


Use of the Microguide mobile phone application for ENT conditions: a national review

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Main Article

Amberley Munnings takes responsibility for the integrity of the content of the paper

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Abstract

Objective. Smartphone applications are used widely in healthcare, including antimicrobial applications such as Microguide. There has been no review of hospitals using this smartphone application for ENT conditions.

Methods. This study analysed all hospital accounts using Microguide and examined the ENT conditions that were listed.

Results. In total, 123 hospitals were included in this study; 45 ENT-related conditions were listed on Microguide across all hospitals, with an average of 8 conditions listed per hospital.

Conclusion. There is a significant disparity of ENT conditions listed on Microguide. A suggested list is recommended to be included for ENT departments using Microguide, to help improve antimicrobial stewardship for the specialty.

Introduction

The scope and detail of modern healthcare means that the range of knowledge required is often more than individuals can reasonably be expected to retain. In recent years, there has been an increasing use of mobile phone applications ('apps') to assist with day-to-day activities, including their use for scoring systems, antimicrobial choices and contacting relevant specialties.

Microguide™ is a smartphone application used by many National Health Service (NHS) hospitals and trusts to guide antimicrobial choice according to local guidelines. It has been shown in the literature to be of significant help, especially in providing reliable recommendations to junior doctors who are rotating through specialties and who report feeling unprepared in prescribing for their new specialties.¹ This is particularly important for junior doctors covering ENT patients out of hours, as these junior doctors are often assigned to a different surgical rotation cross-covering outside of their daily experience. Each NHS trust using Microguide selects which conditions to include antimicrobial recommendations for, and there is considerable variation between trusts regarding which conditions have recommendations.

A literature search was conducted with the following medical subject heading (MeSH) terms and Boolean operators: ("Microguide™") AND ("mobile application" OR "mobile phone application" OR "mobile app" OR "mobile phone app" OR "portable software application" OR "portable software app" OR "smartphone application" OR "smartphone app" OR "portable electronic application" OR "portable electronic app"). This returned one result.¹ The search was therefore widened, simply using the term "Microguide™". This returned 35 results. After screening, six of these papers related specifically to the Microguide antimicrobial application.^{1–6}

To our knowledge, there has been no previous review of the recommendations for ENT conditions included on Microguide across different NHS trusts. Our aim was to review the ENT-related conditions listed for each NHS hospital on the Microguide application. The objective was to suggest a minimum list of ENT-related conditions that should be accounted for. In this way, all NHS trusts could have microbiology treatment recommendations accessible on Microguide. This has the potential to improve the standard of ENT care nationally, by ensuring that appropriate antimicrobials are prescribed from the very start of every patient's in-hospital care.

Materials and methods

We analysed the list of hospitals using Microguide via assessing the application. Our inclusion criteria were as follows: (1) the hospital must be an NHS hospital; (2) the hospital must be within the UK; (3) the hospital must have an ENT service; (4) the hospital must have an account on Microguide that is currently in use (i.e. not a prototype guide); and (5) the Microguide account for the hospital must be in relation to secondary care, not primary care.

Each hospital with a Microguide account that met these criteria was included in this review. Included Microguide accounts were reviewed between January 2023 and February 2023 to assess which ENT-related conditions were listed on the account.

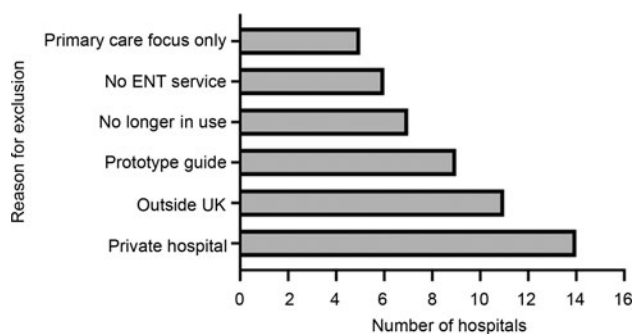


Figure 1. Reason for hospital exclusions from the Microguide analysis.

