CASE STUDY

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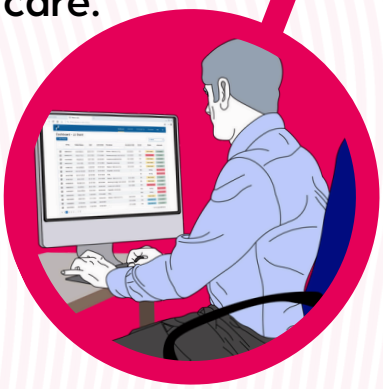
HealthiumPro



Partnership Story

Enhancing patient safety in MedTech

Professor Petre Cristian Ilie, Consultant Urological and Robotic Surgeon has partnered with Camgenium to create innovative websites and apps to enhance safety & improve patient care.

Overview

Harnessing technology to improve healthcare is a vision shared by Camgenium and one of its partners Professor Petre Cristian Ilie (Dr Ilie), Consultant Urological and Robotic Surgeon at Queen Elizabeth Hospital Kings Lynn, James Paget and Norfolk & Norwich University Hospitals.

Since 2017, Cambridge-based software engineering company Camgenium has partnered with Dr Ilie to develop innovative software platforms and apps to enhance patient safety and improve efficiencies within patient care.

Dr Ilie and Camgenium's partnership story first began during the Covid pandemic when Derma-Checkup, a dedicated platform for virtual dermatology clinics was designed, developed, and offered free of charge to an NHS trust to support remote patient care. The partnership between Dr Ilie and Camgenium has since evolved to include a clinical trial monitoring system called PuraStat, as well as HealthiumPro a fully functioning cloud-based web and app solution for improving patient care before and after surgery. The HealthiumPro platform is patient-centred and provides digital surveillance and monitoring of patients during and after prostate cancer treatment.

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Project background

The HealthiumPro system was first conceived by Dr Ilie when he recognised an urgent need for logging ureteric stents in patients' post-surgery. The Health Safety Investigations Branch (HSIB), findings revealed that there is no national stent register used across the NHS, and hospitals use various systems to track and log stent insertion. Paper-based stent logging is effective, but a combination of human oversight and effective systems is crucial if delayed removal is to be prevented. Delayed stent removal can result in potentially catastrophic outcomes for the patient.

Following the successful development and deployment of DermaCheckup, Dr Ilie approached Camgenium once again to partner with him to create an innovative software solution to address the unmet need of logging stent insertions and removals. The HealthiumPro platform provides a centralised stent database and the system streamlines the tracking and logging of stent insertions and removals. Enhancing patient safety and improving the management of ureteric stents, the Stent Register is an innovative solution that addresses the challenges highlighted by the HSIB.

The HealthiumPro system quickly evolved to address other issues in the care of prostate cancer patients, both before and after surgery. A patient app was added that enabled consent forms to be signed remotely and pre-surgery information to be provided to the patient.

Urologists must inform patients of the alternative treatment options which can mean a lengthy and overwhelming appointment for the patient.

Dr Ilie recognised treatment information could be shared directly with the patient by leveraging technology. Sharing treatment information through a patient app enables clinicians to deliver critical information directly to the patient whilst also reducing clinical time in the hospital. Dr Ilie required a flexible, modular software solution that could evolve with the clinical needs of the patient and the clinicians working in the hospital. The solution also needed to be hosted on HSCN, the NHS private network.

Dr Ilie stated, "I have partnered with the experts at Camgenium for eight years and together we are developing pioneering health tech to firstly improve patient safety and outcomes, and also to improve efficiencies in the hospital."

Dr Ilie continues, "I recognised the need for a flexible and user-friendly software platform to give healthcare professionals such as myself a simple way to track stent insertions and also to provide pre- and post-surgery information to the patient.

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Having access to a robust platform with reporting and analytics capabilities provides valuable insights, supporting data-driven decision-making and ultimately improving patient outcomes".

