What‘s a Flap without an App?

Caitlin O‘Hare[1], Cory Williams[2], King Law[2], Shiv Chopra[1], Milap Rughani[1]

1. *Department of Plastic and Reconstructive Surgery, Royal Brisbane and Women‘s Hospital, Brisbane Queensland.*
2. *Surgical and Perioperative Services, Royal Brisbane and Women‘s Hospital, Brisbane Queensland.*

Purpose

Free flap reconstruction is accepted as gold standard in head and neck reconstruction[1]. These patients and their outcomes are usually monitored through an auditing process within the hospital‘s relevant units. Clinical audit is fundamental in healthcare systems to monitor patient outcomes, efficacy of intervention and evaluation of key performance indicators (KPI)[2].

Acquisition of accurate, relevant and real time data is key in this audit process. Global innovation in smart devices and digital applications have transformed health informatics[3] and have the ability to continue to make a difference, especially in the area of head and neck reconstruction.

However, in many hospitals there is a dichotomy between these global technological advances and collecting data for clinical audit purposes.
We present the development of a digital application (“App”) that collects prospective data for the purposes of clinical audit and improving patient outcomes in head and neck reconstruction. This App aims to make data collection contemporaneous and more easily obtained and therefore analysed.

Methodology

We developed a customised digital application (Microsoft Power Apps, Office 365) compatible with both Android and Apple platforms. The App is integrated within the hospital’s information technology network (Microsoft Sharepoint) and is securely stored. Multiple users may access data on the platform at the same time, and these users may edit data.

Data is collected prospectively from time of operation, which includes patient details, diagnosis, reconstruction and operative details. The patient’s post-operative course can be updated on the App, to include subsequent complications, disease pathology or any further interventions (surgery, adjuvant therapy or mortality). Furthermore, as a patient is followed up over time, further details may be added. All these reviews may be supplemented with photographs, which are easily uploaded to the App.

This data can produce real time audit data and key performance indicators (KPI).

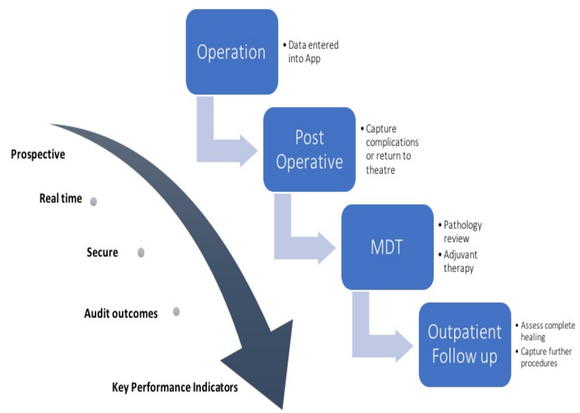

Figure 1: Flow of relevant data which may be uploaded to the App, depicting a patient’s operative course.

Results

We have trialled the application within our hospital setting for the last six months and collected data on 60 free flaps prospectively. There have been a few modifications to the software to improve clinician satisfaction. All modifications have been performed by the on-site information technology team, which allows for interaction between the medical team and software team and these changes are able to be made in real-time.

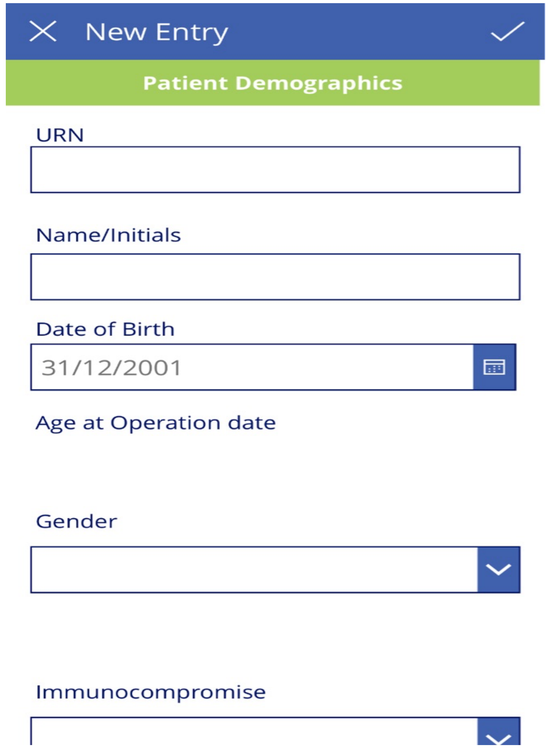

Figure 1: Front end of the App‘s data entry screen.

Conclusion

This App is a novel way to record patient data, specifically for patients undergoing head and neck cancer resection and reconstructions. Auditing of cases, complications, oncological status, recurrence and outcomes is of particular importance, as well as monitoring certain KPIs[2,4]. This App allows for prospective data collection, which is known to reduce bias compared with the traditional means of data collection, i.e. retrospective[5]. This is the first reported App of this kind in the literature.

Take Home Messages

- ✓ Developed an application that is secure
- ✓ Captures key points of patient pathway
- ✓ Integrated into hospital IT system
- ✓ Mobile compatible with multiple users
- ✓ Enables picture uploads
- ✓ Aims to provide outcome measure

Given the ubiquitous use of smartphones in the medical industry, incorporating an App which is is Apple and Android compatible into patient care would be widely accessible[3]. Its use may potentially improve patient outcomes, increase productivity of clinicians and collate information about a patient cohort that may be useful in the future.

Issues such as confidentiality and security are be reduced given the App has been developed using the hospital’s technology network. This same network is used to store the electronic medical records, for telemedicine consults and for secure messaging via staff members.

This technological innovation embraces accurate and relevant data acquisition in order to improve clinical audit and patient related outcomes for head and neck reconstructions. This App may be used in other departments for a similar purpose. We aim to extend this application to enable multiple sites access across Queensland Health Network as our next step.

References

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