Innovation and the Care of Older People
Colman Casey, Tanya Mulcahy and Jane O’Flynn
Health Innovation Hub Ireland, University College Cork, and Cork Institute of Technology

Abstract
The population of Ireland is ageing. While this is a welcome trend, it increases the burden on society in the care of older people. Assistive technologies, as well as, improved medical practices, healthcare efficiencies and social supports can help alleviate this burden. Health Innovation Hub Ireland (HIHI) connects innovation with healthcare and from our experience technology alone is not the solution, it must be integrated with existing and potentially new support programmes and national health policy. HIHI has demonstrated many innovative products and services that can support older people to live healthily and independently for longer.

Introduction
The impact of an ageing population needs to be considered from many facets including cost, infrastructure, policy, technology and the people who deliver it. Innovative products and services can contribute to reducing healthcare costs, while supporting positive ageing. Ireland has an opportunity to consider how and where we want our ageing population to live and how innovation can best assist in managing their healthy ageing. At HIHI we are seeing that individual innovations require close integration in both community and healthcare settings, and these innovations can have an impact from a cost, and health and wellbeing perspective.

As an example, there are many technologies to detect falls but effectiveness will depend on a coordinated quick response. Considering the cost of falls experienced by older people, it is estimated that 30% of those over the age of 65 will experience a fall (Towner and Errington, 2004). In Ireland, in 2018 the average cost of falls was €13,809 per person. Using 2016 population the estimated cost of falls is calculated at €2.6 billion and this is expected to increase to €6 billion by 2046 (O’Dwyer and Murphy, 2018). Technology can play a significant role in the detection (O’Flynn et al., 2019) and reduction of instances in falls, provided there is a coordinated and integrated support.
HIHI structure and function

HIHI was established by the Department of Business, Enterprise and Innovation and the Department of Health in response to a need for establishing innovative products, processes or technologies in healthcare settings. HIHI is a consortium between University College Cork, Cork Institute of Technology, NUI Galway and Trinity College Dublin, along with their associated Hospital Groups\(^4\) and Clinical Research Facilities\(^5\), as illustrated in Figure 1. HIHI is funded through Enterprise Ireland, has HSE staff allocated at all locations and is supported by the HIHI Oversight Group\(^6\).

Figure 1: Health Innovation Hub Ireland locations across the country

HIHI is built on the recognition that collaboration with enterprise can benefit patient care, patient pathways and outcomes. It comprises three main pillars

1. Innovation from companies into the healthcare system
2. Innovation from healthcare staff out of the healthcare system
3. Education programmes to drive innovation and culture change in healthcare

\(^4\) South SouthWest Hospital Group, Saolta Healthcare and Dublin Midlands
\(^5\) HRB CRF Cork, HRB CRF Galway and Wellcome Trust HRB CRF St. James’s Hospital, Dublin
\(^6\) Dept. of Business, Enterprise and Innovation, Dept. of Health, Enterprise Ireland, Health Service Executive, Science Foundation Ireland, IDA Ireland, Health Research Board and eHealth Ireland
HIHI offers pilot and clinical validation studies to companies and offers the health service access to innovative products and devices that they may not otherwise be exposed to (HIHI, 2019). HIHI offers guidance and access to healthcare workers on research collaborations; funding opportunities and technology assessments for their ideation processes. Finally, HIHI offers education programmes through innovation workshops and a Postgraduate Diploma in Healthcare Innovation in order to drive and embed a culture of innovation in healthcare.

Health Innovation

HIHI seeks innovations through a highly structured call process consisting of Open Calls (for any innovative product, process or technology), Focussed Calls (on a topic regarded by healthcare as recognising key needs) and an Open Door policy for any person with an innovative idea, concept, product, process or technology to approach HIHI in Dublin, Cork, Galway, by phone or online. The two most recent Focussed Calls (2016 and 2018) were on the Care of Older People on the topics of ‘Enabling Positive Ageing’ and ‘Improving Care for Older Persons in the Healthcare System’. Of the 103 HIHI projects initiated to date, 28 are focussed on the care of older people. A breakdown of the type of HIHI projects in the Care of Older People is shown in Figure 2.

![Figure 2: Breakdown of HIHI projects in Care of Older People](image)

HIHI has undertaken projects in eHealth System Management, Community Support and Medical Devices for the Care of Older People. Three projects are described in more detail below.

