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Practice patterns of sedation for colonoscopy

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Abstract

Background—Sedative and analgesic medications have been routinely used for decades to provide patient comfort, reduce procedure time, and improve examination quality during colonoscopy.

Objective—To evaluate trends of sedation during colonoscopy in the United States

Setting—Endoscopic data repository of U.S. gastroenterology practices (Clinical Outcomes Research Initiative, CORI database from 2000 until 2013).

Patients—The study population comprised patients undergoing a total of 1,385,436 colonoscopies.

Interventions—Colonoscopy without any intervention or with mucosal biopsy, polypectomy, various means of hemostasis, luminal dilation, stent placement, or ablation.

Main Outcome Measurements—Dose of midazolam, diazepam, fentanyl, meperidine, diphenhydramine, promethazine, and propofol used for sedation during colonoscopy.

Results—During the past 14 years, midazolam, fentanyl and propofol have become the most commonly used sedatives for colonoscopy. Except for benzodiazepines, which were dosed higher in women than men, equal doses of sedation were given to female and male patients. Whites were given higher doses than other ethnic groups undergoing sedation for colonoscopy. Except for histamine-1 receptor antagonists, all sedative medications were given at lower doses to patients with increasing age. The dose of sedatives was higher in colonoscopies associated with procedural interventions or of long duration.

Conclusions—The findings reflect on colonoscopy practice in the United States during the last 14 years, and provide an incentive for future research on how gender and ethnicity influence sedation practices.

Keywords

colonoscopy; conscious sedation; deep sedation; epidemiology; ethnicity; gender; time trends

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Introduction

Colonoscopy is an important medical tool in screening, diagnosing, and treating a variety of gastrointestinal diseases. Although unsedated colonoscopy is performed in some areas of the world, peri-endoscopic sedative and analgesic medications have been routinely used for decades in the United States and many other countries to provide patient comfort, reduce procedure time, and improve examination quality when performing colonoscopy^{1–6}. There are generally 4 stages of sedation recognized by most physicians: minimal, moderate, deep, and general anesthesia⁷. This classification is in practice subjective and exists along a continuum, as the optimal amount of sedation varies depending on the patient and the procedure type; colonoscopies are generally performed under moderate sedation, also termed “conscious sedation.”⁷

Some of the factors that influence an endoscopist’s decision on the amount and type of sedative and analgesic medication selected for a given patient include the type of procedure planned, comorbidities and general health status of the patient, procedure-related patient anxiety, age, and baseline medications⁸. Benzodiazepines (midazolam and diazepam) are the most commonly used sedatives in the United States when moderate sedation is indicated; these are generally given with an opiate (fentanyl or meperidine) for synergism⁷. Patients requiring deeper sedation or general anesthesia often receive propofol; the FDA currently recommends that this drug only be administered by individuals trained to provide general anesthesia⁹.

Administration of sedative and analgesic medications, although generally safe, is not without risk^{10–11}. As a result, there are many examples in the literature of various sedation protocols in which different drug types, drug amounts, and timing of administration are studied^{8,13–15}. There is also increased focus on the financial impact of sedation practices in gastrointestinal endoscopy; for example, there is recent data suggesting a trend toward increased utilization of anesthesia services for patients undergoing gastrointestinal endoscopy^{16–18}. What remains unclear is whether practice patterns for moderate sedation during colonoscopies in the United States have changed over time, or whether gender, ethnicity, age, and intervention during colonoscopy influence these practices.

We aimed to evaluate trends of sedation during colonoscopy in the United States. Specifically, we aimed to examine whether the utilization of various sedatives has changed in recent years. Second, we aimed to examine whether the average amount of sedation used for colonoscopic procedures varies by age, gender, or ethnicity. Third, we aimed to assess whether the average amount of sedation is higher in longer procedures or procedures in which an intervention is used.

Methods

The Clinical Outcomes Research Initiative (CORI) endoscopic database was used for extraction of data from patients undergoing colonoscopy during 2000–2013. This database was established in 1995 as a means of studying outcomes and utilization of endoscopy in a variety of practice settings.¹⁹ Sites include over 99 community/private practice, academic

centers, and Department of Veterans Affairs (VA) medical centers. Of all colonoscopies, 77.2% were performed in community/private practice, 9.3% in academic centers, and 13.5% in hospitals affiliated with the US Department of Veterans Affairs. The endoscopic reports from the participating centers are sent to the National Endoscopic Database after the patient records have been de-identified and all identifying personal information has been removed from individual patient records. Individual patients can still be traced within the database by their unique codes. Because of the use of de-identified data only, the study was granted a waiver of consent by the institutional review board at the Oregon Health & Science University. The database of 2000–2013 was queried for all adult patients undergoing colonoscopy for any indication.

