

# ESOT Hackathon 2021 Winner: NewLife

This year, the first edition of the ESOT Hackathon took place online through an open innovation programme that spanned a period of 4 months from June to October 2021. The objective of the Hackathon was to help identify and develop tools to serve the transplant patient community, such as ideas, scenarios, apps or interfaces.

After a competitive pitch process where teams presented their ideas and concepts to an ESOT jury, and were coached by innovation experts, the ESOT Hackathon 2021 prize was awarded to the NewLife project. Here, we speak with the NewLife team to find out more about their project and what it means to win the Hackathon.

*The NewLife team is: Vincent Karam, Justyna Gołębiewska, Eric Buleux-Osmann, Christophe Duvoux, Wojtek Polak, and Giancarlo La Pietra (as the coach).*

## What was the motivation and purpose behind the NewLife project?

Technological tools, such as web-based social networks, telemedicine, apps, or wearable devices, are becoming more widespread in healthcare and have the potential to improve it, not only by increasing efficiency but by reducing cost as well. These tools can offer an easy and quick way to facilitate exchange within a network specifically dedicated to transplant patients.

There is a range of questions that transplant candidates and recipients may have about their different needs and quality of life at different stages of their health. Apart from scheduled medical/nurses' consultations, the patients have no other alternative to raise their concerns and questions with the medical team or share their experiences with other patients. To try to remedy this, a health app that is available 24/7 is desirable to answer transplant candidates' and recipients' concerns and needs by providing, not only convenient but also very innovative solutions.

Exchanges between transplant patients already exist via patient associations, but they remain limited to a small proportion of patients who usually exchange during rare meetings and are often limited to conversations within each single country. These exchanges can also exist via classic generalist social networks such as Facebook or Twitter. Unfortunately, the often-important information from these exchanges, which can have an impact on the care process and the quality of life of patients, do not benefit the rest of the transplant community, nor the medical teams.

Because the severity of the condition "seen" by the clinician does not always correspond to the patient's experience, the evaluation of the patient's health status should not be the sole responsibility of the clinicians but should also be expressed by the patients themselves. The journey of these patients can be fraught with emotional and physical obstacles and pitfalls.

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### Headquarters

ESOT Office  
Riviera dei Mugnai 8/24 – 35137 Padova (IT) - E: [askme@esot.org](mailto:askme@esot.org) - W: <https://esot.org/> - T: +393482786092

With such an app, transplant candidates and recipients will have a voice and will be involved in the development of measuring instruments.

As smartphone apps allow for constant availability, they are an obvious solution for interventions that aim to strengthen adherence and may help to empower patients. Adherence to treatment protocols such as regular medication, regular measurement of vital signs, and documentation of this information is an important part of pre- and post-transplant care and is fundamental to the long-term success of organ transplantation.

To better assess the need of a transplant-specific app, we conducted two parallel surveys, one among liver transplant patients in France, and the second among liver transplant centres in Europe. Our surveys revealed that 89% of European liver transplant centres were not equipping their patients with an app developed specifically for them and 98% of French liver transplant patients are not using a health app connected to their transplant centre. Finally, 66% of transplant patients think that a health app could have an impact on the medical care and/or health of transplant patients.

Based on this, we concluded that there is clearly an unmet need for these patients that we decided to address by developing a multifunctional app called NewLife.

NewLife will be developed not only with patients but also with centres by following the design thinking methodology. NewLife will be a web app that connects patients to each other and with medical teams in transplant centres. It aims to strengthen adherence and may help to empower transplant candidates and recipients.

## What the app will provide?

NewLife will offer a personalised and interactive platform that is powered by artificial intelligence (AI) and connected to wearable devices. NewLife can be considered as a virtual coach and will include the following eight services.

**Transplant community network:** NewLife will offer a space for transplant patients, patients on the waiting list, and health professionals to exchange information and chat. The capture of unstructured data, in agreement with GDPR will allow to better approach patients' needs and to improve interactions with healthcare professionals.

**Chatbot (virtual assistant):** NewLife will include a chatbot based on AI. This bot will interact with patients who visit NewLife, helping them find specialists, make appointments, and get answers to some practical questions. With this chatbot, patients will be able to talk with a text or voice interface and get an answer through AI online 24/7. NewLife's chatbot will answer general and in-depth questions with only answers that have been pre-validated by healthcare professionals. It will help patients by telling them exactly what they are looking for by asking them serial questions.

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**Surveys & clinical studies:** When registering with NewLife, patients committed to improving the therapeutic management of all transplant patients will be able to choose to be part of a panel to contribute to opinion polls, with the sole objective of improving the quality of their clinical management and their quality of life. With this respect, the app will be considered as a basis to develop specific patient-reported outcomes measures (PROMS) and patient-reported experience measures (PREMS) dedicated to transplant candidates and recipients.

