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A Mobile Solution Easing Imaging Workflow and Burnout

Summary: Streamlining radiology workflow is critical for reducing burnout and making imaging departments as efficient as possible. A developer of an innovative app focusing on easing daily radiology tasks spoke to HealthManagement.org about the thinking behind the creation and the effect it's having on an imaging department.

At present, the app focuses on improving five core daily tasks: communication, education, networking, workflow efficiency, and patient safety. Do you see any other necessary areas into which the app may expand in the future?

The greatest feature about our app is that it is easily customisable. We are always adding features and are able to customise the app to meet the needs of the target practice or hospital. For instance, a current area we are working on is adding a host of tools in the app to integrate in system downtime protocols such as when the electronic medical record or other critical systems are down. In addition to the built-in features, our app easily integrates with an institution's existing resources and systems to allow the user to access these areas directly in the app. In addition to customisation at the user level, we are also able to add any features requested for a group of users. Our main ethos is to have this solution function as a one-stop-shop for the users' needs and daily responsibilities.

The functionality and ease-of-use central to the app are especially interesting. How did you devise RadAppTM in such a way that no programming experience is required for maintenance?

Being developed on the frontlines by end-users like me and my partner, the app was designed with a robust understanding of how the healthcare system works and how physician groups and medical centres function. We understand the current administrative bureaucracy of healthcare and need for cost-effectiveness. We wanted to be part of the solution and to develop a tool that didn't require additional administration (time and costs). As a result, one of our key design requirements was to have this app self-sufficient and easily maintained by a designated 'super user' once in a while if significant changes occurred, without the need for coding or software experience. Changes can be made very easily to the app software database and can be quickly applied to all users, without requiring coding or programming. We did all the coding and work upfront to simplify both the user interface and the maintenance interface on the backend.

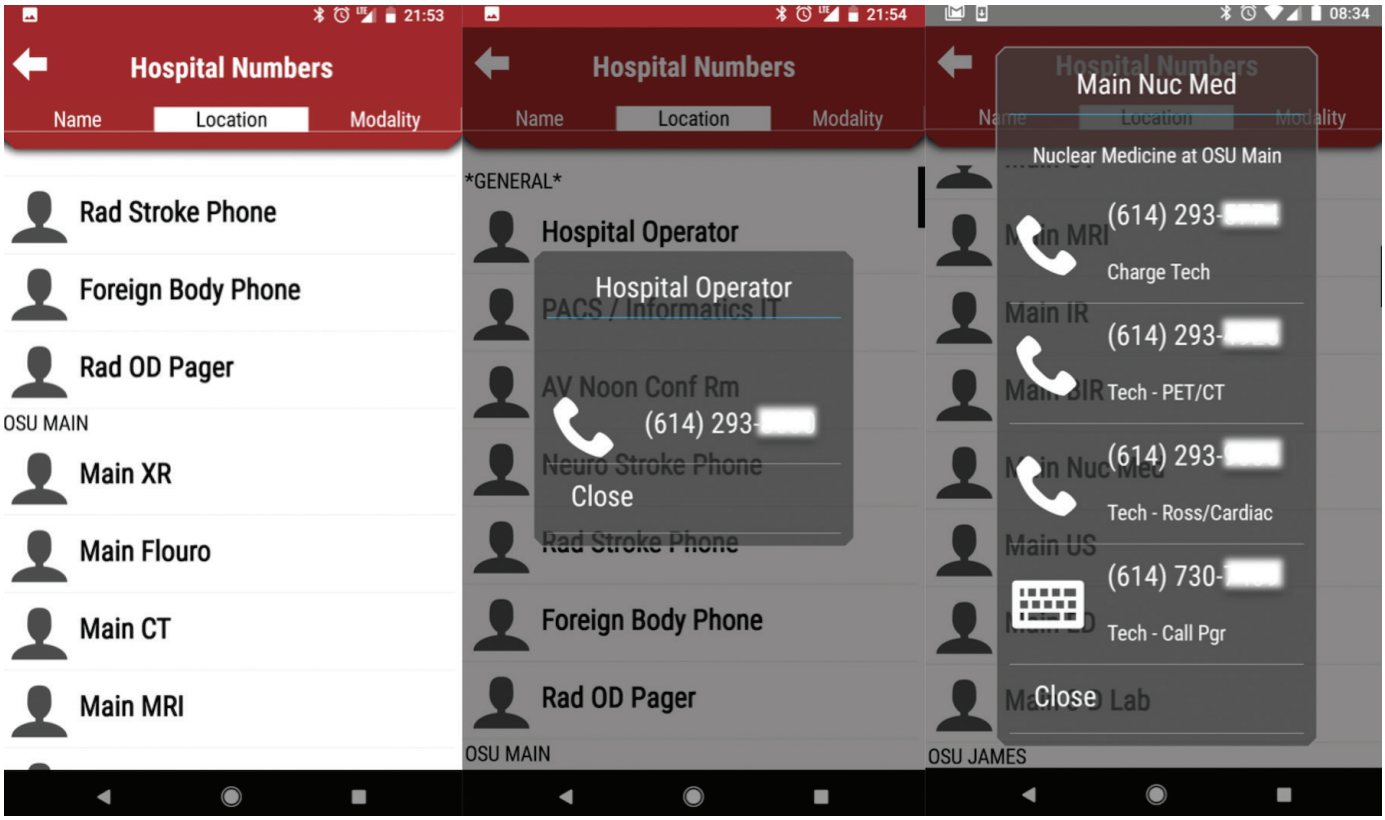
Can you provide some background on how RadAppTM was devised? Who are the radiology and technical team members and who did you consult on both a technical and professional level?