Multiple tables were drafted before data extraction; tables were generated separately for men and women and were stratified by seven different types of drugs: midazolam, diazepam, fentanyl, meperidine, diphenhydramine, promethazine, and propofol. For these tables, sedation data was collected from colonoscopy reports entered by physicians using the CORI database between 2000–2013. A separate set of tables was created to extract data pertaining to sedation use stratified by intervention type and year of procedure. Definitions for intervention type corresponded to specific pre-existing CORI definitions and were as follows: 1) no intervention, 2) biopsy or multiple biopsies, 3) polypectomy, including number of polyps removed, location, and method of removal, 4) hemostasis, including submucosal injections, bipolar coagulation, argon plasma coagulation, hemostasis clip application, or band ligation, 5) dilation, 6) stent placement, 7) ablation.

We accumulated the number of colonoscopies associated with each medication and calculated the average dose used. Various medications were given simultaneously during the same colonoscopy. In some patients, different types of interventions were performed during the same colonoscopy. Last, not all types of information were available for each individual colonoscopy. In filling out the colonoscopy report, it was left to the endoscopist's discretion how much information and which details to include in the final report. For these reasons, the individual numbers associated with subcategories in the tables do not add up to 100%.

Patients were stratified by *race* as Caucasian (white), African American (black), or Others (American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander). Because of their relatively small numbers, in the analysis, the stratification of the data by other races is not shown separately. In addition to race, patients were also stratified by *ethnicity* as Hispanic yes or no. Of all Hispanics, 96.1% identified as whites, 2.3% as blacks, and 1.6% as other. In the following text of the article, we use the term “ethnicity” when we refer to both, race or ethnicity.

Student's t-test was performed to test the effect of gender, age, ethnicity, and procedure type on the amount of sedative used. Similarly, the amount of sedation in different procedure types and procedural interventions was compared using the t-test or the one-way analysis of variance. Procedural counts associated with different demographic groups or procedural types were compared using chi-square tests. Rising or falling trends in the utilization of sedatives were approximated with linear and non-linear regression analysis.

Multivariate linear regression analysis was then performed. In each dataset, the dose of midazolam, fentanyl, meperidine, propofol, diphenhydramine, and promethazine were used as separate numeric outcome variables. The following parameters were used as possible predictor variables: age, gender, ethnicity, inpatient vs. outpatient status, presence of any intervention, polyp number, size of largest polyp, procedure length, ASA class, and year of endoscopy. The results of the regression analyses were expressed in terms of the regression coefficients and their statistical significance.

Results

The database contained records from 1,508,335 colonoscopies, of which 122,899 were excluded because of either (1) lack of sedation information; or (2) residual sedation was documented from a prior endoscopy (mostly esophago-gastro-duodenoscopy). A total of 1,385,436 colonoscopies from 2000–2013 were included in the present analysis. midazolam was used in 1,057,719 procedures, fentanyl in 614,707, meperidine in 421,546, propofol in 125,899, diphenhydramine in 33,614, diazepam in 9,363, and promethazine in 1,218. Figure 1 shows the time trends in the proportional usage of individual drugs. The frequency in usage of each individual drug is expressed as percentage of all drug used during a given year. Midazolam has remained the most commonly used drug, followed by fentanyl, propofol, and meperidine. Whereas, the use of propofol for deep sedation has greatly increased, the use of meperidine has declined at the expense of increasing fentanyl use during the same time period. The use of diazepam largely dropped out of favor after 2003. The average dose of medication used for the individual compounds did not significantly change over time.

Table 1 shows the mean dose and its standard deviation stratified by the type of colonoscopy for the 4 most commonly used medications. The dose of midazolam remained largely unaffected by whether the colonoscopy was accompanied by any intervention. Similarly, the dose of midazolam remained unaffected by number, size, or location of the polyps removed. The doses of fentanyl, meperidine, and propofol were slightly, but statistically significantly higher in colonoscopies associated with than without intervention. The use of all 3 medications increased with the size and number of polyps excised. The overall magnitude of these influences was relatively small. They were most pronounced with respect to propofol. However, because of the large number of colonoscopies in the study, these differences were all statistically significant at a level of $p < 0.0001$.

