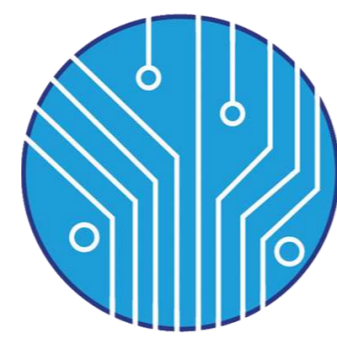


A Transnational Home-Based Rehabilitation Service Delivery Model

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WEARABLE SENSOR TECHNOLOGIES

SENDoc

Introduction

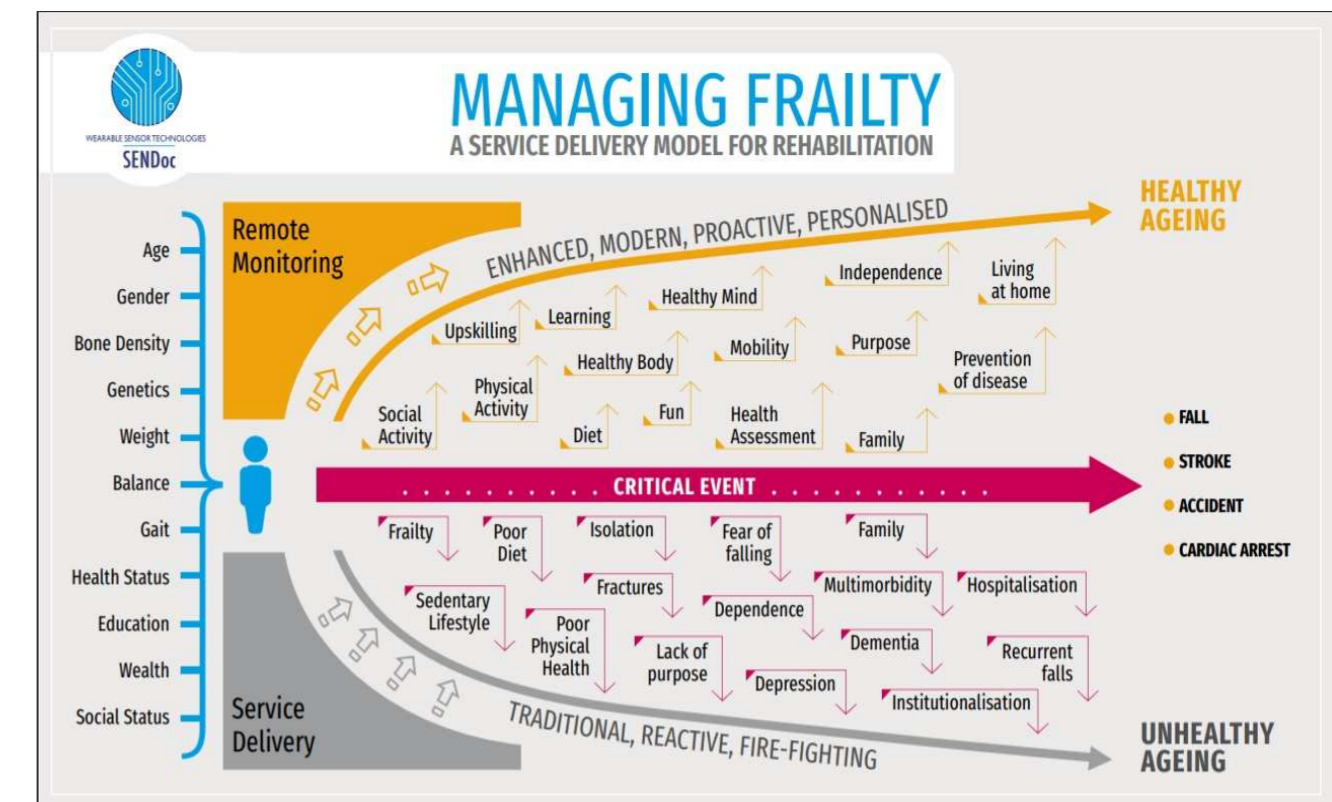
In order to achieve sustainability, remote and rural communities require health service models that are designed in and for these settings and are responsive to local population health needs [1]. However, to date, no such model exists covering the Northern European extremities even though the countries share a large number of common features, most predominantly a low population density and low accessibility to amenities. Technology can facilitate effective and accessible models of service delivery, enabling healthcare outside the hospitals and institutions [2]. The Smart sENsor Devices for rehabilitation and Connected health (SENDoc) project proposes that this can be achieved remotely, at scale, in rural communities within the Northern Peripheral Area of Europe using wearable sensors. This is especially relevant in 2021 as the COVID-19 global pandemic continues to spread worldwide and entire communities, particularly the elderly, are encouraged to stay at home as much as possible.