RadApp was devised out of the need for a user-friendly centralised solution that brings together a wide variety of resources for communication, education, scheduling, daily work requirements, and networking in order to improve workflow efficiency and patient safety. While in residency training, my partner, Dr. Egbert Nitin, and I met several times a week brainstorming ideas on what would be the perfect tool that would help us provide effective, efficient, and evidence-based care in an increasing demanding work environment. It took us a year to develop such a tool to meet our requirements for improving daily workflow by providing quick access to essential tools and information as well as being secure and compatible with Android and iOS devices including phones and tablet devices. Following extensive development and testing, we trialled the application for the more than 130 users in our Radiology Department with great success and positive feedback.

While our original primary goal was to improve the workflow, the app had positive effects on the stress of the work environment

RadAppTM has an impressive and comprehensive reference section. How are these references sources updated?

One of my favorite features is the



The user-friendly app was developed by radiologists seeking solutions for workplace inefficiency.

reference tool. This section includes a variety of pertinent national and society guidelines as well as hospital and local guidelines. These references are formatted in a user-friendly format to allow quick efficient reference for the on the job use. We include references such as the Fleischner society guidelines for pulmonary nodules, society guidelines for thyroid nodules and ovarian lesions, the ACR recommendations for incidentalomas such as pancreatic and renal lesions, and much more. We also have local guidelines for contrast administration in the setting of renal insufficiency, management of contrast reactions, treatment of contrast extravasation, and foreign body/implant identification/recommendations for MRI, to name a few. We set up the software to automatically check for and update these references every time the user opens/uses the app, without them needing to do anything.

Did you face any obstacles/resistance from anyone both during 'onboarding' and continued use?

We were lucky enough to have broad enthusiastic support and near unanimous adoption of the app by our users. We attribute this to the extremely user-friendly and versatile nature of the app providing access to many resources that are often cumbersome to find or require accessing multiple areas. The app even provides access to these tools offsite and offline in some cases, which allows users to be efficient whether they are on-call or on their way to a meeting. Even for the slow adopters, once the app was demonstrated and the tools shown, this group of users became some of our greatest fans. We made sure we had something for everyone from the most sophisticated tools and references to fun items such as social media, specialty-specific news feeds, and even daily cafeteria menus.

What measures have been taken to ensure RadAppTM is not vulnerable to cyber attacks?

In addition to simplicity, versatility, and ease of use and maintenance, another requirement we had was security which we take very seriously. Firstly, the app is only provided to target users and is not available publicly on the Apple or Android app stores for anyone to download. Secondly, we do not include patient information or medical records in our app. Thirdly, confidential areas such as departmental policies, phone numbers/pagers, and schedules are protected by a one-time login once the app is loaded to protect the information. The app has Base64 encoding, high-grade encryption, and accesses the most sensitive files using an institution's usual security protocols to protect the data. Lastly, we also have the ability to deactivate a device's access to the app. For instance, if a device is lost, anyone who tries to open the app won't be able to due to

the above security measures and login requirements, but we can deactivate the software remotely as well.

Has RadAppTM had any notable beneficial impact on radiologist burnout?
While our original primary goal was to improve the workflow and efficiency, we've noticed that the app had positive effects on the work environment. Many of our users provided positive feedback that the app helps reduce the demands and stress of trying to reach the appropriate tech for a study acquisition, paging a referring physician for a critical finding, finding a useful reference or hospital policy quickly, or dealing with administrative tasks on the go. The feedback we've received and lessons we've learned further reinforced the role of tools such as our app solution to meet the increasing demands on physicians and trainees to multitask and be able to access, synthesise, and apply evolving and growing amount of data and knowledge.