The procedural length of time was recorded in 825,702 colonoscopies (Table 2). The occurrence of intervention increased the average procedure time by 4.4 minutes. The longest durations were associated with stent placement, tumor ablation, and hemostasis in declining order. Polyp number, size, and location also exerted a small but statistically significant influence with $p < 0.0001$.

The vast majority of patients undergoing colonoscopy received more than one medication during their sedation. Typical combinations included dual therapy with midazolam plus fentanyl, meperidine, or propofol and triple therapy with diphenhydramine, midazolam and fentanyl. As a general pattern, patients who received a high dose of one drug also tended to

receive a high dose of their other drug regimen. The correlation coefficient between midazolam and fentanyl dose was $r = 0.330$ ($n = 551,843$, $p < 0.0001$) and between midazolam and diphenhydramine dose $r = 0.280$ ($n = 26,698$, $p < 0.0001$). Similarly, the correlation coefficient between diazepam and fentanyl dose was $r = 0.271$ ($n = 460$, $p < 0.0001$) and between diazepam and meperidine dose was $r = 0.194$ ($n = 8,552$, $p < 0.0001$).

The average dose of midazolam and diazepam were both slightly, but significantly higher in women than men with $p < 0.0001$ (Figure 2). Except for minor variations, the average doses of other drugs were similar in both gender groups.

Figure 3 contains a stratification of average medication dose by ethnicity. The data reveal several general trends. The average medication dose tended to be higher among whites than blacks or Hispanics. Of all ethnic groups, the average medication dose tended to be lowest among Hispanics. There were several notable exceptions to these overall patterns. For instance, propofol and meperidine dose were both highest among blacks, and the average promethazine dose was highest among Hispanics.

The most obvious demographic patterns concerned an age-dependent decline in the dose of various medications (Figure 4). With the exception of diphenhydramine and promethazine, the decline was similarly present in all medications. Dosing showed continuous decline involving all ages after the youngest group (20–29 years).

Table 3 contains the results of the multivariate regression analyses. The analyses were limited to the 4 most common medications. Because of the large sample sizes, there was a tendency even for minor risk factors to exert a statistically significant influence. The strength of each individual influence is partly reflected by its beta-coefficient (in relationship to the unit of measurement and the standard error), as well as the t-value. In general, all risk factors identified by the univariate analyses remained statistically significant independent risk factors in the multivariate analysis as well. For instance, the dose of midazolam was *negatively* influenced by old age, black and Hispanic ethnicity, and *positively* influenced by female sex, long procedure duration, and the occurrence of any intervention. Similarly, the dose of fentanyl was *negatively* influenced by old age, female sex, black and Hispanic ethnicity, and *positively* influenced by long procedure duration and the occurrence of any intervention. The dose of propofol was *negatively* influenced by old age, female sex, and Hispanic ethnicity, and *positively* influenced by black ethnicity, long procedure duration, and the occurrence of any intervention.

Discussion

The present study used a multicenter endoscopic database to evaluate the treatment patterns used for sedation of patients undergoing colonoscopy. The data revealed that during the past 14 years, midazolam, fentanyl and propofol have become the most commonly used sedatives for colonoscopy. Except for benzodiazepines, which were dosed higher in women than men, equal doses of sedation were given to female and male patients. Whites were given higher doses than other ethnic groups undergoing sedation for colonoscopy. Except for histamine-1 receptor antagonists, all sedative medications were given at lower doses to

patients with increasing age. The dose of sedatives was higher in colonoscopies associated with procedural interventions or of long duration.

Our study found few differences in sedation trends based on gender, with women and men generally receiving the same amounts of sedation, with the exception of benzodiazepines. Prior investigators have shown that women underuse colonoscopy compared with men; reasons for this may include lower referral rates, potential for embarrassment, and preference (but unavailability) of female endoscopists.^{20–23} Our findings that women receive at least as much sedation as men (and in the case of benzodiazepines, more sedation than men) argue against sedation practices as a significant cause for colonoscopy underutilization by women. However, some data indicate that even when accounting for differences in body weight by gender, women require more sedatives during endoscopy than men to achieve similar comfort levels.²⁴ Further study of potential differences in sedation needs during colonoscopy between women and men are needed to clarify ideal dosing parameters for both genders, which may improve colonoscopy utilization.

