

# Milestones and Medicare Outcome Analysis Summary

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### Milestones vs Medicare outcomes cohort details

- Medicare cases: inpatient from 2015-2017
- Milestone graduates: 2015-2017
- Procedure: Partial Colectomy
- Practice months after graduation: 24 months

## 1. Cohort Description

### Overall Cohort

n_case	1150
n_surgeon	301
n_hosp	316
n_patient	1130
POA_severe_complication_rate	14%
POA_any_complication_rate	26%
death_rate	9%
readmit_rate	34%
reop_rate	4%

### Case level characteristics

Characteristic	N = 1,150
flg_male	498 (43%)
age_at_admit	76 (7)[70, 82]
race_white	1,000 (87%)
AHRQ_score	13 (12)[3, 20]
flg_admit_emerg	582 (51%)
flg_multi_surgeon	735 (64%)
hosp_beds	
<350	713 (62%)
>=350	433 (38%)
colectomy_type	
lap	462 (40%)
open	688 (60%)

## 2. Milestone ratings

### 2.1 Overall mean

#### Descriptive table

Characteristic	Overall, N = 1,150	mean<8, N = 766	mean>=8, N = 384	p-value
flg_male	498 (43%)	345 (45%)	153 (40%)	0.11
age_at_admit	75 (70, 82)	76 (70, 82)	75 (69, 81)	0.088
race_white	1,000 (87%)	657 (86%)	343 (89%)	0.11
AHRQ_score	10 (3, 20)	11 (3, 21)	10 (2, 20)	0.12
emergent_admission	582 (51%)	389 (51%)	193 (51%)	0.9
multi_surgeon	735 (64%)	507 (66%)	228 (59%)	0.028
hosp_beds				0.15
<350	713 (62%)	463 (61%)	250 (65%)	
>=350	433 (38%)	300 (39%)	133 (35%)	
colectomy_type				0.023
lap	462 (40%)	326 (43%)	136 (35%)	
open	688 (60%)	440 (57%)	248 (65%)	

#### Odds ratios and predicted values for all outcomes

#### Model summary for any complication

Fixed Effects	OR	OR_lower	OR_upper	se	p_value
mean_ge_8	1.15	0.84	1.59	0.16	0.38
flg_male	0.89	0.66	1.20	0.15	0.44
age_at_admit_scale	1.00	0.87	1.16	0.07	0.96
race_white	0.87	0.50	1.50	0.28	0.61
race_hisp_other	1.59	0.71	3.54	0.41	0.26
emergent_admission	1.79	1.26	2.54	0.18	0.00
comorbidity_score	2.14	1.82	2.51	0.08	0.00
SES	0.76	0.55	1.04	0.16	0.08
claim_year	0.87	0.60	1.24	0.18	0.44
flg_multi_surgeon	0.73	0.51	1.05	0.18	0.09
flg_assistant_surgeon	1.10	0.75	1.61	0.20	0.63
hosp_beds(>=350)	1.33	0.98	1.80	0.16	0.07

Fixed Effects	OR	OR_lower	OR_upper	se	p_value
hosp_mcdays2inptday_ratio	0.17	0.03	1.16	0.98	0.07
hosp_rn2bed_ratio	1.08	0.87	1.32	0.11	0.49

Random Effects	effect	variance	var_prop
id_physician_npi	Intercept	0.0	0%
cpt_cd	Intercept	0.1	100%

## 2.2 Professional ratings

### Descriptive table

Characteristic	Overall, N = 1,150	mean<8, N = 569	mean>=8, N = 581	p-value
flg_male	498 (43%)	257 (45%)	241 (41%)	0.2
age_at_admit	75 (70, 82)	76 (70, 82)	75 (70, 82)	0.6
race_white	1,000 (87%)	481 (85%)	519 (89%)	0.020
AHRQ_score	10 (3, 20)	11 (3, 21)	10 (3, 20)	0.11
emergent_admission	582 (51%)	299 (53%)	283 (49%)	0.2
multi_surgeon	735 (64%)	382 (67%)	353 (61%)	0.029
hosp_beds				0.018
<350	713 (62%)	372 (66%)	341 (59%)	
>=350	433 (38%)	194 (34%)	239 (41%)	
colectomy_type				0.3
lap	462 (40%)	238 (42%)	224 (39%)	
open	688 (60%)	331 (58%)	357 (61%)	

### Odds ratios and predicted values for all outcomes

#### Model summary for any complication

Fixed Effects	OR	OR_lower	OR_upper	se	p_value
prof_rating_ge8	1.11	0.82	1.50	0.15	0.50
flg_male	0.89	0.65	1.20	0.15	0.43
age_at_admit_scale	1.00	0.86	1.16	0.07	1.00
race_white	0.87	0.50	1.50	0.28	0.62
race_hisp_other	1.59	0.71	3.56	0.41	0.26
emergent_admission	1.79	1.26	2.55	0.18	0.00
comorbidity_score	2.14	1.82	2.51	0.08	0.00
SES	0.76	0.55	1.04	0.16	0.08
claim_year	0.87	0.60	1.24	0.18	0.43
flg_multi_surgeon	0.74	0.52	1.05	0.18	0.09
flg_assistant_surgeon	1.10	0.75	1.62	0.20	0.63
hosp_beds(>=350)	1.30	0.96	1.77	0.16	0.09
hosp_mcdays2inptday_ratio	0.18	0.03	1.20	0.98	0.08
hosp_rn2bed_ratio	1.09	0.88	1.33	0.10	0.44

