EFFECTS OF "ANESTHESIA REPORT CARDS" ON PROVIDER PERFORMANCE AND CLINICAL OUTCOMES

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OBJECTIVE

IN THIS STUDY, WE INVESTIGATE ANESTHESIA PROVIDER COMPLIANCE AFTER IMPLEMENTATION OF QUALITY REPORTING METRICS AND ITS EFFECTS ON POSTOPERATIVE COMPLICATIONS. WE HYPOTHESIZED THAT THERE WOULD BE INCREASED COMPLIANCE AFTER IMPLEMENTATION OF INTRAOPERATIVE MANAGEMENT GUIDELINES FOR VARIOUS ANESTHESIA PERFORMANCE METRICS. COMPLIANCE WAS GAUGED BY MONTHLY PERFORMANCE "REPORT CARDS" COMPARING INDIVIDUAL PERFORMANCE TO BENCHMARKS ON SELECTED METRICS. THE EFFECTS OF IMPROVED COMPLIANCE IN THESE ANESTHESIA PERFORMANCE METRICS WAS ASSESSED BY CORRELATION WITH POSTOPERATIVE OUTCOMES.

METHODS

OUR ANESTHESIOLOGY DEPARTMENT IMPLEMENTED A PROGRAM TO CAPTURE AND REPORT QUALITY METRICS. AFTER STAFF EDUCATION, INDIVIDUALIZED MONTHLY EMAIL REPORTS ("ANESTHESIA REPORT CARDS") WERE SENT TO ALL ANESTHESIA PROVIDERS, DETAILING INDIVIDUAL COMPLIANCE RATES FOR A SET OF 14 QUALITY MEASURES (TABLE 1). FOR EACH MEASURE, THE PROPORTION OF CASES WHICH PASSED THE MEASURE BEFORE AND AFTER IMPLEMENTATION OF THE PROGRAM WAS COMPARED USING A TWO-SAMPLE PROPORTION TEST. TO EXAMINE WHETHER PROGRAM IMPLEMENTATION DECREASED THE RATE OF COMPLICATIONS, THE PROPORTION OF COMPLICATIONS PRE- AND POST-PROGRAM IMPLEMENTATION WAS ANALYZED USING FISHER'S EXACT TEST.

RESULTS

WE ANALYZED 14 QUALITY METRICS IN OUR DATASET. OF THESE, 6 DEMONSTRATED STATISTICALLY SIGNIFICANT IMPROVEMENT IN COMPLIANCE ($P<0.05$) (TABLE 1). THE MOST IMPROVED MEASURES WERE BP-02 (82.1% PRE- VS 92.6% POST), NMB-01 (75.9% PRE- VS 89.5% POST), PUL-01 (83.7% PRE- VS 92.4% POST), PUL-02 (29.1% PRE- VS 44.5% POST), AND TEMP-02 (89.7% PRE- VS 94.4% POST). THESE 5 MEASURES HAD STATISTICALLY SIGNIFICANT IMPROVEMENT TO $P<0.001$. IN ANALYSIS OF COMPLICATION RATES PRE AND POST-PROGRAM IMPLEMENTATION, WE FOUND A STATISTICALLY SIGNIFICANT DECREASE IN ANY COMPLICATION (EXPERIENCED WITHIN 7 DAYS OF SERVICE) IN THE POST-PROGRAM GROUP (N=142, 5.5%) AS COMPARED TO THE PRE-PROGRAM GROUP (N=294, 7.6%). THIS WAS STATICALLY SIGNIFICANT TO AN ADJUSTED P-VALUE OF 0.003 (TABLE2).

