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digitally enabled care in diverse environments

NUFFIELD DEPARTMENT OF PRIMARY CARE HEALTH SCIENCES
UNIVERSITY OF OXFORD

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Proactive remote monitoring at home:

Emerging findings from DECIDE's rapid evaluation of home sensors for preventative social care in England

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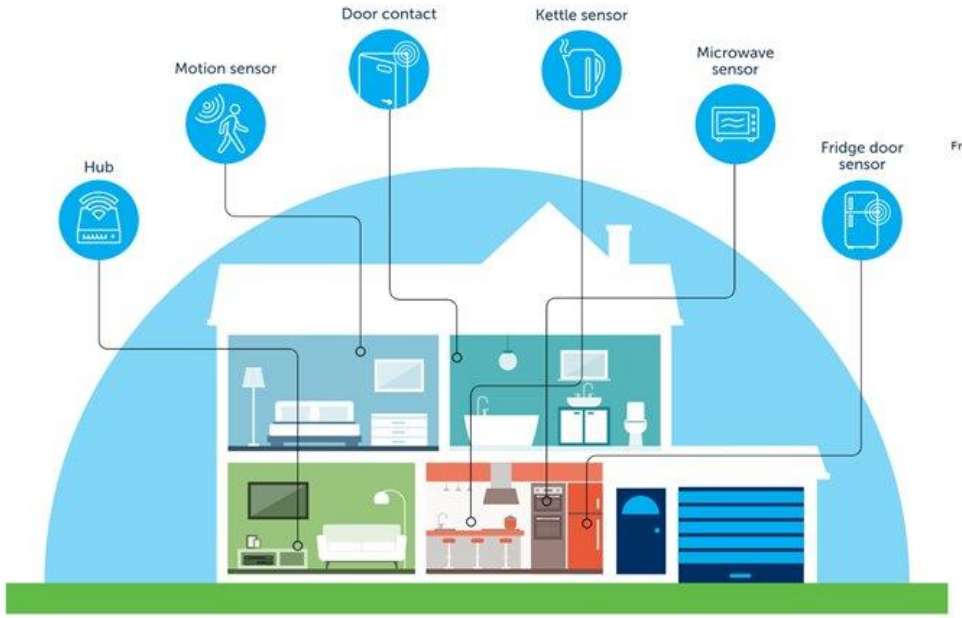
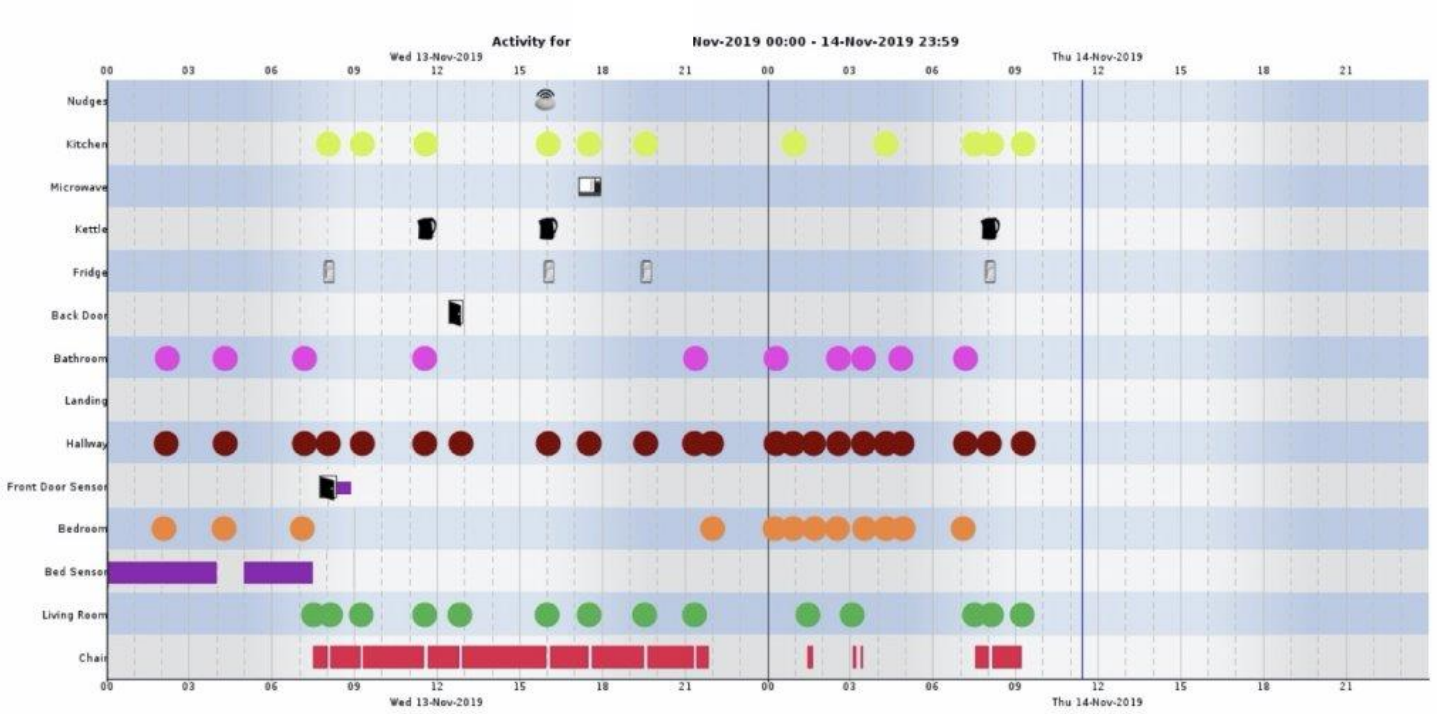
Third generation telecare: proactive and preventative