Our study also shows that white patients generally receive more sedation than black and Hispanic patients. It has previously been established that black patients have a higher risk for colorectal cancer than other ethnicities and should be screened earlier than age 50 (for black men); despite this, black patients are less likely than white patients to be referred for or to receive colonoscopy.^{25–30} Our findings that black patients receive less sedation than white patients (with the exception of propofol) might suggest that black patients have lower satisfaction rates after colonoscopy, especially considering that fear of pain is a powerful factor in the underutilization of colonoscopy among black patients.³¹ Our findings could suggest a bias toward using less sedation among endoscopists performing procedures on black patients, which may contribute to lower utilization of colonoscopy among black patients. The reasons why black patients received more propofol than non-black patients is unclear; data on differing response rates to propofol based on ethnicity is unconvincing.^{32,33}

We also found that Hispanic men and women received less sedation overall than any of the other ethnic groups, including black patients. This is significant given that Hispanics already lag behind other ethnic groups in completing CRC screening.^{34,35} As there is no data to suggest that Hispanic patients are more tolerant of colonoscopy compared with other ethnicities, our findings indicate that lack of adequate sedation during colonoscopy in the Hispanic population may potentiate underutilization of colonoscopy among this group of patients. Other investigators have shown that culturally tailored approaches to colonoscopy referral can increase colonoscopy completion rates among minority ethnicities; cultural sensitivity immediately prior and during colonoscopy might further insure adequate sedation during colonoscopy.³⁶

The reasons endoscopists would deliver less sedation to black and Hispanic patients undergoing colonoscopy are likely multifactorial. Some have shown that non-white patients are less frequently referred for colonoscopy because of language barriers, perceived poor education, or low socioeconomic status.^{37–39} Whether these factors would influence sedation practices during colonoscopy is difficult to prove, though ineffective communication between patient and endoscopist as a result of a language barrier could

understandably play a role. Non-white patients in other settings are screened for pain less frequently than white patients and receive less analgesia when pain is reported, suggesting the potential for similar biases during colonoscopy.^{40,41} Cultural factors may also influence these interactions; a study involving postcholecystectomy Native American patients indicate that usual Western assessments for pain or discomfort may not apply in some cultures.⁴² Further exploration of the causes for ethnic disparities in sedation during colonoscopy revealed by our study is needed.

Our study showed that progressively less sedation was used in patients of increasing age, with the exception of histamine-1 receptor antagonists. This may reflect appropriate caution on the part of the endoscopist when sedating elderly patients given data showing that rates of aspiration, hypoxia, arrhythmias, and hypotension are higher in elderly patients.⁴³ Other evidence shows that elderly patients require less sedation during endoscopy than their younger counterparts and have similar satisfaction rates and procedural outcomes.⁴⁴⁻⁴⁷ As such, the American Society of Gastrointestinal Endoscopy released guidelines in 2006 recommending lower amounts of sedation for elderly patients undergoing endoscopy; our findings may reflect adherence to these guidelines.⁴⁸ Our findings also provide quantitative data on the general amounts of sedation used by endoscopists during colonoscopy for elderly patients, and could be used as a guide for ideal sedation parameters in this population.

Our study also examined procedure time during colonoscopy with or without intervention, with stratification based on type of intervention used. We found that on average, an extra 4 minutes was required for colonoscopies with interventions, and that stent placement was the procedure requiring the most time, followed by ablation. We also found more time was required with a higher number of polyps, larger polyps, and polyps located in the R colon. Interestingly, there was only a slight increase in the doses of propofol, fentanyl, and meperidine (but not midazolam) for colonoscopies with interventions compared with those without. Unexpectedly, *less* sedation was administered for procedures in which hemostasis was performed compared with procedures in which no hemostasis was performed, with the exception of Propofol. This may reflect on concerns for hypotension secondary to sedation in the setting of active bleeding or premature termination of a procedure once hemostasis has been achieved. The option to better titrate propofol infusion in such circumstances, could explain its greater use.