CONCLUSION

AFTER IMPLEMENTING A COMPREHENSIVE ANESTHESIA QUALITY IMPROVEMENT PROGRAM, WE OBSERVED SIGNIFICANT IMPROVEMENTS IN ANESTHESIA PERFORMANCE METRIC COMPLIANCE FOR SEVERAL PROCESS MEASURES. ADDITIONALLY, WE FOUND THAT THESE IMPROVEMENTS WERE ASSOCIATED WITH A DECREASE IN ANY POSTOPERATIVE COMPLICATION (EXPERIENCED WITHIN 7 POSTOPERATIVE DAYS). FUTURE WORK IS NEEDED TO DETERMINE IF THIS INITIAL SUCCESS CAN BE PRESERVED AS WELL AS REPLICATED AT INSTITUTIONS BEYOND OUR OWN.

Metric	Description	N	Pre-ASPIRE (n = 3844)	Post-ASPIRE (n = 2561)	p value
AKI-01	Acute Kidney Injury	4475	2411 (91.3)	1719 (93.7)	0.003
BP-01	Low MAP Prevention	6272	3711 (98.2)	2452 (98.4)	0.646
BP-02	Avoiding Monitoring Gaps	6214	3081 (82.1)	2278 (92.6)	<0.001
CARD-02	Avoiding MI: Troponin I <0.6	6277	3770 (99.8)	2495 (99.8)	0.896
MED-01	Avoiding Medication Overdose	5703	3400 (99.9)	2296 (99.8)	0.093
NMB-01	Train of Four Taken	4792	2121 (75.9)	1787 (89.5)	<0.001
NMB-02	Reversal Administered	4764	2648 (95.3)	1902 (95.8)	0.460
PONV-01	Postoperative Nausea and Vomiting	3811	2072 (89.7)	1359 (90.5)	0.454
PUL-01	Low Tidal Volume - <10mL/kg IBW	4130	2042 (83.7)	1561 (92.4)	<0.001
PUL-02	Low Tidal Volume - Less than 8 mL/kg IBW	4130	710 (29.1)	751 (44.5)	<0.001
TEMP-01	Active Warming	5082	2957 (98.4)	2048 (98.6)	0.564
TEMP-02	Core Temperature Measurement	5293	2826 (89.7)	2021 (94.4)	<0.001
TEMP-03	Perioperative Temperature Management	5314	3157 (99.8)	2148 (99.9)	0.265
TOC-02	Post Anesthetic Transfer of Care	6352	3769 (98.8)	2516 (99.2)	0.149
Note:					
p-value calculated using Chi-square test.					
N refers to subsets of cases reported for each specific metric.					

Table 1. Pass rate for metrics pre- vs post-MPOG/ASPIRE implementation

Outcome		Pre-ASPIRE	Post-ASPIRE	p-value*	adj. p-value**
Any Complication	0	3550 (92.4)	2419 (94.5)	0.001	0.003
	1	294 (7.6)	142 (5.5)		NA
30-Day Mortality	0	3705 (96.4)	2501 (97.7)	0.004	0.122
	1	139 (3.6)	60 (2.3)		NA
Cardiovascular	0	3830 (99.6)	2557 (99.8)	0.151	NA
	1	14 (0.4)	4 (0.2)		NA
Compartment Syndrome	0	3843 (100.0)	2561 (100.0)	0.99	NA
	1	1 (0.0)	0 (0.0)		NA
Delirium	0	3830 (99.6)	2558 (99.9)	0.081	NA
	1	14 (0.4)	3 (0.1)		NA
ICU Transfer	0	3841 (99.9)	2559 (99.9)	0.99	NA
	1	3 (0.1)	2 (0.1)		NA
PONV	0	3836 (99.8)	2559 (99.9)	0.333	NA
	1	8 (0.2)	2 (0.1)		NA
Pulmonary	0	3788 (98.5)	2525 (98.6)	0.915	0.801
	1	56 (1.5)	36 (1.4)		NA
Renal Failure	0	3776 (98.2)	2529 (98.8)	0.122	0.067
	1	68 (1.8)	32 (1.2)		NA
Wound Infection	0	3814 (99.2)	2546 (99.4)	0.446	0.324
	1	30 (0.8)	15 (0.6)		NA

Table 2. Proportion of patients who experienced clinical complications pre- vs post-MPOG/ASPIRE implementation

Memorial Sloan Kettering Cancer Center