These ENT-related conditions could be listed anywhere on the account and did not need to be listed under the ‘ENT’ section (e.g. peri-orbital or orbital cellulitis was often listed under the ‘Ophthalmology’ section, but was included as an ENT-related condition).

Results

A total of 175 hospitals were identified as having a Microguide account. Of these, 52 were excluded (Figure 1).

After the exclusions, a total of 123 hospital Microguide accounts were further assessed for ENT-related conditions.

We identified 45 different conditions included across these accounts (Figure 2).

Some conditions listed were not strictly ENT pathology. These included diphtheria, dental abscess, scarlet fever, Vincent’s angina, brain abscess and whooping cough (pertussis). However, these conditions were often included under a ‘head and neck’ or ‘ENT’ section within the hospital guide. As such, patients may be initially referred to ENT or managed in a shared care capacity (e.g. managed by both ENT and paediatrics); we have included these conditions in our review.

Other conditions were also listed that do not always warrant antimicrobial therapy, such as oral candidiasis and Bell’s palsy. However, as these conditions are ENT-related and guidance was offered for them within at least one hospital Microguide account, these were also included.

Eleven hospitals did not include specific paediatric guides, with a further one advising the user to look at a different hospital guide for paediatric-specific ENT advice. Thirty-nine hospitals (31.7 per cent) did not have a specific paediatric guide. Two guides had ENT-related conditions listed under different sections, such as skin (cellulitis) and eyes (orbital cellulitis), but did not have an active ENT-specific section within the guide.

The most listed condition across both adult and paediatric guides was pharyngitis/tonsillitis, with 180 hospitals including it in their guide. The least frequently listed conditions were

