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Loreburn Housing Association – ARMED

About Advanced Risk Modelling for Early Detection (ARMED)

Loreburn Housing Association, in partnership with care management technology company CM2000, Edinburgh Napier University and Dumfries and Galloway health and social care locality (Nithsdale), undertook a pilot exercise in 2017, which used innovative technology in the form of wearable devices to act as both a predictive tool and an aid to active self-management. Following the success of the pilot, Loreburn is now beginning to roll out the preventative technology to all customers within its sheltered accommodation.

ARMED involves a low-cost wearable device that can detect early indicators of frailty, such as low grip strength, muscle mass, hydration levels, low heart rate and heart rate variability, by gathering 'live' data. Together, this data can predict the potential risk of falling.

By anticipating issues before they arise, the technology allows elderly residents to live independently in their own homes for longer, significantly improving their wellbeing and quality of life.

Taking A Person-Centred Approach

Nine Loreburn customers took part in the pilot, ranging in age from 60 to 90. All the participants had one or more pre-existing health condition. Loreburn staff worked closely with these customers to ensure that they understood how to use the wearable technology, including how to sync it with their smartphones on a daily basis.

During the pilot, customers, their families, carers and staff all saw the ability to monitor and measure the metrics associated with frailty and fall risks from an individual's own home as a positive.

An added value is that the customer's own doctor can access all the historical data gathered, providing a comprehensive picture of a variety of indicators that would previously have gone unrecorded. For example, one participant was found to have a decreased heart rate around a similar time each day. This information was flagged to staff who contacted the customer's doctor, with their consent. Following examination by the customer's GP, they were placed on the appropriate medication.

It's also possible to have a family portal. This would allow family members to access the data reports to monitor health and wellbeing, and to receive real-time alerts. As well as providing peace of mind for the customer and their family, this would also allow issues to be addressed in a timely manner without emergency hospital admission.

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The ARMED solution is neither age nor illness specific. It could be used by any age group, including Loreburn's younger supported residents, to capture the same data from them and identify any potential risks they may be facing.

▶ Connectivity

ARMED collects and combines data from wearable technology, including:

- Polar Loop 2 – an activity and sleep tracker worn around the wrist
- Tantine Body Composition Scales
- strength grip measurers.

Data is collected via a smart, waterproof wristband (Polar Loop), which monitors the customer's vital health signs 24 hours a day. This information is then synced, via Bluetooth, with a smartphone and uploaded to CM2000 at regular intervals.

CM2000 combines the information from ARMED with predictive analytics modelling. Developed in partnership with Edinburgh Napier University, this modelling uses health and social care data to predict escalating risk of a potential fall and supports active self-management.

Loreburn has installed 'Essential Wi-Fi' at its first trial site in Dumfries. Using Essential Wi-Fi means that there is no cost to customers at that location when they view their own data. Loreburn also uses the Tunstall solution, and the Polar app can either be downloaded onto that or the customer's own smartphone if they prefer. CM2000 is currently looking at how to utilise low-level, low-powered Wi-Fi, which will increase capability across Scotland.

▶ Prevention

Falls currently cost the NHS in Scotland £500,000 a day. ARMED therefore has the potential to save the public purse substantial sums of money by alerting staff, carers and family to intervene to help prevent falls before they happen. This will also save money for other parts of the health and social care system in Dumfries and Galloway. Additionally, it will prevent the human costs to those who are forced into a medical model of care too soon.

From the data gathered by CM2000, real-time alerts (via email/text) can be sent to the customer, sheltered housing staff, carers and family to alert them that the individual has been inactive, potentially leading to dehydration, lack of sleep and the increased likelihood of a fall. In the worst case scenario, it could indicate that something untoward has happened to the wearer so that assistance can be summoned, if required.

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During the piloting of ARMED, those taking part became more active and more aware of their exercise habits. Loreburn has also noticed that ARMED is a very useful self-management tool. For example, a number of customers in one of Loreburn's sheltered developments are currently trying to get to the first million steps!

Following the pilot, within the first three-month period of ARMED being introduced in Loreburn's first sheltered complex there have been no falls. This is positive both for the individuals themselves and for health and social care services in terms of the potential savings in avoidable hospital admissions.

▶ Partnership working

Loreburn realises that collaboration is key to providing a great service and that they needed to work with others to develop a preventative solution. The pilot project was a continuation of the Digital Health & Care Institute (DHI) e-Frailty-funded project with CM2000 and Edinburgh Napier University, which is researching risk prediction and early intervention through the use of wearables to pre-empt individuals entering highly dependent models of care. There has also been support from Annandale and Eskdale Health and Social Care Partnership.

Rather than a 'top-down' project, the development of ARMED has been undertaken in conjunction with customers. There have been discussions with customers about what they want to see in terms of the data and how it's presented. Time has also been spent with customers looking at the information produced and what this means for them, including how many steps they've taken, how much sleep they've had, and the number of alerts.

Longer term, the aim is for ARMED to be introduced in all of Loreburn's sheltered developments across the four health and social care partnership localities in Dumfries and Galloway, working with each individual locality.

▶ Funding

The initial funding for the pilot of ARMED was provided by Loreburn, in partnership with CM2000 and Edinburgh Napier University. The wider roll-out of ARMED has been supported by Annandale and Eskdale Health and Social Care Partnership.

Loreburn also intends to carry out a cost-benefit analysis to estimate the money being saved for the NHS in Dumfries and Galloway. This will be broken down into the potential costs to healthcare services from, for example, an individual having a fall and requiring an ambulance, accident and emergency costs, an

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overnight stay and the ongoing costs to keep someone in a cottage hospital or other health setting if they couldn't be discharged right away.

The outcomes of this cost benefit analysis will inform further discussions with the Health and Social Care Partnership about the future development and roll-out of ARMED.

▶ About Loreburn Housing Association

www.loreburn.org.uk

Loreburn Housing Association (Loreburn) owns and manages over 2,500 properties in Dumfries and Galloway, offering a wide variety of accommodation for a range of housing needs.

Loreburn recognises that it has a key role to play in helping health and social care localities across Dumfries and Galloway to achieve the nine National Health and Wellbeing Outcomes, especially Outcome 2:

"People, including those with disabilities or long term conditions, or who are frail, are able to live, as far as reasonably practicable, independently and at home or in a homely setting in their community."

Loreburn has become the first social landlord in Scotland to adopt newly developed wearable technology that predicts the potential risk of falling for its sheltered housing customers.

▶ Contact

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