

**Dr Louise Hopper**

School of Nursing and Human Sciences  
DCU, Ireland  
[Louise.hopper@dcu.ie](mailto:Louise.hopper@dcu.ie)  
01-7008540

**Dr Eamonn Newman**

INSIGHT: Centre for Data Analytics  
DCU, Ireland  
[Eamonn@computing.dcu.ie](mailto:Eamonn@computing.dcu.ie)

**Prof Alan Smeaton**

INSIGHT: Centre for Data Analytics  
DCU, Ireland  
[alan.smeaton@dcu.ie](mailto:alan.smeaton@dcu.ie)

**Dr Kate Irving**

School of Nursing and Human Sciences  
DCU, Ireland  
[kate.irving@dcu.ie](mailto:kate.irving@dcu.ie)

**Title:** Dementia Ambient Care: Ethical Issues Arising from the use of a Home-Based Multi-sensor Support System

**Background:** With the worldwide increase in dementia prevalence acceptable cost-effective home-based solutions are needed to support people with dementia (PwD) living in the community and to delay institutionalisation. Ambient assistive technologies represent a way of enabling independence and facilitating “ageing in place”, by supporting the health, lifestyle, and safety of PwD in an unobtrusive manner. However, ethical issues associated with their use remain under-reported.

**Methods:** Dem@Care is an FP7 project that uses ambient and wearable sensors to support physical activity, sleep, activities of daily living, social interaction, and mood in PwD. It uses a multiple case study design with purposive sampling of people with early stage dementia. An individualised sensor “toolbox” and intervention strategy is developed for participants based on a clinical assessment of their needs. Sensor data is aggregated over time to identify changes in patterns of behaviour that could signify improvement, stasis, or deterioration of function.

**Results:** Our first two case studies raised important ethical issues associated with sensor use. Difficulties using the technologies resulted in heightened anxiety for the PwD and their carer. Sensor ‘privacy’ buttons were often forgotten resulting in image capture that might not have been intended and was potentially embarrassing to the PwD, and ambient video recording could not be deployed given the lack of an acceptable solution to obtaining third party consent.

**Conclusions:** Although potentially beneficial to PwD, the ethical issues associated with the use of ambient assistive technologies require further discussion given the vulnerability of this population.