Random Effects	effect	variance	var_prop
id_physician_npi	Intercept	0.0	0%
cpt_cd	Intercept	0.1	100%

## 2.3 Operative ratings

### Descriptive table

Characteristic	Overall, N = 1,150	mean<8, N = 655	mean>=8, N = 495	p-value
flg_male	498 (43%)	295 (45%)	203 (41%)	0.2
age_at_admit	75 (70, 82)	76 (70, 82)	75 (70, 82)	0.4
race_white	1,000 (87%)	567 (87%)	433 (87%)	0.7
AHRQ_score	10 (3, 20)	10 (3, 20)	11 (3, 20)	0.8
emergent_admission	582 (51%)	332 (51%)	250 (51%)	>0.9
multi_surgeon	735 (64%)	421 (64%)	314 (63%)	0.8
hosp_beds				0.2
<350	713 (62%)	419 (64%)	294 (60%)	
>=350	433 (38%)	235 (36%)	198 (40%)	
colectomy_type				0.7
lap	462 (40%)	267 (41%)	195 (39%)	
open	688 (60%)	388 (59%)	300 (61%)	

### Odds ratios and predicted values for all outcomes

#### Model summary for any complication

Fixed Effects	OR	OR_lower	OR_upper	se	p_value
operative_rating_ge8	0.91	0.67	1.23	0.15	0.54
flg_male	0.88	0.65	1.19	0.15	0.42
age_at_admit_scale	1.00	0.86	1.16	0.07	0.98
race_white	0.88	0.51	1.52	0.28	0.65
race_hisp_other	1.61	0.72	3.60	0.41	0.24
emergent_admission	1.77	1.25	2.52	0.18	0.00
comorbidity_score	2.13	1.81	2.50	0.08	0.00
SES	0.75	0.55	1.03	0.16	0.08
claim_year	0.86	0.60	1.23	0.18	0.40
flg_multi_surgeon	0.74	0.52	1.05	0.18	0.09
flg_assistant_surgeon	1.08	0.73	1.59	0.20	0.70
hosp_beds(>=350)	1.32	0.97	1.79	0.16	0.08
hosp_mcdays2inptday_ratio	0.16	0.02	1.14	0.99	0.07
hosp_rn2bed_ratio	1.09	0.88	1.33	0.10	0.43

Random Effects	effect	variance	var_prop
id_physician_npi	Intercept	0.0	0%
cpt_cd	Intercept	0.1	100%

## 2.4 Leadership ratings

### Descriptive table

Characteristic	Overall, N = 1,150	mean<8, N = 566	mean>=8, N = 584	p-value
flg_male	498 (43%)	263 (46%)	235 (40%)	0.038
age_at_admit	75 (70, 82)	76 (71, 82)	75 (69, 82)	0.036
race_white	1,000 (87%)	490 (87%)	510 (87%)	0.8
AHRQ_score	10 (3, 20)	11 (3, 21)	10 (3, 20)	0.5
emergent_admission	582 (51%)	292 (52%)	290 (50%)	0.5
multi_surgeon	735 (64%)	385 (68%)	350 (60%)	0.005
hosp_beds				0.7
<350	713 (62%)	355 (63%)	358 (62%)	
>=350	433 (38%)	209 (37%)	224 (38%)	
colectomy_type				0.001
lap	462 (40%)	255 (45%)	207 (35%)	
open	688 (60%)	311 (55%)	377 (65%)	

### Odds ratios and predicted values for all outcomes

#### Model summary for any complication

Fixed Effects	OR	OR_lower	OR_upper	se	p_value
leadership_rating_ge8	1.07	0.79	1.45	0.16	0.66
flg_male	0.89	0.66	1.20	0.15	0.44
age_at_admit_scale	1.00	0.87	1.16	0.07	0.97
race_white	0.88	0.51	1.52	0.28	0.65
race_hisp_other	1.61	0.72	3.60	0.41	0.24
emergent_admission	1.79	1.26	2.55	0.18	0.00
comorbidity_score	2.13	1.82	2.50	0.08	0.00
SES	0.76	0.55	1.04	0.16	0.09
claim_year	0.86	0.60	1.23	0.18	0.42
flg_multi_surgeon	0.73	0.51	1.05	0.18	0.09
flg_assistant_surgeon	1.10	0.75	1.61	0.20	0.64
hosp_beds(>=350)	1.32	0.97	1.79	0.16	0.08
hosp_mcdays2inptday_ratio	0.17	0.02	1.14	0.98	0.07
hosp_rn2bed_ratio	1.09	0.88	1.33	0.10	0.43

Random Effects	effect	variance	var_prop
id_physician_npi	Intercept	0.0	0%
cpt_cd	Intercept	0.1	100%