

# PROTOCOL

Proact Research

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## CONTEXT DATA SET

Multimorbidity refers to the coexistence of two or more chronic diseases along with their associated comorbidities. Enhancing best practices in delivering **well-coordinated, person-centered care** for individuals with multimorbidity is essential. However, current **healthcare systems across the European Union (EU)** primarily follow a **single-disease approach**, making it challenging to establish an integrated, patient-centric model for managing multiple chronic conditions effectively.

The **ProACT project**, a large-scale initiative funded by the **European Commission** under the **Horizon 2020 programme**, was developed to address this gap. It focused on the **design, development, and evaluation** of a **digital health platform** aimed at improving home-based **integrated care** and facilitating **self-management** for older adults (**aged 65 and above**) living with multimorbidity. (See Dinsmore et al., 2021; Doyle et al., 2021) . The research was conducted in Ireland (60 participants) and in Belgium (60 participants). The results of this 4 year project have been published in various articles and Dinsmore et al (2021) details the approach and way of working whole Doyle et al. (2021) shares the various insights of the interviews and surveys.

## METHODOLOGY/ SAMPLE

During the initial visit, the research team secured written consent from participants and distributed devices tailored to their specific condition profiles. Participants also had the flexibility to use their own existing devices, such as a blood glucose monitor, by manually inputting readings into the **ProACT CareApp**. The ProACT sensor devices were connected via Wi-Fi or Bluetooth, and broadband internet access was provided for participants who lacked an existing connection at home for the duration of the trial. During this visit, participants received training on how to use the **ProACT system**, including a brief introduction to the **CareApp** and third-party applications such as the **Withings HealthMate app** for measuring blood pressure. The training was designed to prevent overwhelming participants with excessive information about all the features of ProACT technology at once. To supplement their training, participants were also provided with a **paper manual** containing detailed instructions on device usage and troubleshooting solutions.



Figure 1 CareApp views from the participants POV (Doyle et al., 2022)

Approximately one week after the initial visit, researchers conducted a **second deployment visit** to provide more comprehensive training on the **CareApp**. Additional web-based training materials and instructional videos were made available through the platform. A **study helpdesk**, staffed by research team members in Ireland and Belgium, operated from **9:30 AM to 4:30 PM, Monday to Friday**, to assist

with technical or usability concerns. Additionally, a **clinical triage service** was established in both trial locations to monitor participants' vital signs. This service, available **9 AM to 5 PM, Monday to Friday**, was managed by **clinical nursing staff** who accessed participant data through the **SIMS platform**. A structured protocol was developed to handle potential adverse events, including predefined **threshold values** for abnormal readings, such as high or low blood glucose levels for participants with diabetes. Initially, global threshold values were applied to all participants, but these were later **personalized** based on individual normal values. If a participant's vital sign data exceeded their threshold, an alert was triggered on the **SIMS triage interface**, prompting a **pink petal notification** on the CareApp dashboard. When such alerts occurred, a triage nurse would contact the participant to assess the reading and determine whether further medical action was needed.

The **clinical triage service** focused exclusively on vital sign data and did not monitor nonvital parameters such as sleep or physical activity. Participants were reminded that this study was not a substitute for regular medical care, and they were encouraged to seek medical advice as they normally would if they felt unwell. These reminders were reinforced periodically through pop-up notifications on the CareApp, as per **ethics committee guidelines**. Once the **second deployment visit** was completed, participants commenced their trial period.

Additionally, invited members of the participant's **care network (CN)** were granted access to the **CareApp**, which they could use on their own devices, including smartphones, tablets, or computers. These customized CareApps enabled CN members to view **relevant health data** shared by the participant, along with educational resources related to **condition management, well-being, and technology use**. Participants had full control over which data they chose to share with each CN member. Healthcare professionals (HCPs) with access to participant data were not permitted to make clinical decisions based on the information available in the CareApp. This limitation was explicitly stated in the **participant consent forms** and information leaflets provided to all trial participants.

## ARTICLES RELATED TO THIS DATA SET

Doyle, J., McAleer, P., van Leeuwen, C., Smith, S., Murphy, E., Sillevs Smitt, M., Galvin, M., Jacobs, A., Tompkins, L., Sheerin, J., & Dinsmore, J. (2022). *The role of phone-based triage nurses in supporting older adults with multimorbidity to digitally self-manage – Findings from the ProACT proof-of-concept study*. *DIGITAL HEALTH*, 8, 205520762211311.

<https://doi.org/10.1177/20552076221131140>

Polak, S., Sillevs Smitt, M., Jacobs, A., van Leeuwen, C., Doyle, J., Cullen-Smith, S., & Dinsmore, J. (2025). *A User Typology for Digital Health Self-Management Technologies: A Qualitative Study of the Long-term User Experiences of Older Adults with a Digital Self-Management Platform for Multimorbidity (ProACT)*. *Journal of Healthcare Informatics Research*.

Polak, S., Van Leeuwen, C., Sillevs Smitt, M., Doyle, J., Cullen-Smith, S., & Jacobs, A. (2023). *The Role of Social Networks When Using Digital Health Interventions for Multimorbidity*. In V. G. Duffy (Ed.), *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management* (Vol. 14029, pp. 123–137). Springer Nature Switzerland. [https://doi.org/10.1007/978-3-031-35748-0\\_9](https://doi.org/10.1007/978-3-031-35748-0_9)

Sillevs Smitt, M., Doyle, J., Dinsmore, J., Ferrando, M., Smith, S., Polak, S., van Leeuwen, C., & Jacobs, A. (2022). *Transferability of an Integrated Care Platform [PDF]*. ICCHP-AAATE 2022 Open Access Compendium "Assistive Technology, Accessibility and, 7 pages. <https://doi.org/10.35011/ICCHP-AAATE22-P2-29>

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- Doyle, J., Murphy, E., Gavin, S., Pascale, A., Deparis, S., Tommasi, P., Smith, S., Hannigan, C., Sillevs Smitt, M., van Leeuwen, C., Lastra, J., Galvin, M., McAleer, P., Tompkins, L., Jacobs, A., Marques, M., Medina Maestro, J., Boyle, G., & Dinsmore, J. (2021). A Digital Platform to Support Self-management of Multiple Chronic Conditions (ProACT): Findings in Relation to Engagement During a One-Year Proof-of-Concept Trial. *Journal of Medical Internet Research*, 23(12), e22672. <https://doi.org/10.2196/22672>