The solution

Dr Ilie and Camgenium together developed the cloud-based HealthiumPro system and accompanying patient app to address the clinical need for better pre- and post-surgery patient care. The HealthiumPro system was built on Camgenium's flexible Xenplate platform. Camgenium's Xenplate platform uses a modular, no-code software solution with built in design tools. The platform has prebuilt regulatory compliant modules and uses drag and drop design methods minimising the need for bespoke coding. It could also be hosted on HSCN (NHS private network) which was vital. Camgenium has regulatory approval to be able to host on HSCN.

The Camgenium platform was the ideal solution for Dr Ilie because it enabled him to create the HealthiumPro system in compliance with ISO 13485 (regulatory standard for medical devices) and it could evolve with clinical requirements. The Camgenium platform is incredibly user-friendly allowing Dr Ilie to build many of the forms himself. The accompanying app was developed and created with particular focus on the UI & UX development of the app, enabling a simple and intuitive interface for the patient.

The HealthiumPro system was built with the patients journey in mind. Dr Ilie explains, "When designing the app, we thought of the processes we follow in surgery, rather than an IT persons perspective on how the app should be developed.

By doing this I think we followed the patient's journey and have created a more user-friendly and usable solution for both clinician and patient. Since using the HealthiumPro system, the tracking and logging of stent insertions and removals has become streamlined. This has relieved our healthcare professionals of administrative burden, enabling them to focus more on direct patient care. It has also ensured patient safety."

Patient led technology

The first stage in the patient's journey through the prostate cancer pathway is an initial face-to-face appointment in clinic. This appointment follows the referral by the GP due to raised PSA blood results in the patient and the GPs suspicion of prostate cancer. At this stage, the patient is registered on the HealthiumPro system and is provided with the patient app that allows them to access patient information at home, in their own time. Through the app, the patient has access to a personalised portal. This includes surgery information

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and physical exercises recommended for the patient pre-surgery.

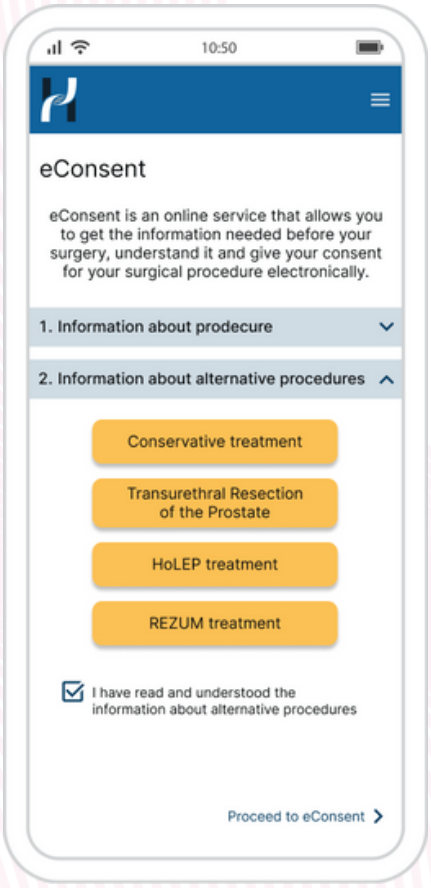
The app also includes an eConsent section which allows the patient to review the information and provide informed consent for their surgery via the app. eConsent can save time for the patient and significantly reduces clinical workload at the hospital. The patient app also includes specific details for their upcoming procedure, which the patient can review and refer back to at any time. The app also gives patients a way to send a direct message to their doctor and ask questions or provide additional information.

Pre-surgery exercises are included in the app because there is data to suggest that patients who complete exercise pre-surgery improve their post-surgery outcomes. These physical exercises have been validated through research on patients undertaking complex surgery. Patients update the app once they have completed the exercises, and this information is transferred in real time to the clinical system.

Website & app development

It was also identified that there is a lack of patient support post-surgery. The HealthiumPro app addresses this through patient-initiated follow-ups. The patient can send direct messages to the clinician in charge of their care.