- Many possible combinations of sensors placed in different areas of the home
- Data compiled on a visual dashboard
- Preventative systems use machine learning to document usual activity patterns and establish thresholds for abnormalities to trigger alerts





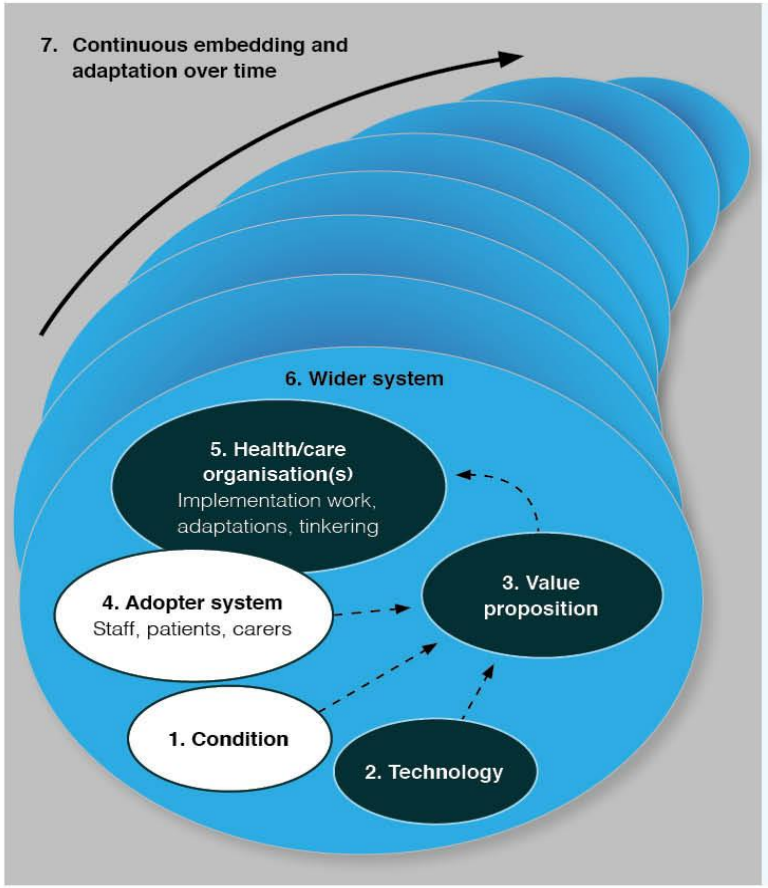
Context: what we know from existing literature