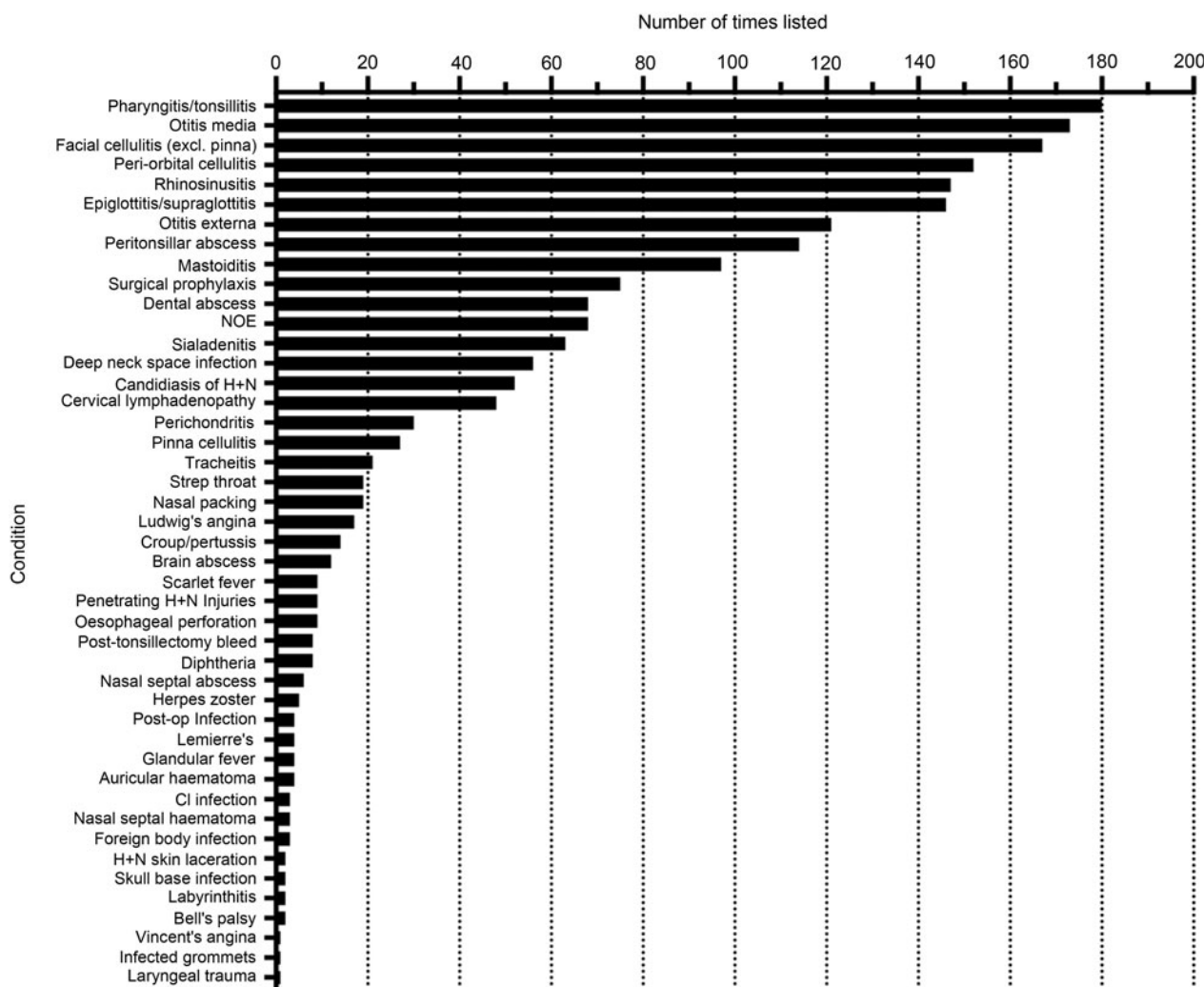


Figure 2. Frequency of conditions listed on Microguide. Excl. = excluding; NOE = necrotising otitis externa; H+N = head and neck; post-op = post-operative; CI = cochlear implant

laryngeal trauma, Bell's palsy, infected grommets and Vincent's angina; each of these was listed by only one hospital.

Overall, an average of eight ENT-related conditions (17.8 per cent of all conditions) were listed per hospital guide. The median number of ENT-related conditions listed was 14, meaning that 50 per cent of the hospitals listed 31 per cent or fewer of the total conditions listed across all guides.

Discussion

The use of Smartphones in clinical practice is increasing.² Microguide was developed in 2011–2012 by the University Hospital Southampton and Horizon Strategic Partners. Since 2013, it had been licensed for use by other UK healthcare organisations (as well as internationally). Each user has editorial independence, meaning that the guide can be adapted to reflect local antimicrobial advice.⁶ It is available for download on Android (Google, Mountain View, California, USA), iOS (iPhone operating system; Apple, Cupertino, California, USA) and Windows Phone (Microsoft, Redmond, Washington, USA) devices.¹ In their study, Shenouda *et al.* identified the application as being one of the most downloaded and utilised of the many available clinical applications.² Hand *et al.* assessed its use in practice, and identified many positive functions, including good convenience, and improved confidence in prescribing and promoting antimicrobial stewardship.⁶ Other studies have also used Microguide to identify specific antibiotic protocols for other conditions, clearly showing it to be a popular resource.^{3–5}

Antimicrobial stewardship is one of the key pillars of the UK's five-year strategy to prevent antimicrobial resistance.¹ It has been shown that many initial antimicrobial prescriptions on admission are unchanged, and thus it is essential that the appropriate antimicrobial(s) are prescribed at hospital attendance.⁷ Microguide is ideally suited to support this endeavour for the reasons mentioned above.

Our review has revealed that the ENT-related conditions listed on Microguide vary widely across different hospital sites. There does not appear to be a great difference between tertiary centres and district general hospitals. Regardless of the nature of the institution, antimicrobial stewardship is important; the distinction between tertiary centre or local district hospital management should not affect the number of conditions listed.

