Reply to Burnham and Vazquez Guillamet

To the Editor—We thank Burnham et al for their interest in our findings [1, 2]. We agree that to expand the pool of infectious diseases/critical care medicine (ID/CCM) physicians, we will need to demonstrate to hospitals that it is worth investing in the training and hiring of these physicians. For this, Burnham et al suggest a cost-benefit analysis drawing analogies to the revelations of cost savings from hiring hospitalists that once fueled the expansion of that discipline.

In our study, we found that the existing pool of ID/CCM physicians is still relatively small; they practice varied combinations of CCM and inpatient and outpatient ID, and assume research, educational, administrative, and several other roles; they are interspersed with other physician types across myriad public and private healthcare systems. Prospective or even pre-/postemployment antibiotic-use outcomes and revenue assessments suggested by Burnham et al would be difficult to measure as hiring of most ID/CCM providers nationwide has occurred piecemeal and unannounced. Many intensive care units (ICUs) are now staffed on a shift basis with several intensivists including tele-ICU providers starting and stopping antibiotics on one patient. As such, it would not be feasible to selectively extract the net economic impact of this dually trained cohort on a given hospital, health system, or region. Initially, one would have to rely on qualitative measures rather than balance sheets to assess their usefulness—emphasizing an implied impact in areas such as infection control, antibiotic stewardship, management of sepsis and immunocompromised hosts, and high-containment pathogen preparedness and acknowledging the possibility of collateral cost savings that would accompany these enhancements.

Although we may be many steps away from being able to demonstrate the economic utility of ID/CCM physicians, our first steps should focus on demonstrating that such training tracks can in fact be operationalized. As a pilot, centers with CCM only rather than pulmonary-CCM programs could be approached with proposals for establishing dual tracks with the ID division at their respective locations. This would simplify combining the ID and CCM clinical and research years and appeal more broadly to trainees than the current system, which requires most to pursue training separately. Success of the proposed pilot could be gauged from annual statistics of the nascent ID/CCM tracks on matching, graduation, and gains/awards as well as new job placements and associated salary packages.

Note
Potential conflicts of interest. Both authors: No reported conflicts. Both authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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References

Penicillin Allergy Testing: A Key Component of Antibiotic Stewardship

To the Editor—We read with great interest the Infectious Diseases Society of America and Society for Healthcare Epidemiology of America guidelines for implementing an antibiotic stewardship program [1]. The authors note in section XII that antibiotic stewardship programs should “promote [antibiotic] allergy assessments and penicillin skin testing when appropriate,” and determined that this merits a weak recommendation. We disagree and offer evidence that this merits a strong recommendation.

The GRADE (Grades of Recommendation, Assessment, Development, and Evaluation) approach entails a clear separation between quality of evidence and strength of recommendation [2]. For instance, a strong recommendation exists for epinephrine in acute anaphylaxis despite low quality of evidence [3]. GRADE defines quality of evidence as “the extent to which our confidence in an estimate of the treatment effect is adequate to support a particular recommendation” [2]. Study design is important, but not the sole factor, in appraising quality of evidence. As noted in Figure 1, the strength of a recommendation also is contingent upon consideration of desirable and undesirable consequences of a management decision, patient values and preferences, resources, and cost.

There is a substantial morbidity associated with not performing penicillin allergy testing in patients with unconfirmed penicillin allergy. In the absence of diagnostic intervention, patients with self-reported penicillin allergy are at increased risk for untoward outcomes of care, including greater rates of exposure to non–β-lactams (eg, quinolones, carbapenems, vancomycin) that will encourage development of nosocomial resistant organisms [4]. Diagnostic intervention can remove this label in approximately 90% of such patients [5].

Performance of penicillin allergy testing in hospitalized patients with unconfirmed penicillin allergy fulfills criteria for a strong recommendation. Most patients with penicillin allergy would want to undergo penicillin skin
testing, informed healthcare providers would recommend this course of action, policymakers would be inclined to adopt this as policy, and further research would be very unlikely to change our confidence in the magnitude of effect associated with this intervention. The American Board of Internal Medicine Foundation’s Choosing Wisely campaign recommended in 2014 that physicians “don’t overuse non-beta lactam antibiotics in patients with a history of penicillin allergy, without an appropriate evaluation” [6].

Preferably, a randomized prospective trial of penicillin allergy testing would have been performed more than 10 years ago; however, it would be unethical to perform such a trial today. There is no equipoise on this issue. Penicillin allergy testing is safe in young children, pregnant women, emergency department patients, preoperative patients, and critically ill hospitalized patients [7]. The reference standard for penicillin allergy evaluation is an oral amoxicillin challenge. On this basis, the diagnostic utility of penicillin skin testing, prior to oral challenge, is well established and has been associated with a negative predictive value of 99.3% [5]. Penicillin allergy testing can favorably alter the antibiotics prescribed for skin test negative patients [8]. Patients with positive skin tests for whom no equally efficacious alternative antibiotic can be used are candidates for penicillin desensitization [9]. The remaining question is how much morbidity is prevented by penicillin allergy testing in specific situations, rather than whether penicillin allergy testing should be routinely performed.

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