- Consensus among policy makers, sector leaders, and technology developers on how the health and care system could benefit from preventative telecare
- Many examples of pilots in English local authorities, but no examples of scale-up to ‘business as usual’
- Very limited robust evidence on implementation process or outcomes (for social care service users or the system)
- Missing perspectives from those who interact with the technology and interpret the data dashboards

Case sites and approach

Site (pseudonym)	Typical service user cohort for home sensors (n)	Technology being used	Organisation and staffing	Service set up and duration
RIVERBOURNE COUNTY COUNCIL	Aged 65+, cognitive impairment, live alone (n=100 active)	Pulse (predominant system used); Responda Monitoring & urgent alerts	Service delivery partner monitors insights and urgent alerts, covers installation, handover & maintenance	Set up in 2020; initial focus on post-hospital discharge frailty
EASTVALE COUNTY COUNCIL	Aged 65+, cognitive impairment; learning disabilities; those with increased risk of readmittance (n= >600 active)	KinLink Monitoring & urgent alerts	KinLink 'wraparound' support: installation, handover & maintenance	Set up in 2019
STEELGATE CITY COUNCIL	Aged 65+, cognitive impairment, live alone (long term monitoring only) (n=60 combined target)	Responda (long term monitoring); SafeNest (short term monitoring on hospital discharge) Monitoring only	Responda provided and monitored by existing domiciliary care provider & council commissioning team; SafeNest monitored by family & SafeNest team; all installation & removal by council TEC partner	Set up in 2024 as a 6-month pilot