Has RadAppTM encountered any implementation roadblocks?
The biggest challenges we've faced were during the development of the software. From the beginning, we set lofty requirements of developing a solution that is user-friendly/versatile, easy to use and maintain, secure, customisable, and pertinent to daily work. It also had to contribute to the user's efficiency, effectiveness, education, networking, patient safety, and evidence-based care delivery. We built upon our experiences as physicians and trainees who worked in a variety of healthcare settings and used a multitude of electronic medical resources and available software tools. Once we achieved these goals and created our prototype, our next challenge was to ensure operability on both iOS and Android based devices and the functionality of the software on both phones and tablets with various screen sizes and hardware specifications. Lastly, we went through countless layers of testing and evaluation of our security measures prior to internal evaluation by our own medical informatics department, then ultimately our department-wide implementation. I really enjoyed every step of this journey, and I find it extremely rewarding when I see users rely daily on this solution for optimal healthcare delivery. ■

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How Digital Transformation Can Enhance Healthcare Staff Communication

Summary: An initiative in Spain is tapping into the wealth of digital and non-digital communication amongst staff for streamlining information in an innovative interconnective platform called Plan Adapta.

Communication among healthcare professionals: what a challenge. Innovation propelled by technology is one of the most significant opportunities that big organisations, such as our hospital, have as tools to fuel change.

When it comes to supporting the flow of daily information and putting digital transformation on top of the cultural change journey in a hospital, traditional help, like EMRs, email, intranets and others do not show enough flexibility, adaptive behaviour or focus on team building and management to provide the soundness necessary to follow the path of clinical conversation.

On a day-to-day basis, the real steady stream of clinical information, despite the intensive use of EHRs, comprises the vast number of telephone calls, countless instant messages, thousands of face-to-face conversations and many multidisciplinary meetings among carers. A wealth of clinical information is hidden there, so the temptation to apply secure technology to those scenarios is as strong as the benefits of habilitating our nurses and physicians with sufficient tech to act on these concepts.

With this kind of strategy in mind, in the summer of 2018, the Hospital General Universitario Gregorio Marañón launched a regional initiative, called

Plan Adapta, to deploy a platform that could cover as many different scenarios as possible. The aim was to promote the use of tools to maintain staff interconnection, either through instant messaging, audio or video-chat, video and document collaboration, anywhere at any time. This covered doctors, nurses, management staff or IT personnel, in a secure way, and with the possibility of sharing historical or new documents.

It can be argued that "there's nothing new under the sun," but the ordered professional usage of these tools is challenging and brings a fresh perspective to the conversation. Technology in itself does not open doors for improvement, and therefore implementation and adoption must be complemented with transition change management and establishment of use of protocols following good practices of methodologies driven by the leadership of the Information Systems Area. This has been our approach. The use of the corporate application promoted regionally, in its instant messaging functionality, implies use cases that involve redefinitions in the field of Human Resources, security and services organisation. This implies a complete change management application, with a common benefit that ends in an improvement in the quality and safety of patient care.

How Does It Work?

What is given to staff is 1 TB per person in the cloud, plus a complete platform that performs with desktops or any mobile device, the features to stay connected and secure interchange of information via calls, messaging, channels, teams and collaboration. Last but not least, we are also offering the staff integration with other apps in order to draw process diagrams, event approval diagrams, information analytics, planners, task and event programmers, and others.

This change raises the need to create specific clinical protocols for use of the application and rules of use for professionals, the signing of specific clauses for use of mobile devices and how to behave on and off duty. This is critical to adapt ourselves and the staff to the advancement of technology itself. The intention is to facilitate the adaptation of the possibilities offered by technology to the operation of the hospital and not vice versa.

On the other hand, and already more specific to the Information Systems Area, we must ensure compliance with the security of the Spanish National Security Scheme (ENS), keeping information accessibility on a 24/7 basis, and providing enough support to anticipate misfunctionalities.

Outcomes

First, the immediacy of a secure connection from any location, even outside the hospital, to any clinical session of the clinical services or in a multidisciplinary manner, such as Tumour Committees.

In addition, the system allows the sharing of documents instantly (no more versioning of documents by email), the sharing of medical diagnostic tests, direct communication between professionals of different services to communicate transfers of patient clinical information, second opinions, questions and inquiries about protocols and procedures.

The system also offers immense new opportunities like the improvement in the quality and safety of patient care, fullfilment of the EMR and other applications live in the hospital.

Finally, we should emphasise the ease of adoption of these tools within the Plan Adapta, given the great similarity with other existing tools available in the market for these purposes and extensively used in private life. The main aim is to cover a real need demanded by professionals with the possibilities offered by technology and within necessary security limits.

For the Hospital General Universitario Gregorio Marañón, keeping leadership in Digital Transformation is much more than maintaining a framework of corporate applications; it must be combined with tools that really support change of hospital culture, creating the road of quality of care and safety on the care we are providing. ■

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Key Points

- Streamlining communication amongst healhtcare personnel is an ongoing challenge.
- Plan Adapta offers a secure platform that comprises multiple communication modalities.
- Plan Adapta complies with security of the Spanish National Security Scheme.
- Staff are given Cloud gigabytes and access to a platform with the features to stay connected both within a hospital and externally.