

The Reply:

We thank Rustagi for his interest in our article. The relationship among colonoscopy volume, specialty, and polyp detection rates is complex, and we have provided

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further data about the effect of colonoscopy volume separately for each specialty (Table 1). Because of the relatively small number of very high-volume endoscopists in the primary care or surgical specialties, we have combined some specialties in Table 1. These data show relationships among colonoscopy volume and polyp detection, polyp removal, and biopsy rates that are generally similar to those reported in our original article, particularly for gastroenterologists. For example, among the lowest-volume providers, nongastroenterologists had consistently lower polyp detection and removal rates than gastroenterologists.

The relationship between specialty and polyp detection or removal rates for higher-volume providers is somewhat more complicated. For all but the lowest-volume primary care physicians, polyp detection and removal rates were

Table 1 Polyp Detection, Biopsy, and Polyp Removal Rates by Specialty and Colonoscopy Volume

	Gastroenterology	General or Colorectal Surgery	Family or Internal Medicine	Other
Annual colonoscopy volume, by quartile*				
Number of endoscopists				
<33	3813	4779	2364	381
34-55	2736	607	200	53
56-82	1948	170	116	24
83-367	1265	56	52	14
Polyp diagnosis				
Adjusted odds ratio† (95% CI)				
<33	1.01 (0.95-1.07)	0.73 (0.69-0.78)	0.78 (0.72-0.84)	0.75 (0.64-0.88)
34-55	1.09 (1.03-1.15)	0.83 (0.76-0.90)	1.00 (0.88-1.13)	1.08 (0.83-1.40)
56-82	1.07 (1.01-1.13)	0.87 (0.75-1.01)	0.99 (0.84-1.17)	1.11 (0.80-1.54)
83-367	1.00 (Reference)	0.84 (0.70-1.02)	1.04 (0.85-1.28)	0.88 (0.53-1.46)
Polyp removal				
Adjusted odds ratio† (95% CI)				
<33	1.01 (0.95-1.07)	0.74 (0.70-0.78)	0.76 (0.71-0.82)	0.72 (0.62-0.83)
34-55	1.09 (1.03-1.15)	0.82 (0.75-0.89)	0.97 (0.86-1.11)	1.13 (0.87-1.47)
56-82	1.06 (1.00-1.12)	0.84 (0.72-0.97)	1.00 (0.84-1.18)	1.14 (0.82-1.57)
83-367	1.00 (Reference)	0.73 (0.60-0.88)	0.97 (0.80-1.17)	0.89 (0.55-1.45)
Diagnostic biopsy				
Adjusted odds ratio† (95% CI)				
<33	1.24 (1.15-1.33)	0.86 (0.80-0.92)	1.12 (1.03-1.23)	0.95 (0.81-1.12)
34-55	1.16 (1.08-1.24)	0.85 (0.76-0.94)	1.13 (0.96-1.33)	1.08 (0.78-1.51)
56-82	1.11 (1.03-1.19)	0.88 (0.72-1.07)	0.95 (0.79-1.14)	1.09 (0.72-1.67)
83-367	1.00 (Reference)	0.65 (0.49-0.87)	1.19 (0.95-1.49)	1.33 (0.72-2.45)

CI = confidence interval.

*Annual colonoscopy volume reflects only the number of outpatient colonoscopies in the 20% sample of Medicare beneficiaries.

†All odds ratios adjusted for clustering of outcomes by provider. Odds ratios also are adjusted for years in practice, site of service, provider rural/urban practice location, patient age, sex, race, Charlson comorbidity score, ZIP-code based median income, colonoscopy indication, and anesthesiologist assistance during the procedure.

similar to highest-volume gastroenterologists. Among the highest-volume providers, polyp detection and removal rates were lower for surgeons compared with gastroenterologists or primary care physicians. Diagnostic biopsy rates were generally lower for surgeons than gastroenterologists, but not for primary care physicians. However, confidence intervals for these estimates are wide because of the small number of nongastroenterologists with high colonoscopy volume.

Some of the seemingly contrary relationship among specialty, volume, and polyp detection or removal rates noted by Rustagi may be explained by the differences in distribution of colonoscopy volume across specialty. The highest-volume endoscopists are overwhelmingly gastroenterologists, but specialty is more evenly distributed for lowest-volume providers. Therefore, the results for very high-volume providers are dominated by gastroenterologists, whose overall polyp detection, polyp removal, and biopsy rates are higher than nongastroenterologists. These results highlight the fact that both specialty and colonoscopy volume are important determinants of these colonoscopy outcomes.

The inverse relationship between polyp detection or removal rates and physician years in practice is surprising, but consistent with prior findings.¹ Histological data are not available in the Medicare claims; so we could study only polyp detection rates and not adenoma detection rates. However, others have found that adenoma and polyp detection rates are correlated,² suggesting that the relationship between adenoma detection and physician experience would be similar.

We agree that further studies are needed to understand the mechanisms by which provider characteristics affect colonoscopy quality. While our results characterize the gen-

eral relationship between provider characteristics and important colonoscopy outcomes, others have suggested that the individual endoscopist is the critical factor in adenoma detection rates.³ Therefore, it is important that all endoscopists, regardless of specialty, colonoscopy volume, or years in practice, know their polyp detection rates and take measures to improve the quality of their colonoscopy performance because adenoma detection rates have been shown to be inversely associated with the risk of colorectal cancer after colonoscopy.¹

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