Two surveys have dealt with practices of endoscopic sedation in Europe.^{49,50} Both studies revealed most sedations to use a benzodiazepine (midazolam or diazepam) in combination with an analgesic (meperidine or fentanyl). We are unaware of any other study, in which a large database cohort is used to examine trends in moderate sedation among gastroenterologists. Two previous survey-based studies performed by the ASGE in 1989 and again in 2006 indicated a consistent preference for benzodiazepines and opiates when applying moderate sedation during endoscopy, but lacking was information on specific doses or trends in sedation practices over time (only the years 1989 and 2006 represented).^{18,51} Another recent survey-based study found that propofol was more popular in community practices compared with academic practices.⁵² This is in contrast to our finding that midazolam and fentanyl have remained, over time, more commonly used than propofol, though propofol usage has increased in recent years. Though we did not perform

sub-analyses based on practice type or location, others have shown that regional differences in propofol use in the United States do seem to exist.¹⁸

Our study had some limitations. The CORI database relies on information entered by practitioners at the time of colonoscopy; incomplete or incorrect documentation is assumed to occur occasionally. For example, the practitioner is required to input a patient's ethnicity for every patient entered in the database, misclassification is therefore possible. However, the large number of unique patients included in our study reduces the significance of data entry errors. Another limitation was that data on location and practice setting for colonoscopy were difficult to abstract from the CORI dataset and were therefore not pursued; however, this data was not integral to the goals of the study. An inadequate bowel prep can add substantial time to a colonoscopy. Because of the variability associated with its grading, we did not assess the influence of bowel prep *per se* but only studied the influence of endoscopy time on sedation. Propofol use has risen substantially over the last several years. In a future study when its utilization has become more widespread, it might be useful to study its patterns of administration in more detail. For instance, the propofol dose may vary depending on whether it is administered by an anesthesiologist, certified nurse anesthetists, critical care subspecialist, or nurse under the supervision of an endoscopist. The variability in the dosage of propofol may also depend on whether it is administered as a single agent or as part of a "balanced" propofol sedation regimen (propofol + minimal doses of fentanyl/midazolam).

In conclusion, our study provides the most comprehensive and quantitative assessment to date of sedation trends during colonoscopy in the United States during the last 14 years. Midazolam in combination with fentanyl remains the most commonly used sedative, but propofol usage has markedly increased in recent years. Women largely receive the same amounts of sedation that men do when undergoing colonoscopy. Black and Hispanic patients receive less sedation in general than white patients, which may help explain why colonoscopy is underused among these minority patient groups. These findings reflect on colonoscopy practice in the United States during the last 14 years, and may provide an incentive for future research on how gender and ethnicity influence sedation practices.

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Figure 1.
Proportional rates of individual sedative usage between 2000 and 2013.

Figure 2.

Average dose of sedation by sex of patients undergoing colonoscopy. The lower x-axis refers to midazolam and diazepam, the upper x-axis refers to fentanyl (in mcg) and all other sedatives (in mg).

Figure 3.

Average dose of sedation by ethnicity of patients undergoing colonoscopy. The lower x-axis refers to midazolam and diazepam, the upper x-axis refers to fentanyl (in mcg) and all other sedatives (in mg).

Figure 4.

Average dose of sedation by age group of patients undergoing colonoscopy. The left y-axis refers to midazolam and diazepam, the right y-axis refers to fentanyl (in mcg) and all other sedatives (in mg).

