Connected and intelligent care: Findings from care homes

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Background and scope

- By 2040, 3 Million people in the UK will be over 85, twice as many as today
- 21, 485 care homes for 418,000 residents in 2018, averaging 20 residents per care home.
- Because of the scale of people living with dementia, care homes are being challenged as a the current system is no longer able to care for the emerging demand.
- Research by the EU finds number of care homes has been diminishing
- Opportunity to utilize new and co-created connected technologies (5G, IoT) to cope with rising challenges
- Our pilot project worked with stakeholders to better understand the challenges of care homes, in particular for dementia care, and explore how the IoT, 5G and AI technologies can be harnessed to improve care and introduce more efficient ways of working within the care homes.

Sussex centers involved in the project

- Centre for Advanced Communications, Mobile Technology and IoT, School of Engineering and Informatics (**Prof. Maziar Nekovee**)
- Centre for Social Work and Research, School of Education and Social Work (**Dr Henglien Lisa Chen**)
- Centre for Dementia Studies, Brighton and Sussex Medical School (**Dr Naji Tabet**)
- Department of Management, Sussex Business School (**Dr Dimitra Petrakaki**)

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Aim of initial study

- Investigate existing digital technologies in care homes
- Gain a better understanding of the challenges in providing dementia care in care homes.
- Identify the potential areas that requires 5G and IoT solution and innovation.

Methods: interviewing and technology observation

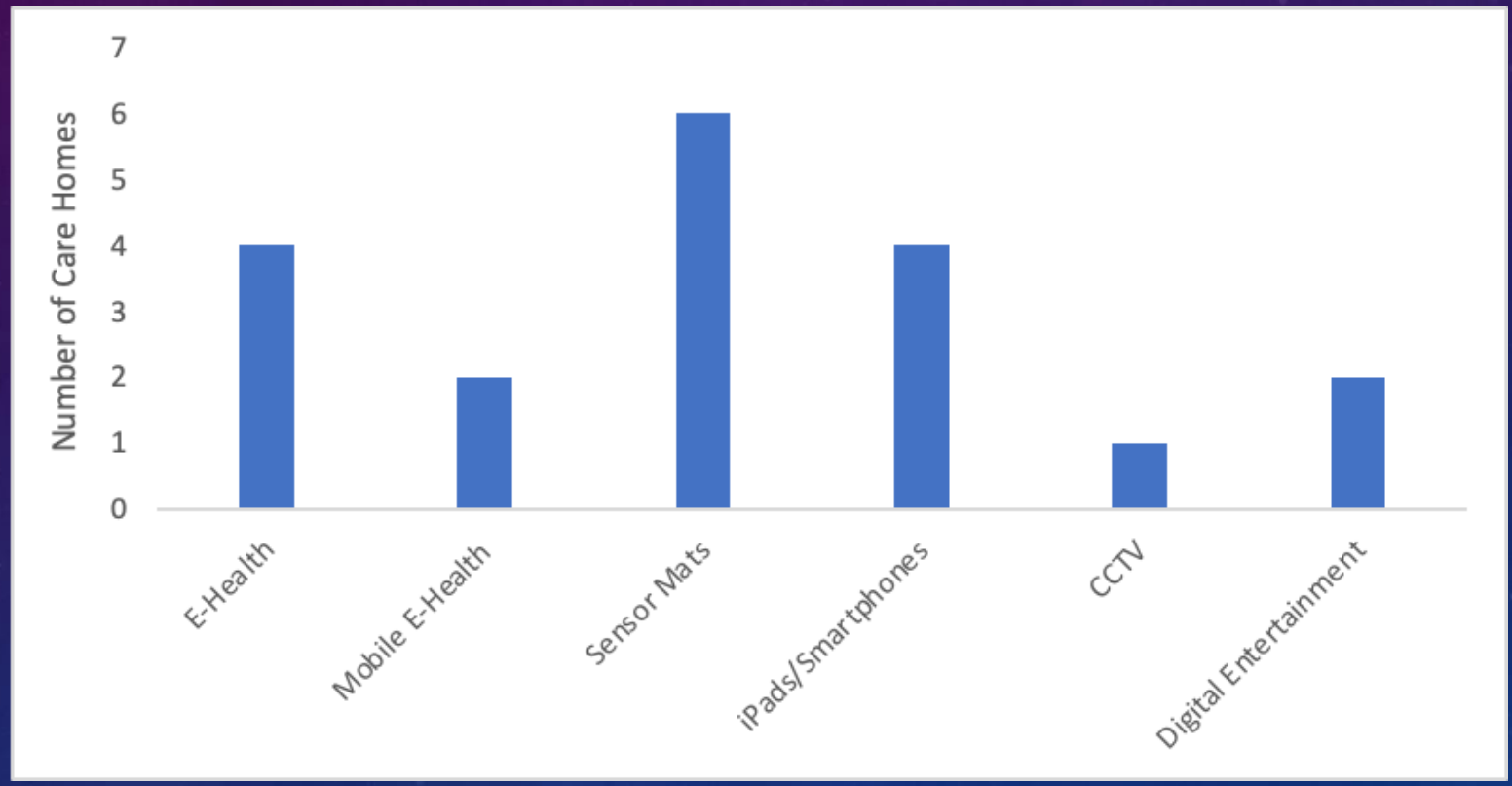
The key focus of the interviews:

- What are the existing technology in place?
- What are the experience of the above?
- What are the gap of technology to assist care staff and/or people with dementia ?

Interviewees: Managers and staff in six care home in Brighton & Hove and West Sussex
Observations: Technologies in care home - the usage of the technologies - environment
Date: between 7 and 27 January 2020
Venue: individual care homes
Length of each interviewing and observations: approx. one and half an hour

Homes	Local Authority	Registered	Dementia/Residents (no.)	Existing Tech	Building
1	Brighton & Hove City Council	EMI Dementia Residential Care	36/36	Medicare, iPad, sensor mats	Medium: Victorian houses/2 floors/23 single rooms and 5 double rooms/with full en-suite bathrooms.
2	West Sussex County Council	EMI Residential and Nursing Care	67/67	RFID tags, Tovertafel, InterCall, sensor mats	Large: purpose build large 3 floors Manor with 5 units depending on stage
3	West Sussex County Council	Dementia Care	13/13 (self-funded)	Medicare, Nourish, VR, sensor mats	Small: Residential building with 13 en-suite bathrooms.
4	Brighton & Hove City Council	Residential, Dementia and Nursing Care	10 NC & 4 RC/32	Call point + pager, Smartphone, sensor mats	Medium: Purpose building with central garden and 45 full en-suite bathrooms
5	Brighton & Hove City Council	Residential, Dementia and Nursing Care	35/106	iCare, DMS, iPad, Relsapp, Sensor Mats	Large: Purpose build 3 floor Manor with 99 single rooms and en-suite bathrooms. Split in 3 units.
6	Brighton & Hove City Council	Care Home with Nursing	9/19	CMS, iCare, iPad, sensor mats, CCTV in hallways	Small: Tudor type property, 22 single en-suite bathroom

