

Purpose

Procalcitonin (PCT) is a biomarker that plays an important role in determining the possible cause of lower respiratory tract infections and sepsis. Used in this manner PCT is a significant laboratory value to evaluate when making decisions regarding antibiotic therapy. Previously, our institution's electronic medical record (EMR) used a reference range for PCT that was inconsistent with evidence-based guidance (0-0.10 ng/mL). Knowing that the EMR can influence the interpretation of laboratory values, we hypothesized that an update to the PCT reference range with the addition of evidence-based guidance accessible to providers via the EMR would decrease antibiotic duration of therapy and therefore have a positive impact on antimicrobial stewardship aims.

Methods

This was a single center, quasi-experimental study that included patients greater than 18 years of age who had a PCT value between 0.11 ng/mL and 0.25 ng/mL. Patients in the pre-implementation group were compared to patients in the post-implementation group, where the PCT laboratory value in the EMR had been updated to include evidence-based guidance and a new graphical representation. The primary outcome was antibiotic duration of therapy and the secondary outcomes were antibiotic days of therapy prescribed on discharge, total length of stay, intensive care unit (ICU) length of stay, and 30-day mortality.

Results

The updated PCT laboratory report resulted in a statistically significant decrease in antibiotic duration of therapy by a median of 2 days ($P=.002$). There was no difference in days of antibiotic therapy prescribed on discharge or in total length of stay, ICU length of stay, or 30-day mortality between groups.

Conclusion

Updating the PCT laboratory reference range and including evidence-based guidance in the EMR display resulted in reduced antibiotic days of therapy during patient admissions. The reduction in antibiotic duration was driven by the COVID-19 positive subgroup of patients in the study. The results show that a change to the EMR can positively impact practice. The outcome of this study helps to reduce healthcare costs and positively impacts antimicrobial stewardship efforts.