

The PEST Approach to Choosing Antimicrobial Therapy

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Results

- Twenty-seven interns participated in the activity
- At baseline, several interns had incorporated aspects of the PEST approach in their pre-teaching responses
- While the teaching session improved therapeutic reasoning as defined by the PEST strategy (Figure 2), there was no appreciable difference in antibiotic selection (Figure 3)

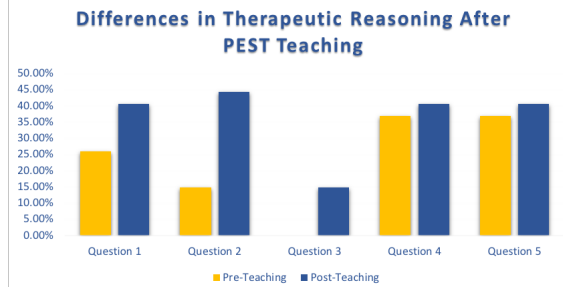


Figure 2. Differences in Therapeutic Reasoning After PEST Teaching

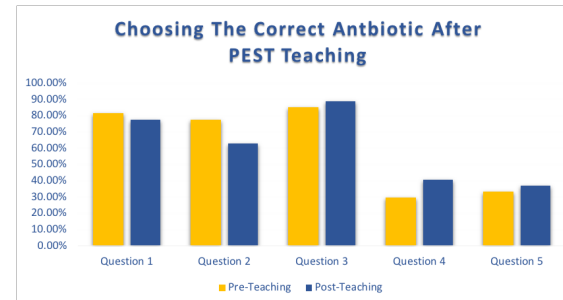


Figure 3. Choosing the Correct Antibiotic After PEST Teaching

P: What is the Pathology? (Step One)

- What is the pathogen?
- No culture data is available? What are the typical pathogens based on the site of infection?

E: What is the Epidemiology? (Step Two)

- What are the local resistance patterns of the pathogen?
- Usually hospital/region specific, is an antibiogram available?

S: What is the Severity? (Step Three)

- What is the stage and severity of the infection?
- (Bacteremia vs. meningitis vs. pneumonia vs. abscess vs. cellulitis?)
 - How many sites of infection?
 - Is the patient hemodynamically stable?

T: What is the Treatment? (Step Four)

- What is the PK/PD of the medication? Concentration in the serum vs. CSF vs. soft tissue?
 - IV vs. oral absorption; hepatic vs. renal clearance (dosing the medication to CrCl)?
 - Static vs. –cidal quality of the medication?
- Medication-medication interactions? Contraindications (e.g. pregnancy)?

Figure 1. The PEST Approach

🌟 **Our results showed fidelity in using the PEST approach to improve therapeutic reasoning after a teaching session**

🌟 **The method, however, did little to improve antibiotic selection**

🌟 **Some interns were using the PEST approach conceptually prior to the educational intervention**

🌟 **Interns did appreciate the systematic approach to selecting antibiotics**

🌟 **Use of such interventions may benefit from repetition, with continued incorporation of a case-based framework to solidify conceptual and practical knowledge**

Background

- Empiric antimicrobial regimen selection can be difficult for early learners and misuse of antibiotics can lead to adverse events and antimicrobial resistance
- We describe an approach to aid internal medicine interns in their clinical decision making with choosing empiric antibiotics

Methods

- The PEST model was created as a four-step approach to therapeutic reasoning and choosing an appropriate antimicrobial regimen for a given infectious disease syndrome (Figure 1)
- In February 2020, we conducted two independent noon conference teaching sessions to discuss the PEST approach
- Pre-and post-teaching responses to five clinical vignette-based questions were collected to assess optimal selection of antibiotics and improvement in the use therapeutic reasoning
- Results from the responses were awarded a score of 0 or 1 point(s) if they chose the correct antibiotic and an additional 0 or 1 point(s) if they explained their answer with sufficient therapeutic reasoning, defined as accompanying three out of four aspects inherent to the PEST approach
- Interns were encouraged to choose an antibiotic and explain their reasoning in detail as part of their response



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