Reply to Freyne et al

TO THE EDITOR—We appreciate the interest of Freyne et al [1] in the hospital-wide expansion of our successful intensive care unit (ICU)-based stewardship intervention [2]. While the results of our hospital-wide program were less profound, we believe that we have encouraged rigorous methods of program assessment, highlighted both the efficacy of the intervention and its limitations in non-ICU settings, and provided suggestions as to how to improve the adaptability of such programs.

The stepped-wedge randomized design is a particular strength of our study. In their letter, Freyne et al [1] promote the use of time-series analyses. This was, in fact, the design of our original ICU stewardship evaluation [3]. The ideal study design here would have been a cluster randomized controlled trial; however, because of our small number of clusters, the stepped-wedge design was more appropriate. This design not only affords the same benefits as time-series analyses through modeling of the effect of time [4], it also confers a statistical advantage by enabling us to account for clustering. Furthermore, there was no risk of assessment bias of our primary outcome (days of therapy per patient day), as the data was auto-populated in our stewardship database from pharmacy and administrative databases with no manual data entry by the study team and no opportunities for subjective adjudication. Collapsing data from all of the medical and surgical services into a single time-series analysis would not have provided any additional advantage in this regard.

Our stewardship intervention failed to show a significant effect on overall antibiotic utilization, and we agree with Freyne et al [1] that there was a ceiling on our potential impact based on the number of patients assessed. However, we did demonstrate the efficacy of our intervention in the subset of patients who met stewardship review criteria. While this positive finding was important, we felt it was equally important to evaluate the effectiveness of the intervention in the broader sense, as overall reductions in hospital-wide antibiotic use is required to meet our mandate of reducing costs, antibiotic resistance, and Clostridium difficile infections. While targeting day 2 of therapy would increase the number of cases assessed, there is a potential trade-off between increasing the number of interventions and limiting the clinical and microbiology information available to support safe and appropriate recommendations. Nonetheless, we recognize the limitations of a day 3 intervention on non-ICU wards and suggest the parallel implementation of strategies to reduce initiation of inappropriate treatment.

We do not consider this to be a “negative study.” The lack of hospital-wide reductions in antibiotic use should not undermine the evidence of efficacy of the intervention. Instead, it should increase the importance of sharing experiences, particularly those that pertain to the adaptability of and challenges associated with expanding a commonly used stewardship strategy [5–11] outside of the ICU. Rather than discouraging other institutions from initiating similar programs, we hope that we have shared practical lessons learned from our own experiences such that others may tailor their interventions accordingly, as we have, to better serve their patient populations.

Note

Potential conflicts of interest. All authors: No potential conflicts of interest.

All 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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Clinical Infectious Diseases © 2015;50(4):667

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DOI: 10.1093/cid/ciu900