

Improved Accessibility and Utilization of the DSM Antibigram – There’s an App for That

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What is a hospital antibiogram?

A hospital antibiogram is a summary of the cumulative susceptibilities of bacteria to an institution’s formulary antimicrobials over a given time frame [1]. The primary purpose of an antibiogram is to guide clinicians in the empiric selection of antimicrobial therapy, prior to the availability of patient specific susceptibility data [1]. The antibiogram is also useful in the monitoring of local resistance trends from year to year, and as an educational tool for prescribers. It may further be helpful for antimicrobial stewardship programs in the development of local guidelines for empiric therapy [2].

How are antibiograms currently prepared and distributed in Manitoba?

The Diagnostic Services Manitoba (DSM) Clinical Microbiology Discipline creates institution specific antibiograms on an annual basis. The antibiograms are prepared according to recommendations from the Clinical and Laboratory Standards Institute (CLSI), as described in their document M39-A4 [1]. Briefly, susceptibility data is obtained from automated susceptibility testing instruments used in the clinical microbiology laboratory. Only final, verified susceptibility results are acceptable. There need to be a minimum of 30 isolates tested for every bacterial species that is included in the antibiogram. Surveillance isolates are excluded, as are duplicate patient isolates (i.e., only one isolate of a given species per patient per analysis period is included in the dataset). The data is presented as the percentage of isolates that test susceptible to different antimicrobials, and only antimicrobials that are routinely tested against a given pathogen are reported.

Currently, DSM prepares an institution specific antibiogram for each of the 7 hospitals in Winnipeg, Deer Lodge Centre, and the Winnipeg Children’s Hospital. Antibiograms are also generated for the Northern Regional Health Authority (with data obtained from Thompson Hospital) and the Prairie Mountain Regional Health Authority (with data obtained from Westman Laboratory in Brandon). The antibiograms are created as pocket cards, with pharmacy assisting in their distribution. They are also available online as pdf files on DSM’s website (www.dsmanitoba.ca). The target audience of the antibiograms includes physicians working at hospitals in Winnipeg, Brandon, and Thompson, residents, medical students, infection control practitioners, and pharmacists.

Why create an antibiogram application?

Smartphone use is exceedingly common among physicians (including residents and medical students), pharmacists, and other healthcare professionals [2]. Having the annual DSM antibiograms available as an application (app) will hopefully help increase dissemination of institution-specific antimicrobial susceptibility data, potentially assisting with antimicrobial stewardship efforts.

Which antibiogram app is being used by DSM?

DSM is currently using the Portable Databases Antibiograms Application (Figure 1). This app runs on iPhones and android smartphones, and is available for free from online app stores. Once the app is installed on a smartphone, the DSM antibiogram datafile needs to be obtained by email. This file is available on request from Rachel Eaton at the St. Boniface Hospital Clinical Microbiology Laboratory (email: reaton@dsmanitoba.ca).

How do I use the antibiogram app?

The antibiogram app is very user friendly. There are 3 icons on the bottom of the app screen. The “information” icon (bottom left) is used to select the relevant database (in this case, the downloaded antibiogram data) (Figure 2). The “group/patient” icon (bottom right) can be used to switch between different facilities (Figure 3). The current DSM antibiogram app file includes information for Health Sciences Centre, St. Boniface Hospital, and Winnipeg Children’s Hospital. Once a particular group is selected, susceptibility data for clinically relevant organisms can be viewed by clicking on the “bug” icon (Figure 4). Wherever an asterisk is seen beside an organism or antimicrobial, this can be clicked for additional information [Figure 5].

Take Home Points:

- Hospital antibiograms present the cumulative susceptibilities of bacteria to an institution’s formulary antimicrobials over a given period of time. They are primarily used in the selection of empiric antimicrobial therapy.
- DSM produces institution specific antibiograms annually. These are available as pocket cards.
- As of 2017, antibiogram data for select hospitals in Winnipeg will also be available on a smartphone app. The antibiogram file is available on request (email: reaton@dsmanitoba.ca).

Figure 1. Portable Databases Antibigram App, available free of charge from online app stores.



Figure 2. Tap the “information” icon in the bottom left corner of the app (left image) to access the databases list (middle image). Then select the DSM_Antibiogram_2017 database.

