



Long-Term Follow Up of Colonoscopy Quality Monitoring

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BACKGROUND AND AIMS

- High-quality colonoscopy is paramount for colorectal cancer (CRC) prevention.
- Interventions have been proposed to improve colonoscopy quality at the operator and institutional levels.
- Since 2009, endoscopists at our university-affiliated, Veterans Affairs medical center have received a quarterly report card summarizing individual colonoscopy quality indicators.
- We have previously shown that this intervention was associated with short-term improvement in adenoma detection rate (ADR).
- However, the long-term effect on colonoscopy quality is unclear.

METHODS

- We conducted a retrospective study of prospectively administered quarterly colonoscopy quality report cards at the Roudebush VA Medical Center between April 1, 2012 and August 31, 2019.
- The anonymized reports included individual endoscopists' ADRs, cecal intubation rates, and withdrawal times.
- We included endoscopists who had contributed at least 50 colonoscopies per year, and at least 4 consecutive quarters during the study period.
- Linear regression models were used to determine slopes over time for each quality metric by physician.
- Analyses were performed to assess for differences based on whether ADRs were calculated quarterly or yearly.

Table 1. Mean ADR and Slopes of ADR between yearly and quarterly measurement

Physician	Quarterly				Yearly			
	Mean (± SD)	Slope	SE	p-value	Mean (± SD)	Slope	SE	p-value
All	51.7% (± 11.7%)	0.6%	0.2%	<u>0.021</u>	47.2% (± 13.8%)	2.7%	0.4%	<u><.001</u>
Physician A	48.5% (± 7.8%)	1.1%	2.6%	0.689	49.3% (± 5.7%)	-3.0%	2.3%	0.314
Physician B	39.4% (± 5.4%)	0.2%	0.5%	0.628	36.8% (± 9.4%)	1.6%	1.4%	0.306
Physician C	66.3% (± 6.0%)	1.6%	0.7%	<u>0.022</u>	64.1% (± 7.6%)	2.3%	1.2%	0.113
Physician D	53.4% (± 9.2%)	1.2%	0.8%	0.155	47.9% (± 13.3%)	3.5%	1.7%	0.084
Physician E	33.8% (± 11.5%)	4.7%	10.8%	0.692	21.0% (± 15.0%)	13.6%	6.3%	0.275
Physician F	46.4% (± 6.3%)	0.6%	2.0%	0.761	48.2% (± 4.8%)	1.8%	2.3%	0.531
Physician G	48.0% (± 11.5%)	0.1%	1.1%	0.948	39.6% (± 9.1%)	1.9%	1.3%	0.201
Physician H	60.3% (± 8.6%)	1.2%	0.8%	0.118	54.0% (± 13.3%)	3.6%	1.6%	0.070
Physician I	55.1% (± 6.2%)	-1.3%	0.9%	0.167	53.2% (± 9.1%)	1.4%	2.3%	0.589
Physician J	51.8% (± 7.5%)	0.4%	1.5%	0.802	48.9% (± 12.2%)	3.6%	3.9%	0.431
Physician K	38.5% (± 11.0%)	-1.4%	1.3%	0.290	35.5% (± 12.2%)	1.6%	2.4%	0.533
Physician L*	50.1% (± 8.1%)	14.2%	3.4%	0.052	35.9% (± 14.9%)	-21.0%		
Physician M	48.2% (± 11.3%)	11.8%	3.8%	<u>0.026</u>	38.6% (± 15.3%)	7.1%	13.6%	0.692
Physician N	60.0% (± 7.5%)	2.0%	2.9%	0.506	59.7% (± 2.8%)	0.8%	2.7%	0.819
Physician O	52.9% (± 6.4%)	1.3%	1.2%	0.277	52.1% (± 5.2%)	1.9%	1.6%	0.302
Physician P	59.1% (± 10.4%)	6.0%	2.5%	<u>0.043</u>	59.2% (± 8.6%)	5.6%	2.6%	0.160
Physician Q	55.2% (± 10.7%)	0.4%	1.1%	0.747	48.5% (± 13.6%)	3.0%	1.9%	0.169

*Physician L performed colonoscopies over six consecutive quarters, so there were insufficient data to assess yearly measures over time.

Table 2. Individual endoscopists' ADR standard deviation differences between yearly and quarterly measurement

Physician	Quarterly	Yearly	Yearly-Quarterly
All	8.7%	10.8%	2.1%
Physician A	7.8%	5.7%	-2.1%
Physician B	5.4%	9.4%	4.0%
Physician C	6.0%	7.6%	1.6%
Physician D	9.2%	13.3%	4.1%
Physician E	11.5%	15.0%	3.5%
Physician F	6.3%	4.8%	-1.5%
Physician G	11.5%	9.1%	-2.4%
Physician H	8.6%	13.3%	4.7%
Physician I	6.2%	9.1%	2.9%
Physician J	7.5%	12.2%	4.6%
Physician K	11.0%	12.2%	1.3%
Physician L	8.1%	14.9%	6.8%
Physician M	11.3%	15.3%	4.0%
Physician N	7.5%	2.8%	-4.7%
Physician O	6.4%	5.2%	-1.2%
Physician P	10.4%	8.6%	-1.7%
Physician Q	10.7%	13.6%	2.8%

RESULTS

- A total of 24,361 colonoscopies were performed by 17 endoscopists over a mean (range) of 18 quarters (6-28).
- The mean quarterly ADR (±SD) was 51.7% (± 11.7%), while the mean yearly ADR was 47.2% (± 13.8%).
- Over the study time frame, there was a small increase in overall ADR based on both quarterly and yearly measurements (slope + 0.6%, p=0.02; and slope +2.7%, p < 0.001, respectively).
- However, most endoscopists had no significant change in their ADRs (**Table 1**).

RESULTS (CONTINUED)

- Overall mean quarterly and yearly cecal intubation rates (99.6% ± 0.9%; 99.6% ± 0.5%) and withdrawal times (16.3 ± 5.8 min; 16.7 ± 5.9 min) did not change significantly.
- Analysis of standard deviation of ADRs to represent outcome variability over time within a physician showed no significant difference between yearly and quarterly measurements (p=0.064).
- Individual endoscopists' ADR standard deviation differences between yearly and quarterly measurement ranged from -4.7% to +6.8% (**Table 2**).

CONCLUSION

- After an initial positive effect, we found that long-term quarterly colonoscopy quality monitoring did not significantly change individual ADR but had a modest and stable improvement in overall pooled ADR.
- The magnitude of this ADR improvement was small and likely due to temporal trends rather than an independent causal effect
- For endoscopists with baseline high ADR and who abide by the precepts of high-quality colonoscopy, frequent monitoring and reporting of colonoscopy quality metrics may not be necessary.
- The optimal frequency requires additional study.