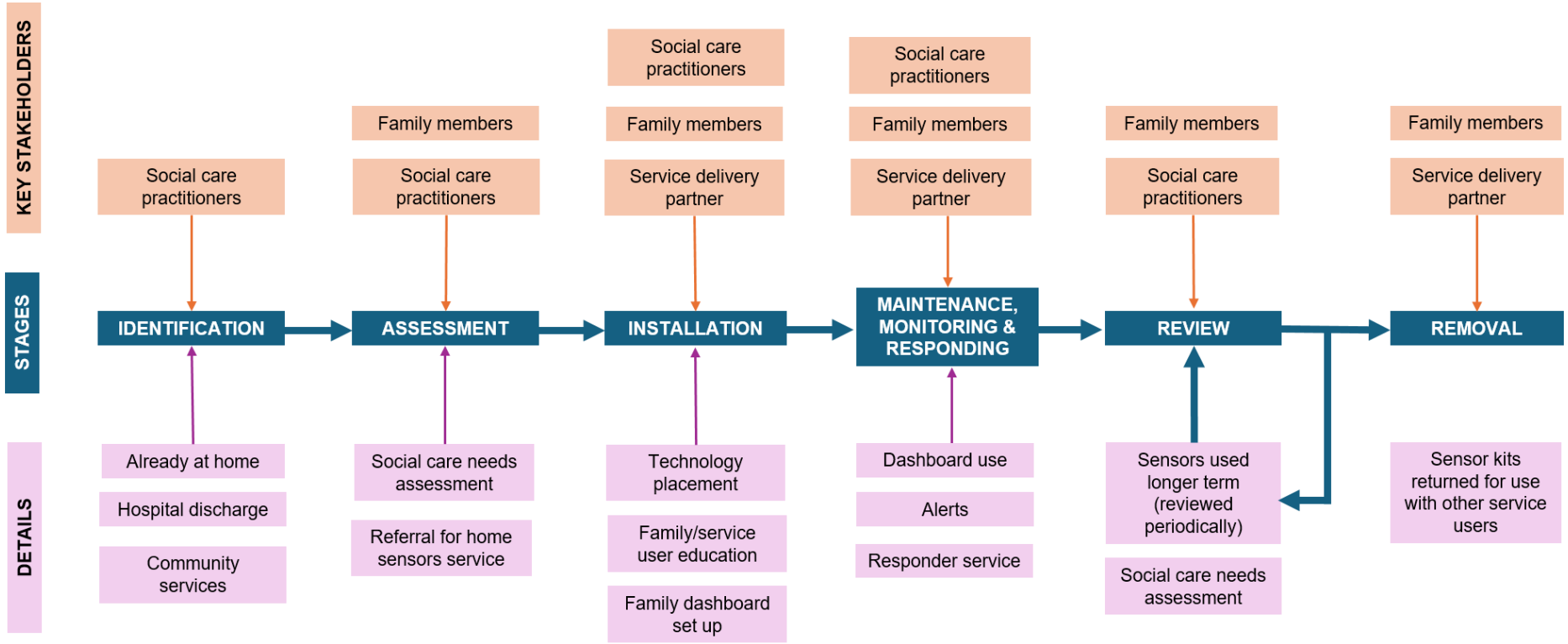
NASSS framework



1. **CONDITION**
   - Nature of condition or illness
   - Comorbidities
   - Sociocultural factors
2. **TECHNOLOGY**
   - Material properties
   - Knowledge to use it
   - Knowledge generated by it
   - Supply model
   - Who owns the intellectual property?
3. **VALUE PROPOSITION**
   - Supply-side value (to developer)
   - Demand-side value (to patient)
4. **ADOPTERS**
   - Staff (role, identity)
   - Patient (passive vs active input)
   - Carers (available, type of input)
5. **ORGANISATION(S)**
   - Capacity to innovate in general
   - Readiness for this technology
   - Nature of adoption and/or funding decision
   - Extent of change needed to organisational routines
   - Work needed to plan, implement and monitor change
6. **WIDER SYSTEM**
   - Political/policy context
   - Regulatory/legal issues
   - Professional bodies
   - Sociocultural context
   - Interorganisational networking
7. **EMBEDDING AND ADAPTATION OVER TIME**
   - Scope for adaptation over time
   - Organisational resilience

Note: Adapted from Greenhalgh T, et al. 'Beyond adoption: a new framework for theorizing and evaluating nonadoption, abandonment, and challenges to the scale-up, spread, and sustainability of health and care technologies'.[1]

Complexity in the care pathway: system mapping



Who are home sensors for?

Mr Jee

- Previously cared for his wife, is physically active and socially engaged
- Hospitalised after severe ankle break
- Sensors for short-term monitoring on returning home, after initial care package was reduced