Additionally, remote monitoring functionality allows healthcare professionals to discharge patients earlier. The app records blood pressure and temperature, the parameters that would typically be monitored in a hospital environment.



eConsent screenshot from HealthiumPro app.

This information is reviewed by clinicians who will act accordingly if patient results indicate a problem. Allowing patients to digitally monitor themselves remotely has the potential to transform patient care post-surgery, as the patient is able to go home sooner, and the hospital frees up bed space.

The clinical section of the HealthiumPro system has been designed to help automate writing surgical notes. The system has prepopulated steps that are completed during surgery, allowing the clinician to add variables that change from patient to patient. By creating surgery notes in this way, it is easier to correlate surgical data with patient-reported outcomes.

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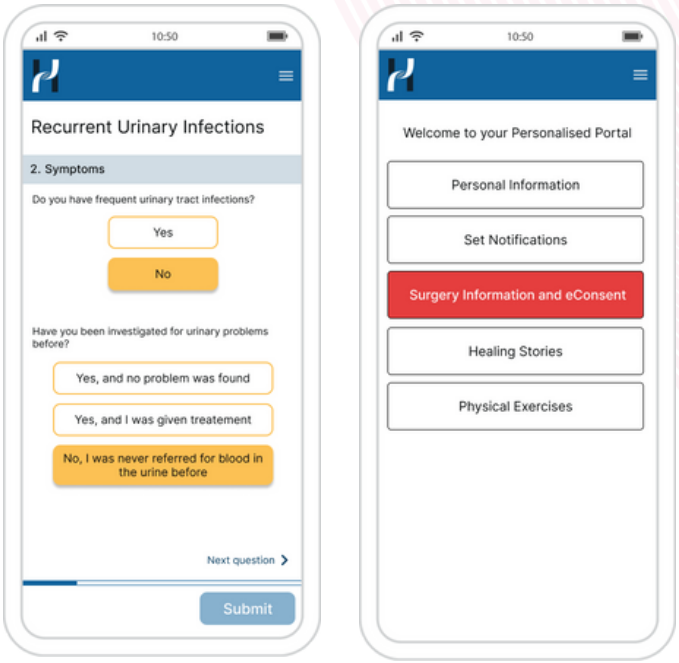

Screenshots from the HealthiumPro app.

Dr Ilie states, "I think this is very important because in science we use research that is backdated, we look at what happened in the previous ten years, but we don't use live data. If we used live data, I think we could improve results much faster." Dr Ilie continues," For example, if I do a bladder repair on a patient and I want to compare the outcomes with those patients that didn't, by asking patients to complete post-surgery data on the app, I have the outcomes in an easy-to-process digital format. The reality is that currently, we don't have the data to draw a conclusion, but we could if the HealthiumPro system were being used more widely. Enabling clinical research to be facilitated by this digital platform".

In summary

This transformative cloud-based system and app has so far improved patient care at the hospitals in which it has been deployed, thus, setting the stage for nationwide implementation in further healthcare settings. This solution that was first born out of the critical need to enhance patient safety and improve the management of ureteric stents has evolved to be so much more effective in managing pre- and post-surgery outcomes for patients. Dr Ilie explains, "Since the implementation of the Stent Register at our hospital (QEHKL), we've seen a profound change in the safety mechanisms for patients requiring stents. The system's automation has significantly reduced the need for time-consuming manual registers and monitoring. Our patients are experiencing improved outcomes because of it".

Camgenium's CEO Dr Philip Gaffney OBE expresses, "Camgenium is honoured to have been able to enable the HealthiumPro system through its development, deployment and hosting. Our engineering experts work extremely closely with Dr Ilie to fully understand both the needs of patients and clinicians in the hospital. We look forward to continuing our partnership and the development of the HealthiumPro system in the future, ensuring patient outcomes are improved and healthcare professionals can focus more of their critical time with patients rather than on administrative tasks".