MediCuris

the reversed app with the doctor in charge

1 Highlights

1. Maximize privacy and security by removing the need for supplying patient credentials.
2. Passive monitoring is less expensive than live monitoring.
3. Putting the doctor in charge ensures that the doctor will not be overwhelmed with redundant data.
4. Low upfront costs, deployed one doctor at a time with no need complete corporate installation.

2 The problem

Health insurance companies and hospitals are under pressure to reduce cost. At the same time, they are also being asked to improve the quality of care by increasing access to doctors and nurses. Unfortunately, any increase in access to doctors and nurses results in an increase in costs. While technology can help, there are challenges to acceptance of technology by both doctors and patients.

1. Patients may not be tech savvy at all, may not even be able to create an AppStore account to download an app.
2. Doctors and healthcare professionals are weary of the data-deluge that technology can create.
3. Corporate IT models are expensive and not natural to hospitals and doctor's practices. Standardized big-data practices are very good for industrial production systems, like a car manufacturer. Doctors are individual and think of corporate style IT as an imposition on their practice.
4. Security and privacy are paramount in any doctor-patient communication and any system that can be hacked is not acceptable.
5. Large upfront costs are not acceptable for hospitals already strained by increasing demands on their limited resources.

3 The solution

Our novel approach represents an elegant technological solution that addresses these well-known concerns, at a minimal cost, guarantees privacy and security in a novel manner, improves monitoring and gets the doctors on board by putting them in charge.

The use cases we consider are quite typical. For example, extended monitoring and polling, e.g. after a surgery, can help a doctor assure that his patient is not developing any complications. Another example is to rule out an alternate prognosis by letting the doctor be more confident in his decision-making via passive observations after a visit. Such follow-up care and monitoring can be expensive if they necessitate hospital visits. At the same time, it is safe to assume that most patients already have smartphones and are quite comfortable using them. If we can utilize the ubiquitous smartphone and increase monitoring without increasing hospital visits, we can achieve substantial improvements by utilizing the time of the doctor more efficiently.

Finally, the entire system is initiated by the doctor if and only if he/she thinks it is advantageous. And it can be terminated by the doctor at any time too.

Our cloud based system also assures the benefits of electronic data storage and integration with other systems, including research and development, that we now take for granted.

