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TELEMECHRON: the telemedicine project for chronic diseases

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The TELEMECHRON (Telemedicine for the Home Management of Patients with Chronic Diseases and Comorbidities) project, a telemedicine initiative funded by the Ministry of Health and co-funded by the Tuscany Region, the Lombardy Region, and the Autonomous Province of Trento, has ended successfully. The study, which started in September 2020 and ended in September 2024, aimed to analyze current models and design innovative strategies to enhance the quality of care, optimize the use of resources and home management of patients with chronic diseases through the use of technology.

In order to understand whether the use of a mobile application (App) would be of use to health care professionals caring for Trentino patients with **type 2 diabetes mellitus**, the **TreC Diabete** digital platform was used to tele-monitor users being treated at the diabetes centers of the Santa Chiara hospitals in Trento and Santa Maria del Carmine in Rovereto.

Thanks to the **TreC Diabete** platform, patients collected and entered their clinical parameters, such as blood glucose and blood pressure, into the app and communicated directly with healthcare professionals through the app's functions. This approach provided insight into the extent to which technology could facilitate **more efficient and personalized disease management**, potentially improving the quality of care and reducing the need for in-person visits.

During the APSS study, **103** patients were enrolled, of which 51 were assigned to the intervention group (with indication to use the App) and 52 to the control group (without the App). Almost all participants remained in the study for all **12 months**, providing *follow-up* data as required by the study protocol on a regular basis.

"The conclusion of the TELEMECHRON project is an important step forward for healthcare management innovation in Trentino and nationally. *The results tell us that the* ***TreC Diabete***

application is effective in supporting diabetes management; we also see this in patient satisfaction. However, the project has highlighted some challenges, such as the need to improve digital literacy, a key element in expanding access to telemedicine, especially among older segments of the population. Telemedicine can help clinicians, and it is clear now that we cannot do without it: we must work to ensure that solutions like this can become an integral and daily part of our health care system, guaranteeing Trentino citizens a service that is increasingly effective, efficient and close to their needs," this is the comment of the provincial health councilor, **Mario Tonina**.

Results and impacts of the Trentino project

During its four years of operation in our province, the TELEMECHRON project has achieved the following results:

- – **control of blood sugar and other clinical parameters:** patients who used TreC Diabete showed levels of glycated hemoglobin, a key indicator of diabetes control, parallel to the control group. For the other parameters, (e.g., blood pressure, heart rate, and weight), no major differences were found between the two groups either. However, the reduction in glycated hemoglobin levels between the time of study entry and the end of the study remained considerable.
- **Information sharing:** the use of the platform allowed greater sharing of data and information useful for better mapping the patient's trajectory, strengthening the patient-healthcare provider bond.
- **Patient satisfaction:** most patients rated their experience with TreC Diabete positively, appreciating the ease of use and instant access to health information.

Challenges and weaknesses

The TELEMECHRON project highlighted some challenges and areas for improvement:

- ***Digital Literacy:*** The number of participants in the study was lower than originally expected. The small sample, along with missing data, certainly limits the robustness of the analysis and the conclusions drawn from it. The difficulty in engaging people in the study may suggest that there is limited digital literacy among the population with type 2 diabetes (median age of users is 67 years).
- **Management time**: the goal is that the time initially spent by health care workers managing patients via telemedicine will be offset by future benefits and time savings, making the use of telemedicine a net benefit to health care workers.
- **Technological reliability**: an even more reliable system needs to be developed to ensure consistent use of digital tools.

Other action areas

In addition to APSS, the TELEMECHRON project involved **two *partners*** in different action areas:

- **Tuscany Region:** focus on home management of patients with chronic kidney disease. The pilot demonstrated that the telemonitoring system improved the quality of care and reduced the frequency of nephrology follow-up visits.
- **Lombardy Region**: an innovative model (using the Trentino App TreC Cardio) for home management of patients with chronic diseases and comorbidities was implemented in the pilot, with a decisive role of the nurse case manager. Results showed a significant improvement in patients' exercise capacity, as measured by the walking test (6MWT), with an average increase of 20 meters walked after 6 months of remote care. In addition, the technology used received a positive usability rating, with 40.5 percent of patients rating it between good and excellent.

233 is the total number of patients enrolled by the three TELEMECHRON *partners* (Azienda USL Toscana Nord Ovest: 8 patients – Istituti Clinici Scientifici Maugeri IRCCS: 122 patients – Azienda Provinciale per i Servizi Sanitari della Provincia Autonoma di Trento: 103 patients).

Future prospects

Telemedicine is not suitable for all medical branches, but it can play a key role in healthcare today and even more so tomorrow. This is what emerged during the project's **closing event** held on Sept. 26 at the Istituto Superiore di Sanità in Rome, which was also attended by **Diego Conforti** (PAT Office of Innovation and Research Director – Department of Health and Social Policies) with a talk at the panel discussion "Telemedicine and healthcare: designing the future of chronicity management in local communities through innovative models and strategies."

The successful outcome of the national "TELEMECHRON" study paves the way for new opportunities for large-scale adoption of telemedicine solutions. APSS and project partners, including **Fondazione Bruno Kessler,** will keep working on integrating these technologies into standard care pathways, with the goal of further improving the quality of care and sustainability of the health care system. Challenges that have emerged will also be addressed, with actions aimed at improving digital literacy, optimizing management time, and ensuring technological reliability.

"Type 2 diabetes," explained Sandro Inchiostro, director of the APSS diabetes care program and head of the Trentino study, "is a condition that is constantly increasing and creates a major problem at both the public health and society levels. *It is a condition that requires continuous intervention from a health care perspective, very close follow-ups, implementation of care protocols that are increasingly complex, and close patient involvement. This makes this type of condition a potential situation in which the interaction between healthcare professionals and patients can be facilitated by telemedicine tools, as we can reduce the complexity of care, improve outcomes, reduce the time needed for management, and still have our patients be more satisfied and feel more cared for than in a traditional approach to diabetes care."*

The PAT APSS working group is composed of:

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PAT press release

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