CareFolk – eHealth System Management

CareFolk is an integrated care platform (web and mobile) that enables secure communication and the co-ordination of care provision among professional and community / social care providers (CareFolk, 2019). CareFolk is designed to remove barriers to integrated care and to make the work of the care team easier and simpler, ultimately resulting in better care for the patient. It accommodates case managers, clinicians, health &
social care professionals, primary, community and social care services, as well as the care receiver and their families.

This HIHI project was delivered in collaboration with the HSE Integrated Care Programme for Older Persons (ICPOP) Team (HSE, 2017). ‘CareFolk Integrated’ was installed at integrated care pilot sites in Cork and Waterford. The case managers and care team used CareFolk for the management, review and co-ordination of care for the enrolled patients. Survey responses included ‘in my estimation as a clinician, CareFolk reduces my admin time by up to 50%’ and ‘the CareFolk system saves 10-15 hours per week multiplied by 4 team members over the previous 12 months’.

The overall conclusion of the CareFolk pilot is that this is a platform that facilitates sharing of patient information between care team members. It facilitates the delivery of integrated care in the community/home. It saves time through efficiencies delivered to the care team, in sharing notes and accessing data ‘on the go’. Care team members feel more in control and can manage their care plans more efficiently. The product also has the capability to include family carers and has the potential to enhance care delivery at home and in the community.

**Ami Community Support**

The Ami Community Support project demonstrates how technology can support older people and create a lifetime community in a typical Irish town (Mulvihill et al., 2019). It is an innovative collaboration between social enterprise and community groups, led by Independent Living Ireland (ILI, 2019) and developed in partnership with Amicita Social Enterprise, Cork City Partnership’s Friendly Call Cork and Nimbus Research Centre. The project team set out to design a solution together with community and health end-users and so the system was co-designed with the members Mitchelstown Age Friendly Committee (Pesch et al., 2018).
A prototype of the Ami platform (AMI, 2019) was tested in the town. Sensors and panic buttons, installed in the homes, measure movement, temperature, heat and humidity and are connected wirelessly to a base station in a Community Centre in the town centre. These sensors can be used to detect drops in temperature, emergency alarms or changes in routine, which may signify health problems prompting a friendly call to be made.

![Figure 4: Older Person – User Scenario Diagram](image)

The team involved on the pilot is now seeking to scale their network by including other towns, develop the Ami Platform further and support older people in using a person-centred, integrated approach to community care.

**FeelTect – Medical Device**

Venous leg ulcers (VLU) occur due to the blood return from the veins in the legs being slow or obstructed. VLUs are estimated to affect around 1 in 50 people over the age of 80 in UK (NHS, 2019). Compression is a proven therapy for VLUs (O’Meara et al., 2012), however if it is applied too loose, it is ineffective, and if it is too tight, it is dangerous. It can be extremely difficult for experienced healthcare professionals to achieve a targeted pressure with existing products.

Galway-based wound care company, FeelTect, have developed a prototype of Tight Alright, a pressure sensing, connected-health device for measuring and monitoring sub-bandage pressure during compression therapy (FeelTect, 2019). Tight Alright aims to improve the
application and maintenance of evidence-based therapy, ensuring safety while reducing healing times. HIHI conducted a user feedback and validation study. The study involving relevant healthcare professionals verified the clinical need for a pressure sensing device to enable correct application of bandages for venous leg ulcers.

FeelTect was supported by the BioInnovate Ireland programme and the Enterprise Ireland Commercialisation Fund. It has also recently been awarded EIT Health Headstart funding to support the miniaturisation of Tight Alright to a truly wearable product, making it the first device capable of continuously monitoring compression therapy outside the clinical setting. The FeelTect team is currently talking with potential strategic partners and preparing for seed round fundraising to support the progression of Tight Alright into clinical practice.

Conclusion
Healthcare delivery in Ireland must adapt to the needs of our rapidly increasing older population. We are living longer and how we enable this longevity to be a healthy, positive experience requires the implementation of innovative solutions supported by policy and processes. This combination will enable carers, communities and families to support the health and wellbeing of older people and provide care at home. Ireland must now consider what we want to deliver, what innovations will support this and how we implement what is needed to support our ageing population.
References