Table 1

Medication dose by type of colonoscopy

Type of colonoscopy	Midazolam (mg)			Fentanyl (mcg)			Meperidine (mg)			Propofol (mg)		
	n	mean	SD	n	mean	SD	n	mean	SD	n	mean	SD
No Intervention	645,805	4.1	1.9	372,618	100.6	38.5	264,334	62.9	24.3	71,625	197	106
Any Intervention	411,914	4.0	1.9	242,089	102.7	40.2	157,212	65.0	28.3	54,274	219	120
Biopsy	120,645	4.2	2.2	70,889	104.2	41.9	48,371	65.9	27.6	16,616	228	115
Hemostasis	9,971	3.9	2.1	7,292	98.1	40.8	2,516	61.0	25.3	2,080	275	172
Dilation	662	4.5	2.5	351	115.3	53.2	281	69.9	35.7	121	213	137
Stent placement	68	3.7	1.7	23	78.3	33.1	38	67.8	42.3	14	n/a	n/a
Ablation	4,369	4.3	1.9	2,468	91.6	37.8	1,575	61.2	21.0	728	232	108
Any polypectomy	405,954	4.0	1.8	238,268	102.8	40.2	155,187	65.1	28.3	53,358	219	120
1–2 polyps	295,065	4.0	1.8	172,711	102.0	39.1	114,402	64.2	26.6	37,530	209	107
3–4 polyps	73,416	4.0	1.9	43,446	103.5	41.4	27,161	66.4	30.7	9,960	231	144
5+ polyps	37,473	4.1	1.9	22,111	108.5	45.3	13,624	69.9	35.4	5,868	278	148
Largest polyp												
0–9 mm	334,571	4.0	1.8	195,957	102.3	39.7	127,872	64.9	28.3	44,889	210	113
10+ mm	71,392	4.1	2.0	42,316	105.3	42.3	27,323	65.7	28.1	8,469	266	142
Polyp location												
Left	174,431	4.1	1.9	101,445	103.7	39.9	68,972	65.4	27.8	21,263	209	106
Right	126,110	4.0	1.8	75,333	100.0	38.4	47,020	63.2	25.9	17,317	213	114
Both	104,966	4.0	1.8	61,222	104.9	42.4	38,962	66.5	30.9	14,740	242	145
Unknown	456	4.0	2.1	273	92.3	39.4	241	88.1	86.0	38	305	98

Table 2

Procedural duration by type of colonoscopy

Type of colonoscopy	Number of colonoscopies	Average procedure time (min)	SD (min)
No Intervention	495,238	21.1	10.4
Any Intervention	330,464	25.5	12.9
Biopsy	99,140	24.3	12.3
Hemostasis	9,297	33.4	18.7
Dilation	607	30.7	17.4
Stent placement	84	42.8	21.2
Ablation	2,144	34.9	19.3
Any polypectomy	325,131	25.4	12.8
1–2 polyps	231,914	23.4	11.0
3–4 polyps	59,957	27.8	13.2
5+ polyps	33,260	35.1	17.3
Largest polyp			
0–9 mm	264,785	24.2	11.3
10+ mm	60,356	31.0	16.8
Polyp location			
Left	138,004	23.5	11.0
Right	98,405	24.4	12.1
Both	88,407	29.6	15.0
Unknown	325	26.6	13.2

Note: Procedural times were not available for all colonoscopies.

Table 3

Outcomes of multivariate linear regression analyses

Variable	Beta	Std Error	t-value	p-value
Midazolam, n = 660,484, R² = 0.094, F = 8557.92, p < 0.0001				
Age (yrs)	-0.037	0.000	-217.60	<0.0001
Female sex	0.370	0.004	86.90	<0.0001
Black	-0.621	0.009	-70.50	<0.0001
Hispanic	-0.874	0.008	-103.99	<0.0001
Duration (min)	0.008	0.000	44.38	<0.0001
Any Intervention	0.122	0.004	27.91	<0.0001
Fentanyl, n = 371,696, R² = 0.111, F = 5778.73, p < 0.0001				
Age (yrs)	-0.805	0.005	-151.44	<0.0001
Female sex	-0.155	0.133	-1.17	0.241
Black	-8.036	0.304	-26.43	<0.0001
Hispanic	-10.380	0.256	-40.49	<0.0001
Duration (min)	0.879	0.006	148.64	<0.0001
Any Intervention	1.213	0.137	8.84	<0.0001
Meperidine, n = 259,336, R² = 0.079, F = 2766.18, p < 0.0001				
Age (yrs)	-0.522	0.004	-122.28	<0.0001
Female sex	-1.528	0.109	-13.96	<0.0001
Black	-3.947	0.202	-19.55	<0.0001
Hispanic	-8.575	0.231	-37.19	<0.0001
Duration (min)	0.348	0.005	77.00	<0.0001
Any Intervention	2.175	0.113	19.29	<0.0001
Propofol, n = 34,511, R² = 0.286, F = 1724.63, p < 0.0001				
Age (yrs)	-2.081	0.039	-52.97	<0.0001
Female sex	-4.053	0.968	-4.19	<0.0001
Black	80.683	7.562	10.67	<0.0001
Hispanic	-5.568	2.203	-2.53	0.012
Duration (min)	6.166	0.059	104.62	<0.0001
Any Intervention	4.017	1.007	3.99	<0.0001

Female sex compared with male sex; black and Hispanic compared with white ethnicity; any intervention compared with no intervention.