Evaluating the impact of educational interventions on medical trainees' knowledge of culturing in catheterized patients

**BACKGROUND**

- Asymptomatic bacteriuria is a common phenomenon, especially in chronically catheterized patients.
- The Infectious Disease Society of America (IDSA) guidelines recommend against culturing for pyuria and bacteriuria in asymptomatic patients.
- Inappropriate treatment of asymptomatic bacteriuria in catheterized patients leads to antibiotic overuse, the emergence of multi-drug resistant organisms, adverse drug interactions, and increased episodes of Clostridium difficile infections.
- Numerous studies have shown that presenting evidence-based information improves medical trainees’ knowledge and skills.

**OBJECTIVES**

- To evaluate current knowledge and practices of trainees regarding indications to order urine cultures in catheterized patients.
- To educate trainees about current evidence-based indications to order urine cultures in catheterized patients.
- To assess the impacts of this educational intervention.

**METHODS**

- **Setting:** 1541-bed academic medical center, New Haven, CT.
- **Survey:**
  - Types: baseline and post education, paper and electronic.
  - Respondents: medical students, residents, fellows.
  - Survey period: January to March 2018; post education surveys given a range of immediately after to several weeks after education.
  - Components: questions about respondent’s role, primary location of practice, and 13 questions to evaluate whether culturing practices were consistent with IDSA guidelines.
  - Scores calculated on a scale of 0-12 (one question was controversial) with 1 point for each incorrect answer. Differences between the means of these scores by method of education.
- **Results:**
  - There was no difference in score based on how the trainees were educated (1.94 for email vs 1.89 for word-of-mouth vs 2.00 for in-person conference, p=0.99, Figure 2).
  - Trainees who reported that they did not receive any form of education scored significantly worse than average (4.68 vs 2.84, p<0.005, Figure 2), and the trainees who reported receiving multiple forms of education scored better than average (1.00 vs 2.84, p=0.06).
  - There was no difference in score based on how the trainees were educated (1.94 for email vs 1.89 for word-of-mouth vs 2.00 for in-person conference, p=0.99, Figure 2).

**RESULTS**

- 163 out of an estimated 930 trainees (18%) responded to our baseline survey, with average scores improving with level of training: 6.4 for medical students, 4.2 for interns, 3.9 for residents, and 3.8 for fellows (p<0.05, Table 1).
- 93 of 160 (57%) trainees responded to the post education survey, with improvements in scores across all levels (p<0.05 for residents, Table 1) and all questions (Figure 1).
- Trainees who reported that they did not receive any form of education scored significantly worse than average (4.68 vs 2.84, p<0.005, Figure 2), and the trainees who reported receiving multiple forms of education scored better than average (1.00 vs 2.84, p=0.06).
- There was no difference in score based on how the trainees were educated (1.94 for email vs 1.89 for word-of-mouth vs 2.00 for in-person conference, p=0.99, Figure 2).

**CONCLUSIONS**

- Our data show that advanced trainees scored better than medical students and interns. However, trainees at all levels improved their scores with education about culturing.
- The form of the education did not make a difference in their scores, which suggests that it is just as effective to send out electronic resources as more time-intensive noon conferences.
- Our analysis shows that there is great opportunity and benefit to targeting education to trainees to promote diagnostic stewardship.
- Future studies should focus on the sustainability of the impact of these educational interventions.

**REFERENCES**


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