4 How it works

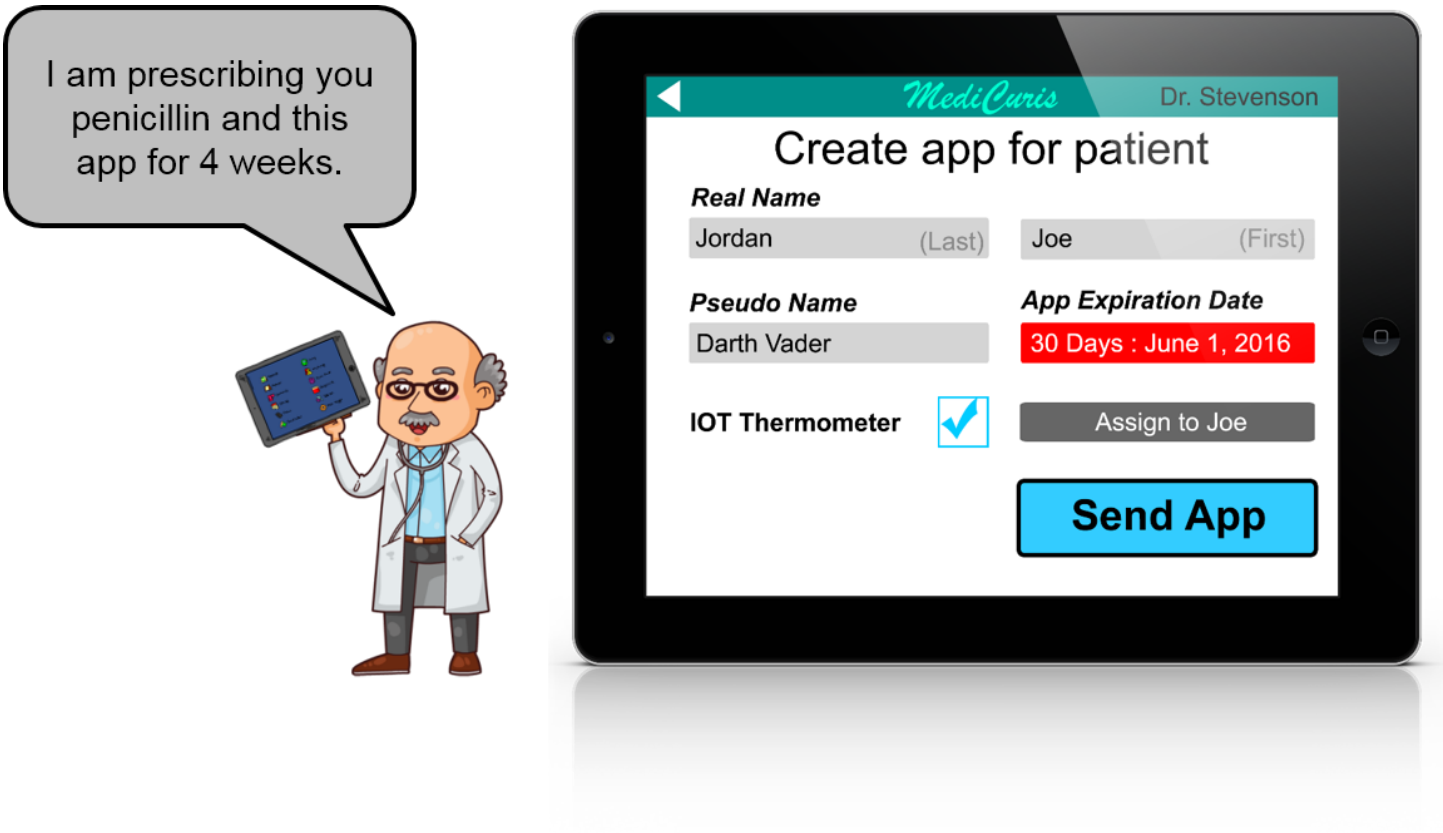

Figure 1 A customized mobile app, sent by the doctor to the patient, when he deems it appropriate.

When a doctor or nurse determines that a patient need more direct access or monitoring, a custom web-app is created, by the doctor specifically for that patient. This app is not only encrypted, but does not even require any login. The identity of the patient is completely absent in the app, thereby guaranteeing ultimate privacy. The doctor 'sends' this app to the patient via text or email. For the patient there is no further action required, no login to remember, and there is no trace in some app store of ever having downloaded app. The app can contain questionnaires, the ability to chat, upload pictures or even chat as decided by the doctor. New questionnaires can be added after deployment. Like any prescription, the app can have a time-limit, after which it will be deactivated.

As the patient uses the app and uploads information or answers questions, the doctor can see them at his own time, via the iPad app where the true identity of the patient is decrypted and made available. By avoiding real-time communication, the doctor or nurse is allowed to better utilize his time instead of live communications which are more demanding of his time.

Finally, utilizing IOT, the doctor can add thermometers or other devices, provisioned over the air, to the app so that the results are made available to him.

The MediCuris system requires no significant hardware installation or large upfront financial investment by the hospital or the doctor. It can also be deployed one doctor or nurse at a time. Meanwhile, the data that is collected, is in electronic form on cloud-based services and therefore can be used for all sorts of larger monitoring and analysis or the development of expert systems. In effect, the MediCuris system can offer, eventually, all the benefits of largescale enterprise-wide systems without requiring an upfront commitment and allowing a hospital or an individual practitioner to start small.

5 References

"21% won't prescribe apps because it would generate an overwhelming amount of patient data"
Source: https://www.prlog.org/12286663-quantiamd-poll-finds-physicians-are-split-on-use-of-medical-apps-and-42-believe-more-regulation.html

For one, doctors are busier than ever; the Health Resources and Services Administration reports a shortfall of 8,200 primary-care physicians.