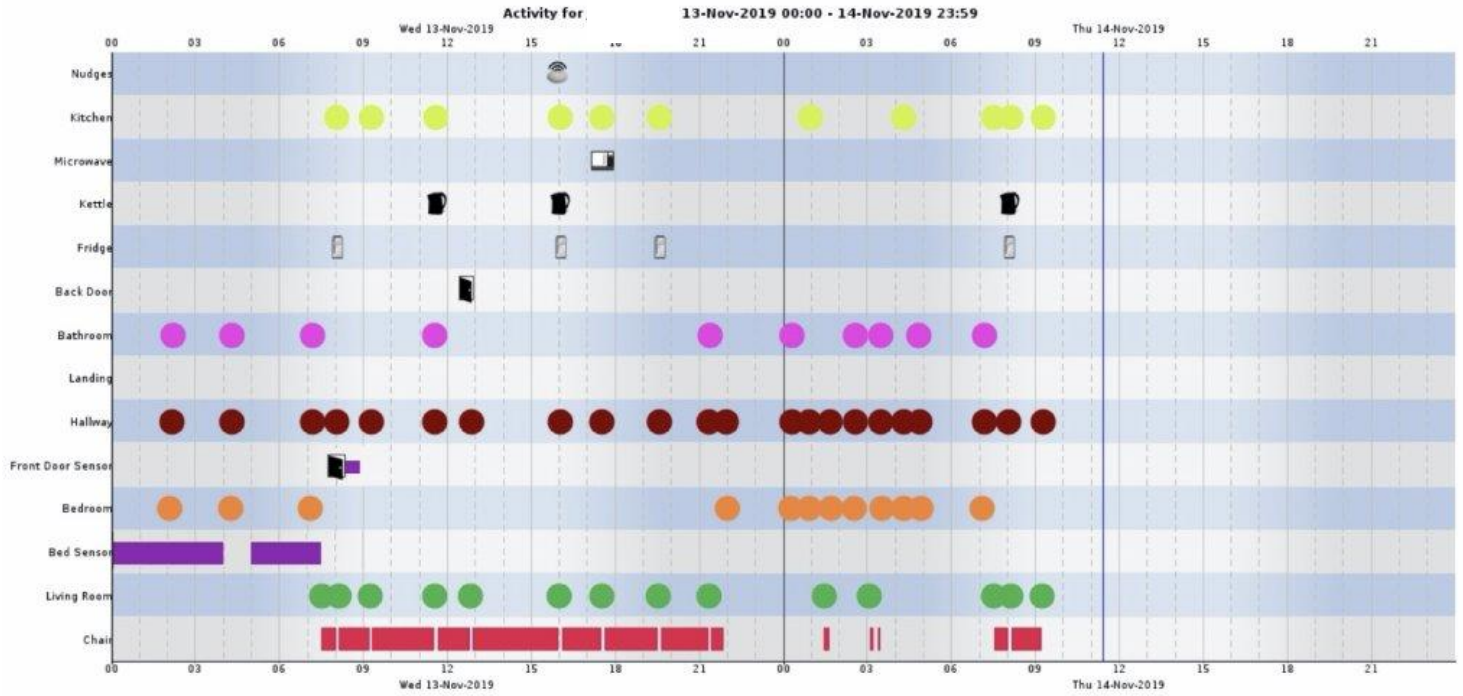
Mrs Kay

- Social care service user for many years following a car crash that resulted in physical weakness and memory problems
- Works part time, well known in her community, family live several hours away
- Sensors for long-term monitoring in combination with other telecare and daily support from a paid carer: “It’s just for people to keep an eye on me.”

Who does the work of monitoring and responding?

Access to the data dashboard depends on the system.

End users of the dashboard can include care providers, social care teams within local authorities, local call centres and emergency response teams, family members, or service users.



Reassurance and changed care interactions

“It reassures me that my mother is either in bed or in her chair. I always check before I go to bed at night. I check she is in her chair, or bed, though she does not go in bed these days. And the front door is not open. … It does reassure me when I see her going from one room to another. I know everything is ok. I can breathe easy, until I look at the app again.”

[Family/informal carer, Eastvale]

“It has eased the burden of needing to make routine phone calls literally just with the agenda of checking that she's OK, and has given time to get on with some of the more complicated things that we do - for housing, for coordinating her medical appointments, and those sorts of things and sorting out transport. [...] I've now got more time for dealing with that kind of stuff”

[Family/informal carer, Riverbourne]

Communication with health services

“It's helped us to then corroborate what [service user was saying about he didn't sleep well. And as a result of that, I took the graphs that they [social services] sent me to the endocrinologist and said has he got sleep apnoea and can we investigate this? So that it was investigated as a result of the extra evidence that we were getting from the monitors to say that they had a very unusual sleeping pattern.”

[Family/informal carer, Riverbourne]

Care management informed by evidence

“To have a very evidence-based and informed level of assessment of need, and I think that's something that we've always found particularly difficult in social care.”

