Improving access to health treatment guidelines through mobile technology

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With ever-increasing shifts in technology, opportunities to improve access to the latest in health treatment guidelines are arising. By leveraging mobile technology, South Africa is able to improve delivery of the most up-to-date information in health care to all corners of the country.

Health in South Africa: the standard of care

In 1996, the South African National Drug Policy was developed with the aim to ensure an adequate and reliable supply of safe, cost-effective drugs of acceptable quality to all citizens of South Africa and the rational use of drugs by prescribers, dispensers and consumers. From this arose the Standard Treatment Guidelines (STGs) and Essential Medicines List (EML) intended to satisfy the health needs of the majority of the population.

There are three sets of STGs and EMLs, encompassing primary health care, adult and paediatric care at hospital level. A fourth level, tertiary and quaternary care, consists only of an EML and not STGs. These STG/EMLs provide the national selection of medicines for the South African public sector, but are also intended as a model for the private sector. To ensure that the guidelines remain robust, an extensive peer-review programme is maintained through which each STG is reviewed in its entirety every 3 years. Previously, after each 3-year cycle, a new STG/EML edition would be published and hard copies distributed to health care workers countrywide. This process has been explained in greater detail elsewhere.

However, the practice of publication and distribution on a 3-yearly basis has posed certain problems:

- as the system of continuous review is always in process, once the book has been published, it rapidly becomes outdated as the new review process begins; and
- dissemination of the new publications to health care workers in South Africa may take many months, with many facilities not being aware of new publications being available.

From late 2015 and throughout 2016, road shows were conducted through various provinces to train healthcare workers (including nurses, medical practitioners, and pharmacists) on the development and review processes of the STG/EMLs. During these contact sessions, a survey was distributed to gauge awareness of the latest activities surrounding the STG/EMLs. One of the questions asked was the awareness that a new version of the Primary Health Care (PHC) STG/EML had been published in 2014. The results of the surveys conducted among attendees in the Eastern Cape, North West and Gauteng are shown in Figure 1. More than a year after the publication of the PHC STG/EML 2014, between a third to a half of all participants were unaware that this new version was available. To overcome the problem with accessibility, the National Department of Health (NDoH) has leveraged a technology that has become rapidly available to many citizens in South Africa: the smartphone.

Mobile technology in Sub-Saharan Africa

Sub-Saharan Africa has undergone a leap in mobile technology in a few short years. In 2002, only about 33% of adults in South Africa owned a cellular phone. By 2014, this number had reached around 89%. Today, cellphones are as common in South Africa as they are in the United States, and about a third of cellphone users indicate their device is a smartphone (i.e. able to access the internet and download applications). This mobile digital revolution is predicted to increase twentyfold in Sub-Saharan Africa in the next five years, which is double that seen in the rest of the world.

Researchers have forecasted that mobile global subscriptions will increase from 635 million in 2014 to 930 million in late 2019. This rise has been ascribed to the increasing affordability of smartphones, the rise of social media, content-rich applications, and access to video content. A report by Kleiner Perkins Caufield & Byers (KPCB) found that South Africans spend more time on their smartphones than they do on their...
computers or watching television. Of those using smartphones, a gap appears with regards to ownership when age was considered: about 41% of adults aged 18 to 34 own a smartphone, and of those 35 and older, 27% own a smartphone. In South Africa, equal numbers of men and women appear to own smartphones. Those more likely to purchase smartphones in South Africa have at least a basic understanding of English, and about 57% with a secondary education or more own a smartphone compared to 13% with lower levels of education.

In stark contrast to the access to cellphones in Sub-Saharan Africa, landline penetration has been extremely poor. In South Africa, 94% of the population sampled said that they did not have a working landline in their home. In contrast, about 60% of the population in the United States has a landline telephone in their household.

This explosion in the utilization of mobile technology is seen most acutely in countries lacking in fixed-line infrastructure. This phenomenon of utilising a modern technology (such as smartphones) without the initial basic infrastructure (in this case landlines) is called “leapfrogging”, and is evident when emerging markets (such as China, South Africa, and Brazil) embrace technological change more rapidly than developed countries.

This leap in use of mobile technology has given rise to exciting new opportunities in health care. The market is growing with medical-grade devices that can monitor critical vital signs, communicate this to the healthcare professional and thus allow delivery of more personalised treatment plans.

The South African NDoH has joined this movement, by developing a mobile application for the STG/EMLs. On 25 November 2015, the PHC STG/EML 2014 mobile application (app) was launched. The same day, the app was downloaded 369 times. Since then, as can be seen in Figure 2, the app has been downloaded in many countries (including countries in Europe, the Americas, and Africa), and continues to gain popularity.

Ensuring access to the most updated information is now possible on the app. Once a section has undergone final ratification in the review process, it can be immediately uploaded onto the app, allowing earlier access to new information, and in some cases to new medicines.

Box 1 describes one of the major changes that has been made since the publication of the PHC STG/EML 2014. Although both versions of the PHC STG/EML are endorsed by the NDoH, the app allows health care workers access to the most updated information that can be immediately translated to patient care. Even though the STG still lists a macrolide as an example of a class, the mobile app is able to accurately show which macrolide has a better sensitivity profile, and show an accurate dose and updated duration.

| Box 1: Comparison of print (online PDF document or hardcopy book) and mobile app versions of the 2014 PHC STGs and EML |
| PHC STGs & EML 2014: Print version | PHC STGs & EML 2014: Mobile app version |
| Treatment of tonsillitis and pharyngitis in children allergic to penicillin | Treatment of tonsillitis and pharyngitis in children allergic to penicillin |
| Macrolide, e.g. | Macrolide, e.g. |
| Erythromycin, oral, 10-15 mg/kg/dose 6 hourly for 5 days | Azithromycin, oral, 10 mg/kg/dose, daily for 3 days |

Knowledge and usage of the app is also slowly increasing throughout the country (See Figure 3). In the months to come, the STG/EML for Hospital Level: Adult, and the Tertiary and Quaternary List will also be made available on the app. The Hospital Level: Paediatric STG/EML is scheduled for inclusion in the app in early 2017.


**Figure 2:** Awareness and use of the mobile app among attendees at road shows (2015-2016)
**Conclusion**

Increasing accessibility to the latest and most up-to-date standard treatment guidelines is a means of improving rational medicine use, and ensuring equitable access to health care. By leveraging a technology that is relatively cheap, has a high penetration into the country, and can easily be updated, improved dissemination of the guidelines in a user-friendly format has been achieved.

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**References**


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