TeleGraft

The revolutionary artificial blood vessel enabling chronic kidney disease patients to receive dialysis at home and bypass surgery

Telemonitoring of home dialysis utilizing a smart biomimetic arteriovenous graft

Need for healthcare treatment

With 10% of the worldwide population affected by chronic kidney disease and millions of deaths each year due to lack of access to healthcare treatment, there is a dire need for innovative and accessible devices which will help patients safely receive dialysis from home.

Currently available “haemodialysis” treatment is purposed for kidney failure where the blood is purified using an external machine known as an artificial kidney. It may require surgically placed arteriovenous grafts to access the blood system. However, up to 70% of present arteriovenous grafts fail in the first year after implantation, primarily due to thrombosis, luminal scar formation, and infection.

The EU-funded TeleGraft project proposes to develop a smart arteriovenous graft that by biomimicry and drug eluting properties minimizes the risk of thrombosis and infection, allows blood flow monitoring and detection of inflammation and infection for early detection of such impending complications.

At a glance

Programme: Horizon Europe

Type of action: Innovation Action

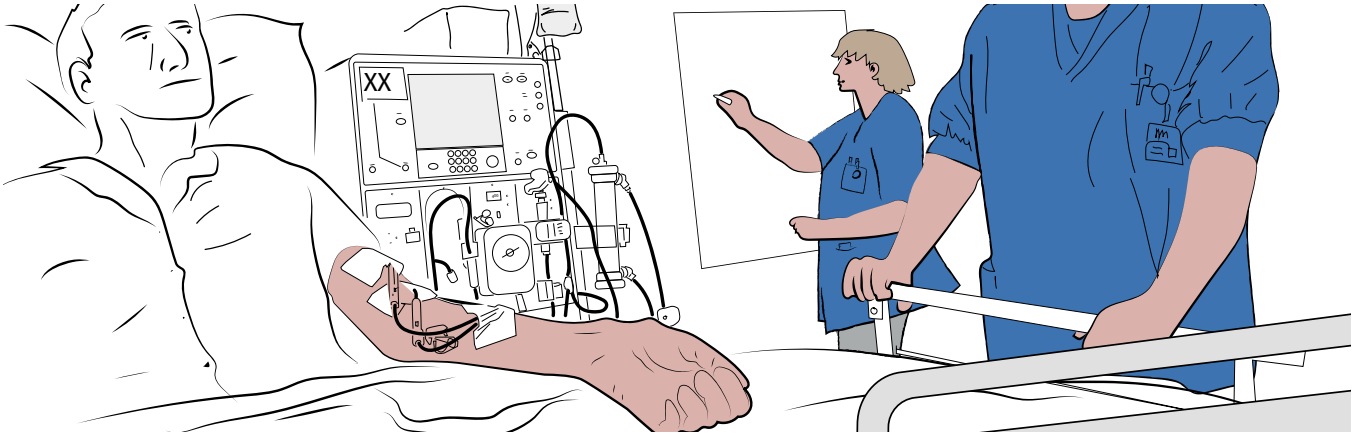
Total budget: 5.298.235,75 €

Total grant: 4.352.522,00 €

Duration: September 2022 – February 2027 (54 months)

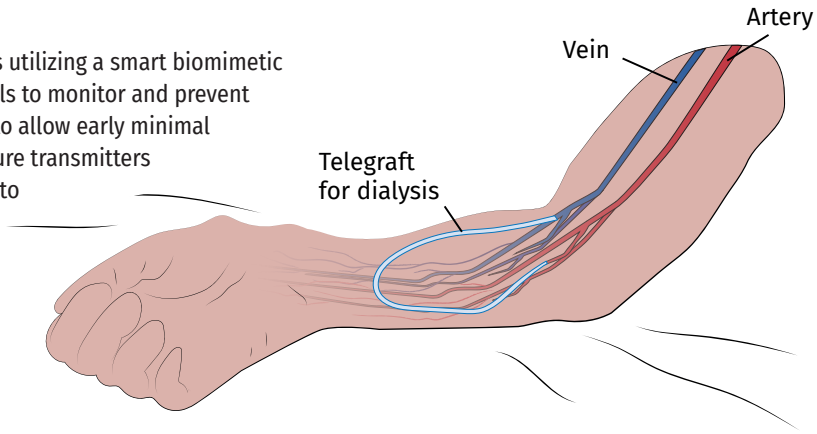
Consortium: 11 partners from 7 European countries

Coordinator: University of Southern Denmark (SDU), Denmark



TeleGraft

TeleGraft stands for telemonitoring of home dialysis utilizing a smart biomimetic arteriovenous graft. It comprises two diagnostic tools to monitor and prevent device failures, serving as a telemonitoring system to allow early minimal invasive prevention of serious complications. Pressure transmitters are used to monitor blood flow and optical sensors to detect inflammation and infections. The data are processed by AI machine learning models and displayed in an easy-to-understand dashboard for healthcare professionals. The innovation offers a promising solution for patients who do not have direct access to haemodialysis infrastructures.



Smooth, sustainable, and smart substitution

In low- and middle-income countries, TeleGraft substitutes complicated and expensive kidney transplantation and allows simpler and cheaper implantation of arteriovenous grafts for haemodialysis.

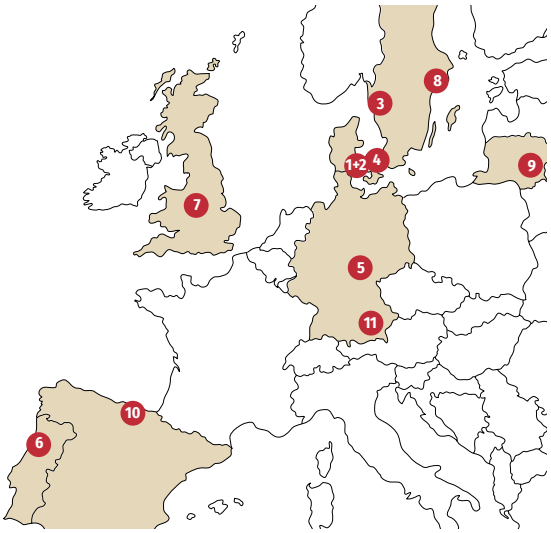
In the longer term, TeleGraft used for dialysis:

- Improves performance of grafts for dialysis;
- Enables patients to receive dialysis at home;
- Becomes a sustainable and affordable solution for smart active implants;
- Allows for remote monitoring of complications and real-time online detection of potential device failures;
- Allows transferal to bypass surgery.

Consortium

The TeleGraft project brings together researchers and practitioners from eleven partner institutions from Denmark, Sweden, Great Britain, Lithuania, Germany, Spain, and Portugal

1. University of Southern Denmark (SDU)
2. Odense University Hospital (OUH)
3. VERIGRAFT, Sweden (VERI)
4. Biomodics (BM)
5. Leibniz-Institut für Photonische Technologien (IPHT)
6. BMD Software LDA (BMD)
7. University of Birmingham (UoB)
8. Region Stockholm (KUH)
9. Viešoji įstaiga Vilniaus universiteto ligoninė Santaros klinikos (VULSK)
10. Servicio Vasco de Salud Osakidetza (OSA)
11. Klinikum rechts der Isar der Technischen Universität München (TUM-MED)



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This project has received funding from the European Union's 9th Framework Programme Horizon Europe, under grant agreement No. 101057673. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Health and Digital Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.