**Gamification:** Gamification is one of the major current trends in healthcare. This is due to increasing technological advancements, active lifestyles, growing digitisation, and an increased focus on health and wellness. NewLife's gamification will increase the potential to collect relevant data on transplant patients or those waiting for a transplant. It will motivate users to provide more feedback, which will help transplant professionals find new trends. It will also help wellness companies, pharmaceutical industries, and health authorities to produce products or develop services that meet the needs of transplant patients. To reward regular users to motivate them and retain them, NewLife will look for partners to seek discounts or vouchers to support transplant candidates and recipients.

**Appointment & medication wizard:** NewLife will include a personalized agenda to remind medical appointments and follow-up laboratory visits. NewLife will also include a medication management wizard that reminds you of important things to do and how to do them, such as when to take medication, what combinations of medication should be avoided and reminders not to take medication before a blood test.

**Therapeutic education:** NewLife will be enriched by interventions of specialists and testimonies of expert patients (moderated by healthcare professionals). These actions will constitute practical and useful popularisation content updating the latest developments in the specialty. The administrators will update illustrated brochures or tutorial videos intended to inform and clarify questions related to the transplant patient's journey.

**Clinical follow-up:** An ergonomic electronic notebook will allow patients to transcribe the follow-up of certain parameters of their laboratory check-up and certain clinical data, such as their weight, blood pressure, and treatment. For patients who cannot enter data, they will be able to simply take a picture of their last lab workup via NewLife.

**Wearable devices and internet of things (IoT):** NewLife will have the possibility to collect data generated by their IoT from equipped patients. The data can be transferred by Bluetooth technology.

## How will it work?

A patient app is only valuable when a certain critical mass is reached. This is the key issue to NewLife's success. Most transplant recipients need to join NewLife to communicate and share. Membership will have to come from different types of transplanted organ communities and from different countries in Europe to benefit from the added value of the network.

To reach the final critical mass, it is better for NewLife to be well deployed on a small and coherent portion of its target than to be diffused on the whole target. The basis of our strategy is the joint experience we have developed through 25 years of coordination of the European Liver Transplant Registry ([www.eltr.org](http://www.eltr.org)) and our partnership with patient organisations.

## **How would you integrate the subjective patient data collected by the app with the objective data?**

The power of today's computers and almost limitless storage capabilities with the cloud enable us to compile large volumes of data, not just medical (objective) but also behavioural (subjective) data. NewLife will collect structured, semi-structured, and unstructured data. To make sense of all this information, called Big Data, it is necessary to add the good engines of the calculations (algorithms), the combination of both objective and subjective data making it possible to draw up medical profiles, or even to anticipate certain complications or affections. Beyond predictable medicine, artificial intelligence is finding more and more places in the field of health. NewLife will collect valuable additional patients' experience to be integrated into the AI-based diagnosis and predictive clinical toolbox for time-relevant organ transplantation and prediction of post-transplant outcome and quality of life status.

Massive data processing in a Big Data approach should foster the development of personalised medicine for the transplant patient, which should be much better in terms of more appropriate treatments and in terms of reduced resource consumption through targeted treatment. The use of the healthcare system will thus be more personalised and less likely to be unnecessarily over consumed.

## **You mention that the app will provide patients with the tools to manage their transplant journey – what are these tools and how will they help patients?**

NewLife will include a multitude of features, some of which already exist but others that are innovative. Unfortunately, a number of these features are not designed specifically for the organ transplant community, either patients or centres. Therefore, NewLife will address this unmet need.

## **Did you encounter any challenges when creating the New Life project? Are there any limitations?**

As this is a concept at this stage, we have not yet been able to assess the limitations in practice. However, we know that the success of a project like NewLife will depend on several factors, including the budget, technical partner(s), project management, regulatory support and dissemination strategy. The NewLife team is aware that limitations can occur at each of

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these levels and its first challenge will be to make a careful selection of partners to reduce the incidence and impact of limitations.

Despite all the fascinating features of NewLife, the commitment of patients, nurses and transplant professionals remains the key to the successful implementation of NewLife. Having the ESOT community at our side is also a considerable advantage.

### **What does it mean for the New Life project to win the Hackathon? What are the next steps for the project?**

Among all the other quality candidates, our project managed to convince a jury of eminent decision-makers from various backgrounds, who awarded it first prize in the final pitch. This recognition confirms the potential of the NewLife concept and encourages our team to go all the way to make it a reality. We hope that this recognition will help us to find sponsors and partners to support NewLife.

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