Contributions

- We developed an infographic model which maps how prevention and monitoring sensor technology (a micro service) can be incorporated into the rehabilitation model (a macro service) and used going forward as a tool in the rehabilitation process.
- The model allows for patients in rural and sparse communities to be connected to the specialists and therapists they need
- The model captures how technology can be used as both a 'preventative tool' by encouraging pre-emptive actions and self-care, and as a diagnosis / monitoring tool at rehabilitation stage

Methodology

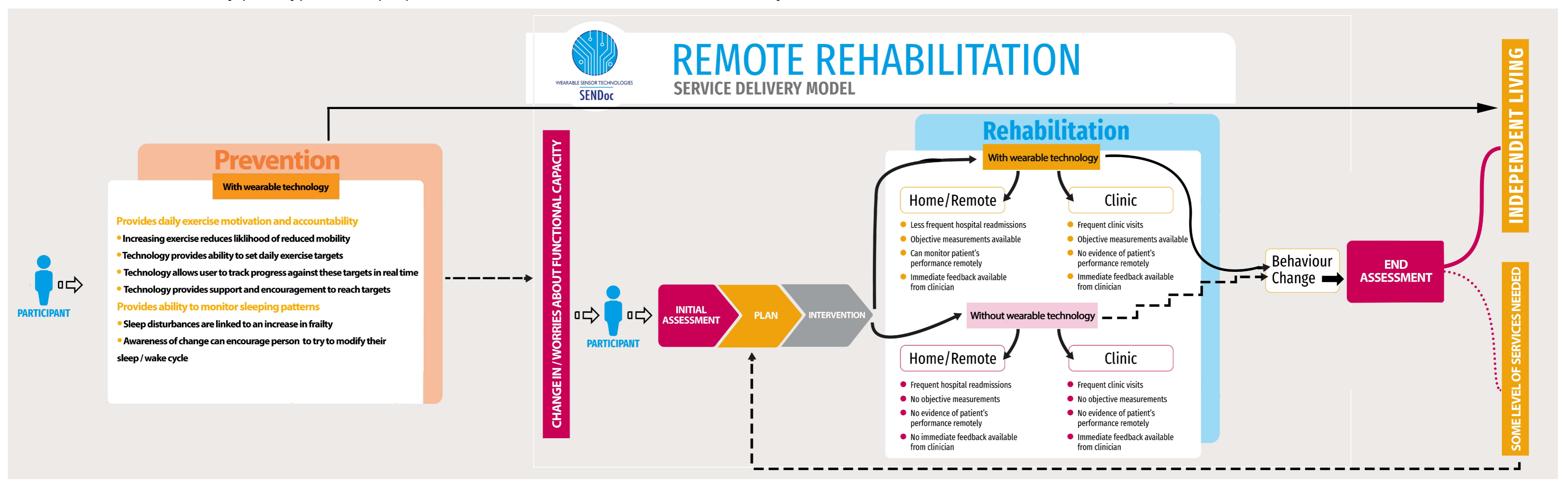
It is thought that by incorporating remote monitoring into the service delivery model for rehabilitation, healthy ageing is more likely to be achieved.



But how do we incorporate remote monitoring into the current process? In this work, we present a transnational home-based rehabilitation service delivery model to help guide policy makers of health care systems in the NPA region. Regional best practices and knowledge have been collated and used to develop this model, increasing its generalisability and transferability between different country's health care systems. The design draws on the findings and lessons learned of wearable technology trials at the four SENDoc partner sites, namely Ireland, Northern Ireland, Finland, and Sweden, which identified what technology and techniques did and didn't work in both clinical and home settings. It also draws on advice from a range of clinicians, from existing literature, and current best practices identified from the SENDoc project to ensure full user buy-in for further applicability and replication. The model considers the potential benefits, risks, and requirements, of introducing this technology at scale in rural areas for ageing populations, and adapts traditional rehabilitation provision to encompass connected healthcare concepts, which aim to enhance and improve care provision.

Results

Presented below is an early prototype of our proposed Remote Rehabilitation Service Delivery Model. Please note that the model is still under revision and this is not the final version.



Conclusions

- If health care systems adopted our model, patients can be connected to the relevant experts regardless of location. The model ensures we get care to the people who need it
- Incorporating technology and monitoring in the rehabilitation model steers the future of rehabilitation away from a reactive fire-fighting model and towards proactive and personalised care
- Having a telehealth process in place for rehabilitation and therapy is especially relevant in 2021 as the COVID-19 global pandemic continues to spread worldwide and entire communities, particularly the elderly, are encouraged to stay at home as much as possible

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