Our analysis demonstrates that the Microguide account for our hospital had limited ENT-related conditions listed. By compiling the conditions listed across all hospital sites, the authors of this paper devised our own revised guide (Table 1). This was then sent to our microbiology department for review. It was discussed formally at their governance meeting, who accepted these changes. The hospital's guide is now being updated with microbiology approved guidance for these conditions. We are also in the process of revising the recommendations for ENT surgical prophylaxis. We propose that the conditions included in Table 1 should be considered a standard list of ENT-related conditions to be included in all UK hospital Microguide accounts, with the aims of supporting ENT prescribers to feel more confident in their roles and improving antimicrobial stewardship across the specialty.

Limitations

We only focused on the use of the Microguide application in this study, as any hospital using the application can be easily

Table 1. List of ENT-related conditions for Microguide for Milton Keynes University Hospital

ENT-related condition
Otology
– Pinna cellulitis or perichondritis
– Auricular haematoma
– Otitis externa
– NOE
– Ramsey Hunt Syndrome (<i>vs</i> Bell's palsy)
– Otitis media (incl. advice on infected grommets)
– Mastoiditis (incl. advice on brain abscess spread)
– Cochlear implant infection
Rhinology
– Nasal foreign body infection
– Nasal septal abscess or haematoma
– Extended nasal packing
– Rhinosinusitis (incl. advice on brain abscess spread)
– Peri-orbital cellulitis
Head & neck
– Facial skin laceration
– Facial cellulitis (excluding pinna)
– Tonsillitis or 'strep throat'
– Quinsy
– Glandular fever
– Post-tonsillar bleed
– Epiglottitis or supraglottitis
– Deep neck space abscess
– Sialadenitis
– Closed laryngeal trauma
– Penetrating neck injuries
– Pharyngeal or oesophageal perforation
– Candidiasis of upper respiratory tract or oesophagus
– Lemierre's syndrome
Paediatric
– Whooping cough or croup
– Scarlet fever
– Tracheitis
– Diphtheria
– Cervical lymphadenopathy
Maxillofacial
– Ludwig's angina
– Dental abscess

NOE = necrotising otitis externa; incl. = including

accessed. We acknowledge that this does not include hospitals using an alternative antimicrobial application, or indeed ones that use intranet antimicrobial policies alone. However, the ENT-related conditions list generated by this review can still be a useful resource for hospitals that do not use Microguide.

We have not assessed in this study how often ENT junior doctors use the Microguide recommendations. While there is no way to mandate the consistent use of Microguide or indeed

any hospital guidelines, ensuring that all hospitals include a minimum list of ENT-related conditions will encourage junior doctors to view this as a reliable source of antimicrobial advice and generate a workplace culture where checking for local antimicrobial guidance becomes standard.

- Microguide is an antimicrobial guidance application used by many National Health Service (NHS) hospitals
- This study reviewed the Microguide accounts of 123 NHS hospitals for ENT-related conditions
- The most listed condition was tonsillitis/pharyngitis, but there was significant disparity between hospital accounts
- A list of ENT-related conditions for each Microguide account to include are suggested, to improve antimicrobial stewardship within the specialty

There was no assessment within this review of when the hospital Microguide accounts were last updated. It is essential for hospitals to regularly review and update their Microguide accounts to ensure the recommendations remain in keeping with the appropriate local and national guidelines.

Conclusion

Mobile phone applications have been shown to be a useful resource in delivering patient care, including antimicrobial selection. Our review has demonstrated that hospital guides vary in the ENT-related conditions listed, with a mean of eight ENT-related conditions listed per guide. We have suggested a standard list of ENT-related conditions to be included on Microguide accounts (and indeed on alternative antimicrobial applications), which has the potential of improving antimicrobial stewardship across the specialty. We hope this

review will encourage ENT departments using the application to review their guides (as we have our own), and to assess the impact this has on patient care.

Acknowledgement. We would like to acknowledge the creators of the Microguide application.

Competing interests. None declared

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