

I sincerely congratulate the authors of the recent report on carbapenem-resistant *Klebsiella pneumoniae* infection³ for their restraint in ascribing to carbapenem-resistant *K. pneumoniae* such properties as increased virulence or attributable mortality. They elegantly and correctly avoided a common temptation to perform multivariate analysis using their large database (eg, by comparing carbapenem-resistant *K. pneumoniae* isolates with carbapenem-susceptible *K. pneumoniae* isolates as a potential predictor of mortality). In conclusion, Oscar's behavior is most probably only associated with mortality—he is not necessarily a more virulent cat.

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Infect Control Hosp Epidemiol 2009; 30:500-501

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Colonization or Infection of the Urinary Tract: Do We Pay Attention?

To the Editor—Antibiotic resistance has emerged as a major public health threat.¹ The restriction of antibiotics and the judicious use of these agents have been shown to decrease antibiotic resistance and reduce healthcare costs.²⁻⁵ It is critical that clinicians differentiate colonization from infection so that antibiotics are utilized appropriately, thus favorably impacting antibiotic resistance and preventing patients from unwarranted exposure to antimicrobials. This is especially true in the context of asymptomatic bacteriuria, which may elicit unnecessary treatment.

In our 700-bed, university-affiliated community teaching hospital, we have an antibiotic restriction policy that requires clinicians to obtain approval from an infectious disease physician prior to prescribing restricted antimicrobials. We observed that, when healthcare personnel requested antibiotic

approval for the treatment of a urinary tract infection, a substantial number of providers reported the isolation of the organism from culture but were not cognizant of an associated urinalysis, the presence of a Foley catheter, or other supporting clinical data. These parameters are important in differentiating infection from colonization.^{6,7}

Our objective was to evaluate the degree of inattention by healthcare personnel at our institution to some information fundamental to the interpretation of urine culture results. We developed a study protocol that was approved by the internal review board of the hospital. A hand-carried data card was given to the infectious disease physician on call who was responsible for antibiotic approval. When approval was requested for the use of antibiotics to treat a urinary tract infection, the following questions were asked, and the responses were recorded: (1) Was there evidence of pyuria on urinalysis? (2) Did the patient have an indwelling Foley catheter? (3) Which organisms were identified on culture? Responses to the questions were listed as “known” or “not known.” If the provider needed to check or confirm information to respond to these questions, the response was recorded as “not known.” We made the assumption that, if the clinician was not aware of such supporting information, then the clinician's request was formulated independent of such data. In addition, the responses were obtained only in cases for which urine cultures had been performed; that is, the data do not represent cases for which antibiotics were requested for empirical treatment. Information about the department affiliation and job title of the healthcare professionals was obtained. No identifiers of healthcare personnel or patients were recorded. We collected data over a 2-month period.

A total of 71 individual queries were recorded (Table). The results have been categorized on the basis of job title and department affiliation. Thirty-five (49%) of the respondents had supporting evidence of pyuria, 33 (46%) were aware of the presence of a Foley catheter, and 65 (92%) were informed of urine culture results.

We looked for a difference in the awareness of the parameters tested among house staff in different levels of training. According to our statistical analysis, postgraduate year 2 residents in the Department of Medicine were more cognizant of the presence of Foley catheters than their postgraduate year 1 counterparts.

With advancements in technology, there are many novel and complex investigational tests being utilized in medicine. However, clinicians should realize the importance of fundamental clinical information in the interpretation of microbiologic results. Colonization should be differentiated from infection; positive urine culture results in the absence of pyuria and/or in the presence of a Foley catheter usually do not represent infection.⁶ Inattention to this concept may lead to administration of antibiotics for conditions that do not need to be treated and may draw attention away from a true infection. The providers seemed to pay attention to the culture results but pay less attention to other relevant data. Post-

TABLE. Awareness of the Parameters Tested During Antibiotic Approval for Presumptive Urinary Tract Infection

Department, job title	Results of urinalysis	Presence of Foley catheter	Results of urine culture
Medicine			
Postgraduate year 1 (<i>n</i> = 21)	12 (57)	4 (19) ^a	19 (90)
Postgraduate year 2 (<i>n</i> = 19)	11 (58)	15 (79) ^a	19 (100)
Postgraduate year 3 (<i>n</i> = 12)	8 (67)	7 (58)	12 (100)
Physician assistant (<i>n</i> = 4)	1 (25)	2 (50)	3 (75)
Nonmedicine			
Postgraduate year 1 (<i>n</i> = 5)	0 (0)	1 (20)	4 (80)
Postgraduate year 2 (<i>n</i> = 4)	2 (50)	2 (50)	3 (75)
Postgraduate year 3 (<i>n</i> = 3)	1 (33)	2 (67)	2 (67)
Physician assistant (<i>n</i> = 3)	0 (0)	0 (0)	3 (100)

NOTE. Data are no. (%) of healthcare personnel who were aware of the parameter.

^a Z test for proportions, *P* < .05.

graduate year 2 residents in the Department of Medicine paid more attention to the presence of Foley catheters than the postgraduate year 1 personnel. More differences, especially among nonmedicine house staff and physician assistants, might have appeared if we had achieved a higher number of responses from providers in these departments.

Our study has limitations. We evaluated the awareness of healthcare professionals about certain parameters but did not assess their ability to interpret these parameters. Also, the responses provided by healthcare professionals were not confirmed by the investigators. As in most surveys, the data gathered may not truly represent the entire population being studied. For example, it is possible that those house staff physicians who were aware of the difference between colonization and infection did not call for antibiotic approval, so that our antibiotic approval process captured a less informed clientele. Those who did not recognize the significance of interpretation of these tests and who continued to call for subsequent approvals might have had their responses recorded more than once. The survey was voluntary, and therefore we were not able to obtain input from all healthcare professionals. Our data set is small, but it is a useful snapshot of the attitudes and perceptions of clinicians relevant to this topic.

ACKNOWLEDGMENTS

Potential conflicts of interest. All authors report no conflicts of interest relevant to this study.

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Infect Control Hosp Epidemiol 2009; 30:501-502

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Investigation of Individuals Exposed to a Healthcare Worker with Cavitory Pulmonary Tuberculosis

TO THE EDITOR—We report a large-scale contact investigation undertaken after a hospital-based nurse developed pulmonary tuberculosis, and we highlight the difficulties involved in managing this investigation. Our study of the in-