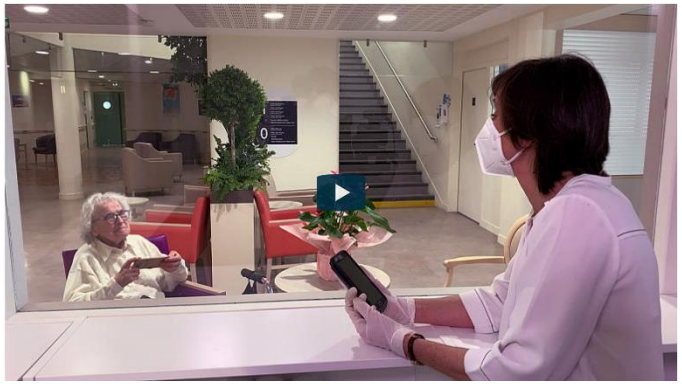
CASE STUDY RESULTS



The needs of providing quality of care by staff

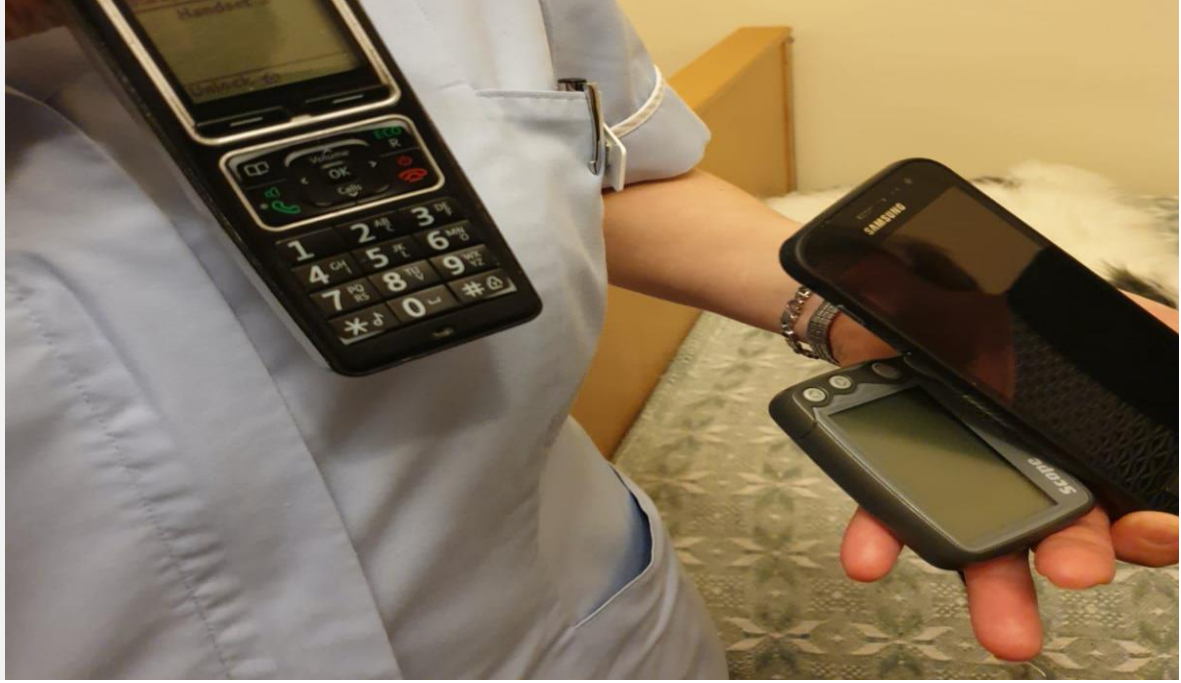
- Sufficient fall prevention to reduce response time.
- Monitoring general health of individual Patients with Dementia (PwD) in order to comprehensively and non-intrusively prevent health deterioration.
- Holistic overview on the health condition and care needs of PwD.
- Reduce administrative time of care recording.
- Knowing when individual PwD needs assistances.

The needs of quality of life by PwD and families



- Enabling the engagement between family members and PwD via a connectivity platforms. This became vital as a result of COVID-19 pandemic
- Need affordable, personalised user-friendly devices to enable PwD to engage and enjoy activities which are meaningful to them, individually and in groups.
- AR/VR Technology used for leisure and cognitive stimulation of PwD are greatly anticipated but long-term effects are not well understood.

The needs for technology ecosystems



- New technology needs to be integrated but not replace existing technology in place to promote a cost-effective transition.
- "One size fits all" technology that combines systems, so staff only carries one device.
- Technology that considers the building age, layout and signal coveargе.
- Connectivity between staff and families and between staff and care professionals:
  - Families want to keep updated on the situation of PwD when they are available.
  - An improved system required to communicate to GP would reduce the trip to surgery and waiting time.

OUTCOME AND CONCLUSIONS

- Better designed/co-designed technology where en0d-users are at the center of the design process, user friendly for staff, PwD and families
- 5G in combination with IoT and AI provide faster and integrated network, capable of realizing real-time monitoring and rapid response, reducing the need for on-site careers and , especially in case of dementia patients
- Privacy and autonomy are important factors in technology adaptation. Non-intrusive solutions are preferred (rather than, e.g, video monitoring), which provide privacy and autonomy while keeping PwD safe
- IoT and 5G are the future of health care with many solution in development, they are expected to reduce social care cost in the UK by and estimated £890 million

THANK YOU!

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