



Quantitative Analysis of Teaching Behaviors by Endoscopy Educators During Trainee-Performed Colonoscopy



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Background

- Within competency-based medical education, Directly Observed Procedural Skills (DOPS) is a recommended method for assessing trainee procedural skills.
- With the rise of train-the-trainer courses educating endoscopy trainers on best practices for teaching endoscopy, a similar assessment of Directly Observed Teaching Skills (DOTS) may be beneficial.
- We previously created and held a workshop teaching endoscopy trainers a standardized approach to teaching endoscopy.
- The frequency of directly observed teaching behaviors in endoscopy trainers has not been previously described in peer-reviewed literature.

Aims

1. Quantify directly observed teaching behaviors in endoscopy trainers during trainee-performed colonoscopy.

Methods

Design

- As part of an IRB-approved study at Boston Medical Center, endoscopy trainers (attendings) were filmed while supervising trainees (fellows) performing colonoscopies up to 7 months before and 5 months after our train-the-trainer workshop.
- Ergonomic behaviors (neck craning, posture) were graded on a 5-point scale, where 1 = none, 2 = minority of procedure, 3 = ~50% of procedure, 4 = majority of procedure, and 5 = entire procedure.

Data collection

- Videos were reviewed and encoded by a second-year GI fellow.
- Data encoded from videos included timing of teaching behaviors by attendings, timing and ability of trainees performing polypectomy, trainee ergonomics, and management of any distractions.

Tables

Table 1. Proportion of Trainee-Performed Colonoscopy Insertion Involving Directly Observed Teaching Behaviors by Attendings.

Teaching Behavior	Proportion of Insertion Mean (SD)		
	1 st & 2 nd year fellows	3 rd & 4 th year fellows	<i>p</i>
Positioned appropriately to observe patient, trainee, and monitor	69.2% (38.7%)	64.9% (38.5%)	0.43
Provided verbal instruction	20.5% (19.2%)	16.0% (12.1%)	0.65
Provided hands-on instruction (holding the colonoscope)	4.6% (12.9%)	1.2% (6.5%)	0.10

Table 2. Proportion of Trainee-Performed Colonoscopy Withdrawal Involving Directly Observed Teaching Behaviors by Attendings.

Teaching Behavior	Proportion of Withdrawal Mean (SD)		
	1 st & 2 nd year fellows	3 rd & 4 th year fellows	<i>p</i>
Positioned appropriately to observe patient, trainee, and monitor	67.9% (40.2%)	43.2% (41.4%)	0.05
Provided verbal instruction	18.6% (15.6%)	16.7% (14.5%)	0.49
Provided hands-on instruction (holding the colonoscope)	3.3% (9.4%)	1.4% (5.6%)	0.08

Results

- A total of 106 trainee-performed colonoscopies supervised by 11 attendings were recorded and encoded.
- Of the procedures filmed,
 - 12 (11.3%) were performed by a 1st year fellow.
 - 58 (54.7%) were performed by a 2nd year fellow.
 - 31 (29.2%) were performed by a 3rd year fellow.
 - 5 (4.7%) were performed by a 4th year IBD fellow.
- Due to uneven distribution of trainee-year among filmed procedures, we compared teaching behaviors during procedures by 1st and 2nd year fellows against procedures by 3rd and 4th year fellows.
- Monitor height was correct in 81% of procedures.
- Bed height was correct in 99% of procedures.
- Trainees displayed neck craning and poor posture for a minor duration of procedures (1.75, SD 0.92 and 2.02, SD 1.08 respectively).
- Of 37 procedures that involved distractions, 25.7% of distractions were addressed by the attending.

Conclusions

- Attendings supervised withdrawal from an ideal position significantly more often for 1st and 2nd year fellows, likely due to their more junior experience and skill.
- Attendings also provided hands-on instruction more often for 1st and 2nd year fellows but only with marginal significance.
- Endoscopy trainers should recognize and address distractions and correct trainee ergonomics during colonoscopy.
- Areas for possible future study include pre- and post-intervention comparison, determinants of teaching behaviors by trainers, and correlation of teaching behaviors to trainee performance and colonoscopy quality.