

mpro5 developed Europe's first bar code safety system for blood disorder sufferers in the form of a Smartphone App for the NCHCD. Dublin

The National Centre for Hereditary Coagulation Disorders (NCHCD), based in St James' Hospital Dublin, is world renowned for its treatment of haemophilia (a group of genetic disorders that impairs the body's blood clotting abilities). The Centre was established in 2001 in response to the 1980's medical catastrophe when significant fatalities were caused as a result of blood products becoming contaminated with HIV and Hepatitis C. Not only had the blood products become contaminated, but the infected stock was impossible to track and trace. Even after a recall was initiated, patients continued to become infected.

A proportion of haemophiliac patients suffer from the severe form of the disease which requires them to self-medicate in their own homes with Clotting Factor Concentrates (the medication used to treat haemophilia). NCHCD therefore wanted to implement a track and trace system for the medication which would ensure that the highest level of care and safety was being reached by each of these patients.

In response to NCHCD's objectives and specifications, Crimson Tide have developed Europe's first bar code safety system for blood disorder sufferers in the form of a Smartphone App available across multiple platforms. The App ensures that every step of patient self-medication is heavily scrutinised; from the automatic capture of the name, lot number and expiry date of the medication, through to the alerting of healthcare professionals of the results and of any unexpected bleeds.

The Challenge

Dr Barry White, Director of NCHCD, was fully aware that the process of patients self-administering medications at home, without supervision, was fraught with multiple risks. Risks include knowing whether the medication matches the patient's prescription, whether the prescription is in date and if the medication batch is on a recall list. He also wanted to implement a system which would remove the necessity of patients completing numerous paper forms upon administration, since manual data entry often leads to errors, poor compliance, lost paperwork and retrospective alerting of healthcare professionals.

NCHCD approached Crimson Tide about developing a bespoke solution that would address all of these issues. The solution needed to be patient focused, easy to use and capable of being deployed on a smartphone. The security surrounding the transmission and storage of the captured data was also a very high priority. They had confidence that Crimson Tide could achieve all of these specifications since the company's ethos revolves around developing custom-made software solutions that meet the individual requirements of each organisation.

The innovative solution

Crimson Tide devised a solution that enables the patients, self-administering at home, to check whether they are administering the correct prescription, that the medication is in date, and that they are administering to the correct area of the body. Once captured, all of this information is wirelessly and automatically synchronised back to the main server, hosted by Microsoft Azure, where it is made accessible for healthcare professionals in real-time. If any patient records a clinically significant bleed, the clinician is alerted immediately via e-mail or text.

CASE STUDY

NCHCD



Furthermore, the mpro App checks to see whether the prescription is on a recall list and patients are also given access to a secure web portal where they can view and print their own treatment history. Working closely with NCHCD, Crimson Tide integrated a mobilised patient satisfaction form into the application in a further development, enabling the hospitals to gather crucial information about the wellbeing of the patients on an ad hoc basis.

The solution is accessible cross-platform, including iOS and Android devices, and can be used on smartphone, pad or even Windows 8 touchscreen devices. Every patient is offered a compatible device for the software as part of the solution. In addition, Crimson Tide developed a website and database for NCHCD, hosted by Microsoft Azure to where all patient data is synchronised and stored.

How it Works

A globally unique ID, in barcode format, is assigned to every patient, as is each unit of medication [GTIN] and each location [GLN] in the supply chain, using the industry standard GS1 track-and-trace bar code system. The smartphone App, developed by Crimson Tide, enables this traceability to extend to the point of patient administration. Integrated in the App is a barcode scanner which allows the patient to capture and verify the unique ID of the product (GTIN, batch/lot number, expiry date and serial number). This ensures that the medication is safe for use before self-treatment is carried out.

All of this information is wirelessly synchronised back to the main server where it is stored and made readily accessible for healthcare professionals via a web portal. Since mpro applications are also fully offline capable, in the event of poor or no mobile signal coverage, all data is saved securely in an encrypted format on the patient's device until coverage is restored, where data is then pushed out to the main server.

“The concept of traceability to medication administration within the patient home is considered the Holy Grail among healthcare providers, regulators and drug manufacturers, and provides the final piece of the supply chain jigsaw. Working with Crimson Tide has allowed us to achieve exactly this, and its success can be measured by the global interest in this project from both healthcare providers as well as the Pharma and supply chain industries” – said Feargal Mc Groarty, NCHCD Project Manager.

The Results

Before NCHCD implemented the mpro solution, patients had to laboriously complete paper forms with details of medication names, batch numbers and the dates of administrations, which they then posted back to the hospital; these tasks being time consuming, retrospective and highly prone to human error.

Since all data from a patient’s Smartphone is synchronised wirelessly and automatically back to the main server with a real-time date and time stamp, the transfer of patient information is instantaneous, thus alleviating the need for paperwork and significantly reducing the organisation’s administration, paper and post charges. Healthcare professionals are also able to react immediately to any abnormal bleeds thereby increasing the level of care being received by their patients.

Even more importantly perhaps, patients have given a highly positive response to the new service, reporting 100% satisfaction with the convenience and 99% satisfaction with the privacy and confidentiality of the mpro system. They found the Smartphones simple and easy to master and in particular, found the recall element of the application very useful.

Aside from being able to provide their patients with the level of care and safety that NCHCD sought, the organisation was also very impressed by how quickly the whole system took to set up, as well as the fact that no internal infrastructure was required.

Client Satisfaction

Speaking about the mpro patient care solution after its implementation, Feargal Mc Groarty has said, "Crimson Tide developed the solution in conjunction with NCHCD and a patient focus group. We realised that we were embarking on an innovative and ground breaking journey which is a risk, but we took comfort in the fact that Crimson Tide has treated this as a partnership and has shared the risks all the way. We truly believe that this project is a world first and there are so many additional uses for this, both within haemophilia, but also for any chronic disease group that is required to self-medicate in the home."