Self-Reported Compliance and Attitudes of Antibiotic Time-outs in an Internal Medicine Residency Program

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Background

Due to overuse and misuse of antibiotics, antibiotic resistance has developed and is becoming one of the great public health dilemmas of our time. The CDC has released statements about the rising consequences of antibiotic resistance and the critical importance of physician- and pharmacist-lead antibiotic stewardship[1]. One of the CDC recommendations is to complete an antibiotic time-out 24-48 hours after initiation of antibiotics. Much of the success with improved antibiotic stewardship has been due to interventions by pharmacists. No data exist concerning the success of implementing an antibiotic time-out during patient rounds in physician residency training programs in accordance with the CDC guidelines. As internal medicine residents are developing clinical habits, it stands to reason that intervening in behavior early in residency training could have lasting positive results particularly regarding antibiotic stewardship habits.

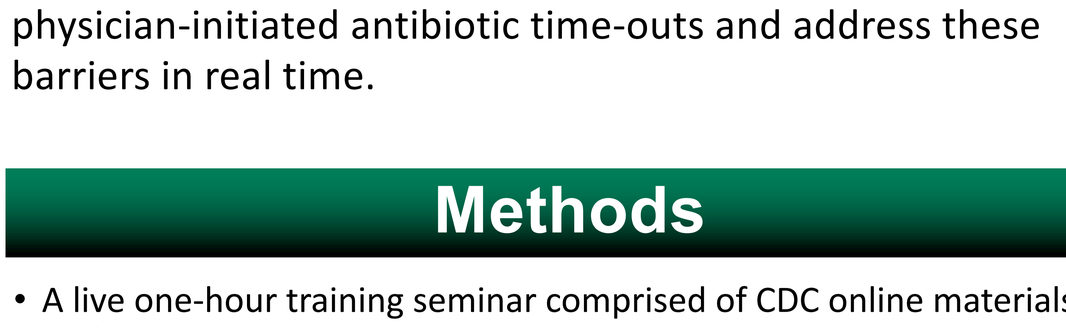
Figure 1. Antibiotic-resistant bacteria[2]

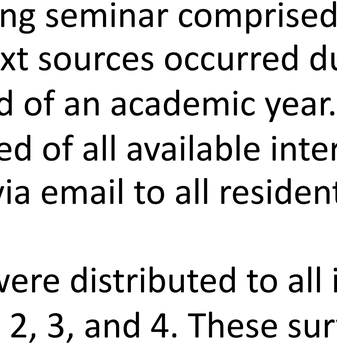
Aim

The purpose of this study was to evaluate clinician attitudes about performing time-outs, and to identify barriers to physician-initiated antibiotic time-outs and address these barriers in real time.

Methods

- A live one-hour training seminar comprised of CDC online materials such as videos and text sources occurred during mandatory resident didactics near the end of an academic year.
- The audience consisted of all available internal medicine residents.
- Materials were sent via email to all residents and attendings not in attendance.
- Brief online surveys were distributed to all inpatient ward service members at weeks 1, 2, 3, and 4. These surveys asked clinicians to assess their confidence in and their average frequency of performing time-outs, as well as to identify barriers to performing time-outs.
- In between surveys, feedback was used for improvement via rapid PDSA cycles.





Results and Actions Taken

- The overall survey response rate was 39%.
- Results of physician self-reported frequencies of performing time-outs, degree of difficulty in performing time-outs, and barriers to performing time-outs are described in Figures 2, 3, and 4, respectively.
- In weeks 1 and 2, the majority of clinicians reported performing time-outs 40-60% of the time. During these weeks, clinicians reported on the surveys that they were forgetting to perform time-outs. To address these concerns, a reminder email was sent in the middle of week 1, and both a verbal and email reminder were given in week 2. In week 3, the majority of clinicians reported performing time-outs 60-100% of the time, and reporting of forgetting to perform time-outs decreased. No reminders were given in week 3, and the frequency of performing time-outs decreased by week 4.

