the prototype is debuted with persons with dementia[3]
- Be emulative of carer behaviour, i.e. provide reminders, support, reassurance[2,3]

What next?

- Technology-led design of the “toolbox” approach, creating personalised systems of home-based sensors.
- Recruitment of individuals with early to moderate stage dementia and their families
- Home-based deployment, system adapts over time.

Structure of Support

Assessment interview:
- Sleep
- Exercise
- Diet/ADL
- Socialising
- Mood

Functional decline detected in 1 or more areas

Relevant components chosen from “toolbox” of technologies and deployed to home for monitoring and support

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