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Trinity project aims to help 50 million patients in Europe with multimorbidity

Dr John Dinsmore, Associate Professor of Digital Health and Integrative Care at Trinity College Dublin (TCD), tells us about a major EU funded project to deliver proactive patient care.

A major EU funded digital health research programme was launched recently by the Trinity Centre for Practice and Healthcare Innovation to empower Europe's 50 million multimorbid patients.

"My research focus is on digital health and the development of interventions to support people self-managing chronic diseases," says Dr John Dinsmore, who leads the SEURO project. SEURO (Scaling EUROpean citizen-driven transferable and transformative digital health) supports older adults self-managing with multiple chronic health conditions.

"My background is in psychology. I try to bring psychology and behavioural science methods and frameworks into the design and testing of digital interventions for individuals.

The aim of the project is to advance the digital health platform 'ProACT' (Integrated Technology Systems for ProACTive Patient Centred Care). ProACT integrates a wide variety of new and existing technologies to improve and advance home-based integrated care for older people with multimorbidity (two or more chronic conditions) such as congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or diabetes.

"These interventions have been designed using behavioural science methods to help improve engagement with the technologies, particularly for older adults over the age of 65 who are managing multimorbidity. Particularly those most prevalent in the European population such as CHF, COPD, and diabetes."

ProACT works by providing a digital application with suite of sensor-based devices, tailored to each individual's unique disease profile, in order to collect relevant data from them. An individual at home can monitor key symptoms related to their diseases, so they are able to track it daily, weekly, and monthly on the application. This is tied to algorithms that provide relevant goal orientated training and education on their personal health and wellbeing parameters and how they can best self-manage.

For example, if a person has diabetes and COPD, they may use a digital glucometer, blood pressure cuff, weight scales, an activity tracker, and a digital SpO2 monitor. ProACT collects this data from the devices, presenting individuals with their readings and trends over time, recommending training that will educate them on their data and assist them in better self-management. For symptoms that cannot be captured via sensor devices such phlegm colour or chest tightness if an individual has COPD, the individual can record this via self-report questionnaires build into the application.

"The aim is to provide them with a solution to support them to better manage their conditions while at home. The application also allows them to share their data with members of their care and support network, such as family, caregivers, or healthcare professionals, with a suite of custom built applications tailored to each care and support network members profile, for example via a specific healthcare professional or formal caregiver app. These care and support network members can then link in with the individual at home to support them as they self-manage.

Trial period

SEURO will evaluate the ProACT platform through large-scale effectiveness implementation hybrid trials in Ireland, Belgium, and Sweden. The project has 12 partners across six EU member states involved, eight of whom previously developed and tested the platform at a proof-of-concept level with 120 older adults with multimorbidity, over 12 months in Ireland and Belgium.

"We got really good results in terms of user engagement, and how they advanced their ability to self-manage at home," says John. "ProACT has the potential to support the Irish healthcare service to meet the goals of Sláintecare 'Shift Left, Stay Left' by decentralising care to the community, and empowering citizens to be more involved in managing their health and wellbeing. The triage support capabilities of ProACT supported in the research by Caredoc has the potential to provide improved workflow orchestration and costs savings as part of new model of community centred care where, for example, a single nurse can monitor several hundred patients and using the analytic capabilities spot who is most in need of support and refer or escalate to the appropriate service such as a GP or hospital.

An aspect of the current trials being explored is to understand how those in need of support can be identified remotely so that services can be more efficiently directed to them. This digital health device to support self-management at home ultimately has the potential to help reduce the burden on the healthcare system and is in stark contrast to current standard care.

Having received €3.99 million in funding under the Horizon 2020 Research and Innovation Programme, the SEURO project will also explore the potential for scaling up the ProACT platform across Europe. To achieve this the consortium in consultation with EU experts in digital health are developing three new digital assessment tools to help healthcare organisations and services advance their readiness to successfully adopt digital health solutions in practice. These are:

1. **ProTransfer**: An organisational self-assessment tool to help evaluate preparedness for transferring a digital health solution into practice.
2. **ProBCF-C**: A checklist to help optimise and sustain behaviour change using a digital health solution.
3. **ProInsight**: An artificial intelligence (AI) prediction model to assess the impact of a digital health solution on health system performance.

"These novel tools help will help organisations to assess their readiness to implement, transfer and scale digital health solutions. Importantly they will help organisations make decisions about what technology is relevant, what the likely impact of adoption will be for them and how best they can improve the structures of the organisation to implement the interventions effectively. This is key going forward for both financial and practical concerns."

Digital health in Ireland

John gives credit to the Irish digital health eco-system for creating an environment where they could develop this project and the platform. "There is the academic side that can help organisations, and a strong digital health, and medtech sector with a lot of great, innovative companies. We are in close proximity to so many academic, industry, and SME partners that provide a rich environment for progressive collaboration."

"We are also able to access research funding opportunities in Europe, such as the Horizon 2020 programme and learn from new EU initiatives such as the new Digital Health Act in Germany. Being an English-speaking country, we are a gateway between Europe and the US too, and that helps our reach become more international."

And when it comes to the future of the project, John says while there is a lot of work and trials to be conducted, there are bright prospects ahead.

"We are presently developing the tools in conjunction with Irish and EU health service partners and preparing for SEURO trials this year. On completion of the trials we hope the intellectual property can be licensed to organisation(s) who have the capabilities to bring this research innovation to market for future societal use". John adds, "This technology has the potential to help so many people and showing this is the priority over the next year."

This case study was developed under Ibec's 'Where Digital Health Thrives' campaign, led by the Irish Medtech Association, Technology Ireland and BioPharmaChem Ireland. Our vision to enable Ireland to become a recognised global hub for digital health, where companies can develop and commercialise products, as well as attract projects and investments.

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