EVALUATING MULTIDRUG RESISTANCE PREVALENCE AND ANTIMICROBIAL STEWARDSHIP PREPAREDNESS IN THE LARGEST NOT-FOR-PROFIT HEALTHCARE SYSTEM IN THE UNITED STATES: Taking the First Step to Optimize Antimicrobial Use

AUTHORS: Roy Guharoy, PharmD, MBA1,2 • Mohamad G. Fakh1, MD, MPH3 • Gail Fraine, RN4 • Michelle Heavens, BSN, MHA4 • Ann Hendrich, RN, PhD4

AFFILIATIONS: 1.) Ascension Health, St. Louis, MO • 2.) University of Massachusetts Medical School, Worcester, MA • 3.) Infection Prevention and Control, St. John Hospital and Medical Center, Grosse Pointe Woods, MI • 4.) St. Thomas Midtown, Nashville, TN

BACKGROUND

One of the 4 CDC core actions to fight deadly bacteria is to improve antibiotic use. Antimicrobial stewardship plays a critical role to control the development of multidrug resistant organisms (MDROs). Ascension Health is the largest private nonprofit health system in the United States, operating in 23 states and the District of Columbia. We evaluated the current state of antimicrobial stewardship across our system as the initial step to address MDRO risk reduction, and to gain insight on areas of focus for future system-wide antimicrobial stewardship program (ASP) implementation.

METHOD

We conducted a survey of 85 hospitals of a single healthcare system. The survey addressed the prevalence of MDROs, and the presence of antimicrobial stewardship programs (ASPs). Questions addressed MDROs including the availability of local antibiograms, the prevalence of resistance for specific pathogens. ASP questions focused on whether a structure exists for antimicrobial stewardship, the availability of the pharmacist and physician champions, antimicrobial restrictions, and clinical pathways to treating specific infections. We also compared the results based on hospital bed size (small ≤200, medium 201-500, large >500 beds).

RESULT

Out of 85 hospitals surveyed, 52 (61.2%) were small (≤200 beds), 27 (31.8%) were medium (201-500 beds), and 6 (7.1%) were large hospitals. Larger hospitals had the highest reported rates of Klebsiella pneumoniae carbapenem resistant organisms (2.2% vs. 0.7% for medium and 0.3% for small; p=0.001). Medium size hospitals reported higher rates of carbapenem resistant to Escherichia coli (0.091% vs. 0.018% for large and 0.015% for small; p=0.09). There were no significant differences for extended spectrum beta lactamase producing E. coli (large 4.6%; medium 4.9%; small 7.9%; p=0.51). The vast majority of hospitals (n=81, 95.3%) produced an antibiogram, with 77 (90.6%) at least annually (Table 1).

ASPs varied from having restricted antimicrobials with specific uses, postprescribing evaluation by pharmacy, to preapproval or consultation by Infectious Diseases physicians, and clinical pathways. ASPs were more established in large (100%) and medium (81.5%) compared to small (23.1%) hospitals (p=0.001). Large hospitals more often restricted broad-spectrum antimicrobials (83.3% vs. 63% for medium and 23% for small; p=0.001). Prospective evaluation by pharmacists was 100% in large hospitals (44.4% for medium and 25% for small; p=0.001). Mandatory Infectious Diseases consultation for specific broad-spectrum agents was more common in large (100%) compared to medium (40.7%) and small (9.6%; p<0.001). Clinical pathways for specific infections were more common among large hospitals (66.7% vs. 40.7% for medium and 21.2% for small; p=0.001). Infectious Diseases pharmacist approval was rarely used (Table 2).

DISCUSSION

Our survey addressed many pertinent issues related to MDROs and ASP in a very large healthcare system. First, multidrug resistance is common in all hospitals of different sizes, although larger hospitals tend to have a higher prevalence. Second, smaller hospitals seem to have a much weaker structure to address MDROs, and often do not have any formal ASP. Particularly, restrictions and post-prescribing evaluations are very uncommon. Furthermore, larger hospitals had processes to limit the use of restricted antimicrobials by using either Infectious Diseases physicians or pharmacists, rarely seen in smaller hospitals. Finally, clinical pathways to address different infections with optimal antimicrobial choices were more developed in larger hospitals. There are opportunities for such pathways to be shared system-wide so to standardize the care.

CONCLUSION

The prevalence of MDROs and the presence of ASPs vary based on hospital size. Smaller hospitals may be less prepared than larger ones to address antimicrobial stewardship. Our findings contribute to a better understanding of the varied needs of our hospitals to develop future processes and optimize patient care outcomes.

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