[TEC practitioner/lead, Eastvale]

“[it’s about] making sure that care is appropriate for that person, making sure people can live independently, safe and well, first and foremost. And that they receive the least restrictive care, so they haven't got people traipsing in and out of their home every day of the week - they get the right care at the right time when they need it.”

[Staff, Steelgate]

Care network conversations prompted by data

“Sometimes care providers will say, you know, we need more care because we're doing XY and Z and then when you actually look, they're not really. Like it happens occasionally, but you can see it's not happened regularly. So then you might look at it together and say, well, this is what I'm seeing. It's, you know, it's different from what you're saying. How do we account for it? So you might use it in that way to have that conversation.”

[TEC practitioner/lead, Eastvale]

“It kind of helps me see how long they are spending in the kitchen. I can’t see what they are doing in there, but can see how long. And often it can be very quick, the dishes can be very dirty. So it does give me that freedom to ring up head office and say this happening and I am not happy with that. So the sensors in a way help cater for things that are not going so well. At least you have an idea of who is in which room and how long.”

[Family/informal carer, Eastvale]

Autonomy, dignity, safety, and privacy

“They're [service user] like, ‘that's a camera, that's a camera’, and we have to really, you know, stipulate ‘this is not a camera this is just to help your family watch where you are, you know, if you do go to bed in the evening or you've not had a fall in a room, it is monitoring your movements..’ But most people are fine with it going in. Obviously social workers have spoken to them and have done their part. But yeah, it's sometimes challenging. Some people just don't want it. They're like, ‘no, take it away. I don't want it’.”

[Installer, Eastvale]

Related issues of concern for domiciliary care workers:

- Worries that technology might replace in-person care
- Sensors capture their activity as well as service users, opening possibilities of data being used for staff performance management or discipline

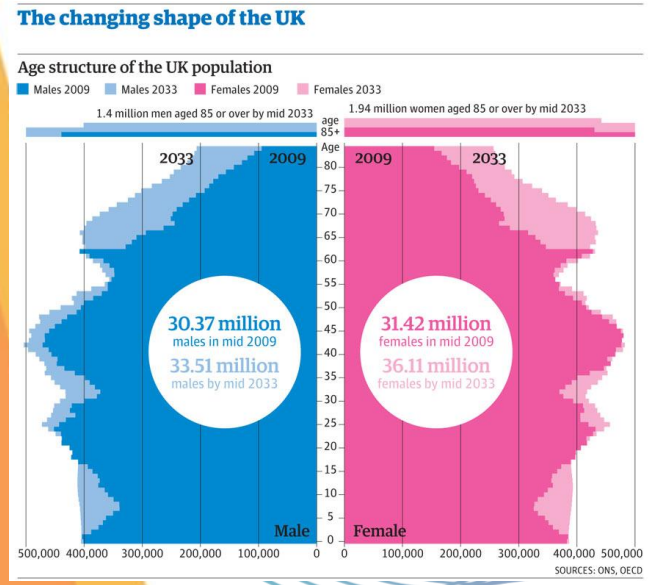
Disruption for end users

- Tinkering with sensors when they do something unexpected (e.g. fall off the wall), get in the way, or prompt action from service users
- Carers get involved when there are changes in circumstances that need to be communicated (e.g. service user not home, so must contact telecare provider to set expectations for no movement)
- Concern by care staff on how to respond to alerts, particularly health-related concerns for which they have no training or responsibility
- Extra tasks when things go wrong (e.g. engaging with tech support team)

Digital technology as part of ‘good social care’?

Consider issues of:

- Changing family structure and interpersonal dynamics
- Technologies as actors in evolving care networks
- Future expectations of care as digital natives age



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Watch this space!

https://www.phc.ox.ac.uk/research/decide/home-sensors-in-social-care

Disclaimer: This presentation describes emerging findings from DECIDE's wider rapid evaluation of technology-enabled remote monitoring within English adult social care services. The full report will be available in summer 2025, after the NIHR peer review process. Until that time, the contents presented here should be treated as a working project document.

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