A visual analytics antibiogram dashboard as part of a comprehensive approach to perioperative antibiotic administration

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Background
• Hospitals routinely perform antimicrobial susceptibility testing for bacterial pathogens.
• Results are often organized into a summary table, or antibiogram, which may be used by clinicians as a reference guide to antimicrobial resistance patterns.
• Antibiograms can raise awareness of resistance problems, support the use of optimal empiric therapy, and identify opportunities to reduce inappropriate antibiotic usage.\textsuperscript{1}
• At many hospitals, antibiograms are static documents that are generated from laboratory data and distributed to house staff once per year.
• Pediatric anesthesiologists are often tasked with administering perioperative antibiotics either for prophylaxis or to treat an active systemic infection.

Methods
• We created a visual analytics antibiogram dashboard using SQL queries of our EHR database and enterprise visual analytics software to track bacterial pathogens and their antimicrobial sensitivity.

Results
• A visual analytics antibiogram dashboard specific to our institution was designed and implemented.
• The dashboard allows the user to display up-to-date, hospital-specific antibiotic sensitivity data for a particular organism using a variety of filters and drop down menus.
• The antibiogram dashboard provides a user interface to explore laboratory EHR data in near-real time and facilitates the rapid assessment of susceptibilities and resistances of microorganisms of interest to various antibiotics.

Figure 1. CHOP visual analytics antibiogram: antibiotic sensitivity table screen shot.

Figure 2. CHOP visual analytics antibiogram: main screen with filters and groupers.

Conclusion
• Pediatric anesthesiologists often have the task of administering perioperative antibiotics.
• While infectious disease specialists usually guide antibiotic choices and dosages, there remains a dearth of information at the time of antibiotic administration in the operating room regarding the susceptibility of organisms to the chosen antibiotic medication.
• This data and dashboard will be an integral part of a project to optimize perioperative antibiotic treatment based on our hospital's EHR data.