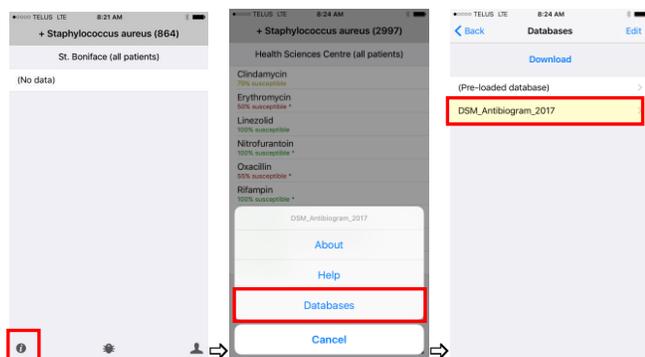


Figure 3. Tap the “group/patient” icon in the bottom right corner of the app to bring up a list of the different site antibiograms available (left image). Then select the hospital site you are interested in (right image).

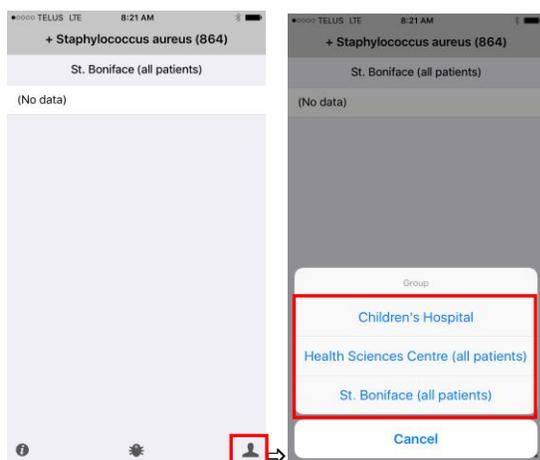


Figure 4. Tap the “bug” icon in the bottom middle of the app to bring up a list of bacteria from the selected hospital site. Then tap on the organism of interest to bring up the antibiogram susceptibility data. In the example below (right image), susceptibility data is presented for *S. aureus*.

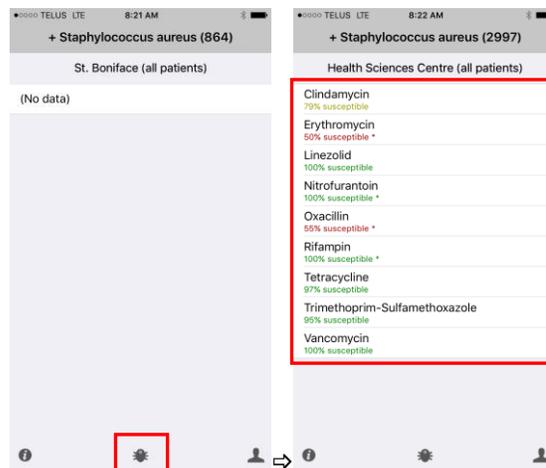
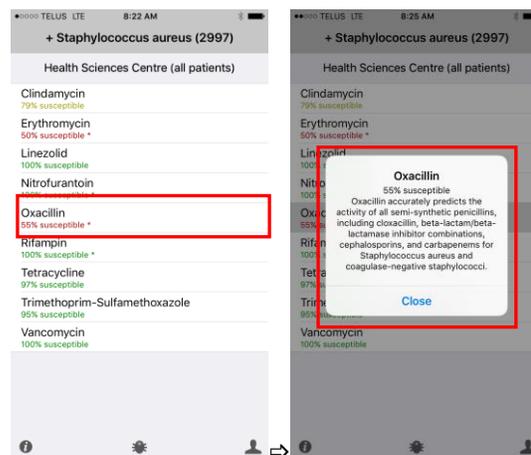


Figure 5. You can tap anywhere you see an “*” to get additional information. In the example below, tapping on oxacillin (left image) brings up a note on oxacillin susceptibility (right image).



References:

1. Clinical and Laboratory Standards Institute. M39-A4 Analysis and Presentation of Cumulative Antimicrobial Susceptibility Test Data; Approved Guideline 4th Edition. CLSI, Wayne, PA, USA, 2014.
2. Schulz LT, Fox BC, Polk RE. Can the antibiogram be used to assess microbiologic outcomes after antimicrobial stewardship interventions? A critical review of the literature. Pharmacotherapy 2012;32:668-76.
3. Boruff JT, Storie D. Mobile devices in medicine: a survey of how medical students, residents, and faculty use smartphones and other mobile devices to find information. J Med Lib Assoc 2014;102:22-30.