

# Is There a Role for a Bespoke App on Antimicrobial Stewardship Targeting Patients and the Public?

TO THE EDITOR—Previous studies in your journal [1–3] and others [4–6] have focused on the use of smartphone applications (apps) to help in the education and training of healthcare professionals (HCPs) around aspects of antimicrobial prescribing or stewardship (AMS). However, no studies have yet explored the availability of similar apps for patients or the public.

The following inclusion criteria were used to access apps on the Android Google Play and Apple iTunes stores: apps in the English Language and search terms were “antibiotic” and “antimicrobial,” respectively. C. M. accessed Google Play and K. K. independently accessed iTunes. Each app description was screened and games were excluded (unless they were clearly aimed at education and training). Any free apps that were aimed at patients/public were downloaded and assessed by C. M./K. K.

In Google Play, search for “antimicrobial” (conducted on 29/12/2015) yielded 72 results with only 3 apps (*Differential*

*Diagnosis*, *Antibiotic Dictionary*, and *Antibiotic Resistance*) of use to the public. One (*Antibiotic Resistance*) required a fee for downloading, and this was the only one that dealt with antimicrobial resistance. The search term “antibiotic” (conducted on 2/02/2016) yielded 76 results, but only 3 apps (*Antibiotic Info*, *Bacteria Battle*, and *Antibiotic Resistance*) were found to have some content regarding AMS. On downloading *Antibiotic Info* it was found to be extremely limited: the app was only one paragraph that discussed antibiotics. *Bacteria Battle* was an educational game that portrayed the effects of bacterial infections in cystic fibrosis (Table 1).

In the iTunes App Store the search for “antimicrobial” (conducted on 04/01/2016) yielded 33 results, none of which were apps marketed for use to the public. All the apps targeted HCPs and dealt with local antimicrobial prescribing guidelines or clinical references (eg, *The Sanford Guide*).

The search term “antibiotic” (conducted on 05/01/2016) yielded 107 results (Table 1) with 8 apps marketed for the public (including children); *Yeast Infection Guide – The Guide to Cure Yeast*

*Infections*, *Urinary Tract Infections Prevention and Treatment Guidelines*, and *Sinus Infection Remedies* advised on the treatment of specific infections. *eMedCheck* app could be used in public health emergencies to assess the need for antibiotic prophylaxis following exposure to anthrax. *Operation Superbugs* provided educational information about antimicrobial resistance to parents whose children are taking antibiotics.

Three educational games were found to have some contents relating to AMS and were all free: *SYNMOD Game* players had to build antibiotic molecules using amino acid blocks and then test their effectiveness in killing bacteria; *DBND* app focused around several real-life scenarios where hand washing is recommended after household daily tasks and the fact that antibiotics are ineffective against viruses. *Bacteria Battle* was also available in iTunes.

An EU initiative [7] targeting health apps in development for the public, did not include any apps on AMS, so although specialized information for HCPs on this topic is abundantly available and evidence-based, only 2 of the apps/games from our searches were provided by

**Table 1. Smartphone Applications (Including Games) Targeting Antimicrobial Prescribing/Stewardship/Resistance in GooglePlay and iTunes**

Device	Antimicrobial Search Term Results	Number of Apps Targeting Patients/Public	Description and Developer	Antibiotic Search Term Results	Number of Apps Targeting Patients/Public	Description and Developer
Android	72	3	Apps: <i>Differential Diagnosis</i> (Botijonline), <i>Antibiotic Dictionary</i> (Kharchenko Alexey), <i>Antibiotic Resistance</i> (fee applies; by Zeena)	76	3	Apps: <i>Antibiotic Info</i> (Teerasak Pinijsuwan), <i>Antibiotic Resistance</i> (fee applies; by Zeena) Games: <i>Bacteria Battle</i> (Augusta University)
iOS	33	0	...	107	8	Apps: <i>Yeast Infection Guide – The Guide to Cure Yeast Infections</i> (fee applies; by Nipon Phuhoi), <i>Urinary Tract Infections Prevention and Treatment Guidelines</i> (fee applies; by Anjoice Malabo), <i>Sinus Infection Remedies</i> (fee applies; by Inga Berga) <i>eMedCheck</i> (University of Maryland) Games: <i>Operation Superbugs</i> (Andrew Gazdecki) <i>SYNMOD</i> , (Biofaction KG) <i>DBND</i> (Richard Hart), <i>Bacteria Battle</i> (Augusta University)

universities. Further work needs to be urgently conducted to address the lack of quality apps for patients/the public in this field.

## Notes

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