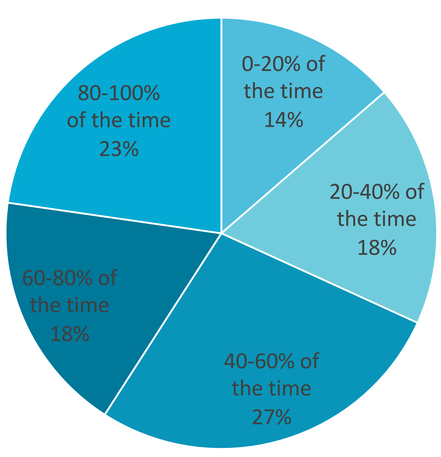


Figure 2. Physician self-reported frequencies of performing time-outs over the course of the study.

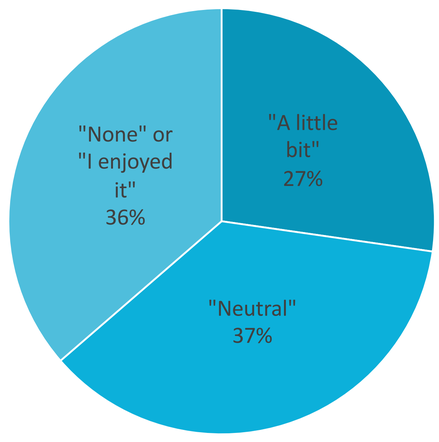


Figure 3. Physician self-reported degree of difficulty of performing time-outs over the course of the study.

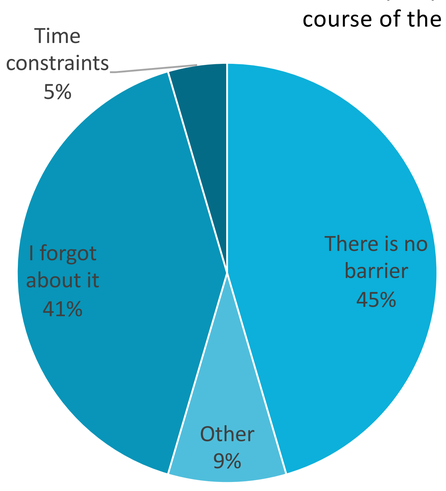


Figure 4. Physician-identified barriers to performing time-outs over the course of the study.

Discussion

- The majority of clinicians reported performing antibiotic time-outs with minimal-to-no difficulty, indicating that the educational intervention was successful overall.
- There was an increase in the percentage of clinicians who reported performing time-outs and a decrease in forgetting to perform time-outs from week 1 to week 3. This was likely due to the rapid PDSA cycles performed.
- The percentage of time-outs performed decreased and the percentage of clinicians reporting forgetting to perform time-outs increased at week 4, likely due to the lack of any verbal or email reminders. Reminders to perform time-outs should be given every 1-2 weeks after receiving training.
- Attending resistance was frequently cited as a barrier to completion of time-outs. This suggests that involvement by team leadership may be important for improved success. Residents frequently cited the input from pharmacists as being helpful in guiding their treatment management, emphasizing the importance of all healthcare members in determining the course of care.

Conclusions and Lessons Learned

- Internal medicine residents at all levels of training successfully implemented antibiotic time-outs into their clinical practice after receiving training.
- Frequency of performing time-outs correlated with receiving reminders to do so.
- Most clinicians reported minimal difficulty in performing time-outs.
- While most reported no barriers to performing time-outs, the most identified barrier was failure to remember to perform time-outs.
- Future studies will assess the impact of antibiotic time-outs on patient care, in terms of how often antibiotics were switched or discontinued, and quantifying the financial benefits of antibiotic stewardship.

References

1. https://www.cdc.gov/drugresistance/solutions-initiative/antibiotic-stewardship.html
2. https://blogs-images.forbes.com/judystone/files/2017/02/antibioticresistance-cdc.jpg