A Novel, Network-wide Outpatient Generational Urine Antibiogram

Jarrod W. Kile RPhD
Lehigh Valley Health Network, Jarrod_W.Kile@lvhn.org

Lalita G. Shastry MD
Lehigh Valley Health Network, Lalita_G.Shastry@lvhn.org

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Background
Antibiograms are used to guide empiric antibiotic selection but do not take into account patient variables. In an effort to better assist our network’s outpatient office practices, we hypothesize that an antibiogram based on age would produce varying susceptibilities and offer our providers valuable information to treat their patients. We designed a generational urine antibiogram to look at the susceptibility patterns, by age ranges, from urine isolates of our outpatient office practices.

Methods
One year of outpatient urine isolates and susceptibility data were retrieved and separated into age ranges as follows: age <20, 20-29, 30-39, etc. As per CLSI standards, 30 or more isolates of an organism and drug combination are considered significant. Fewer than 30 but greater than 10 isolates are included, demarcated in gray, and noted as being less statistically valid. The susceptibilities are color coded as the following: >90% is green, 70-99% is yellow, and <70% is red.

Results
*E. coli* was by far the most common pathogen throughout the age groups. *Enterococcus* species, *K. pneumoniae* and *P. mirabilis* provided a substantially smaller volume of isolates. *P. aeruginosa* did not appear until the 60-60 age range. Extended-Spectrum Beta-lactamase (ESBL) producers showed up in the 60-70 and 80+ age ranges, only.

In the outpatient setting, trimethoprim-sulfamethoxazole(TMP-SMX) and fluoroquinolones(FQs) are two of the most commonly used antibiotics for urinary tract infections. In the outpatient antibiogram, 15-20% of *E. coli* are resistant to TMP-SMX in all age groups; this is comparable to our inpatient urine antibiogram. FQs are active against *E. coli* for the age groups below 60; this is in contrast to our inpatient antibiogram. *E. coli* retains high susceptibility to cefazolin, and consequently, its oral equivalent cephalexin, throughout every age group; This is comparable to our inpatient antibiogram.

Conclusions
This novel, network-wide outpatient antibiogram provided differences in susceptibility when differentiated by age. In our opinion, cephalexin would be the appropriate choice for empiric treatment, when ESBLs and *P. aeruginosa* are not suspected. FQs can be used empirically, with >95% susceptibility to *E. coli*, until the age of 70. A network-wide, outpatient generational urine antibiogram provides our clinicians a means to appropriately choose antibiotics based on age and outpatient status.