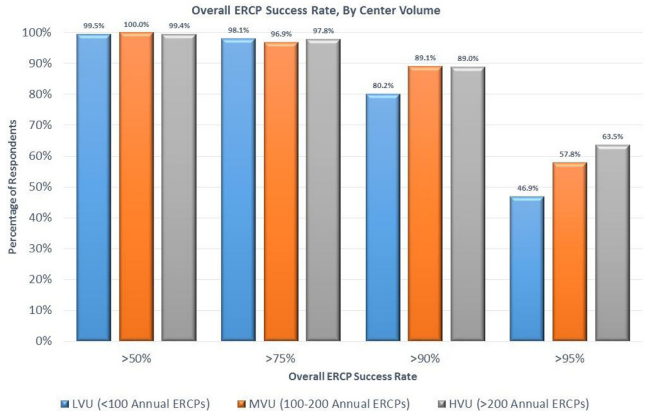

Tu1017

Effectiveness, Safety and Efficiency of Computer-Assisted Propofol Sedation: A Comparative Study Against Midazolam and Fentanyl

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Background: Computer assisted propofol sedation (CAPS) has been recently approved by the FDA for moderate sedation of ASA class I and II patients undergoing routine upper endoscopy and colonoscopy. CAPS uses a continuous propofol infusion after a single premedication dose of fentanyl. As the first U.S. medical center to adopt CAPS technology for routine clinical use, we compared CAPS patients against a concurrent group sedated with midazolam and fentanyl (MF). Methods: Patients who underwent elective outpatient upper endoscopy and colonoscopy with CAPS over a 2 month period were compared against concurrent patients sedated with MF. All procedures were performed by 1 of 9 gastroenterologists certified in the use of the CAPS system, with the assistance of an identically trained nurse. Procedural success rates, polyp detection rates, adverse events, procedure times and recovery times were recorded. Patient satisfaction scores are reported in a separate abstract. Results: CAPS was utilized to sedate 244 patients (mean age 60.4 years; 52.5% male), of whom 55 underwent upper endoscopy, 173 colonoscopy and 16 double procedures. The mean propofol dose was 140.1 mg for upper endoscopies, 185.7 mg for colonoscopies and 265.3 mg for double procedures. During the same period, 75 upper endoscopies, 223 colonoscopies and 30 double procedures were performed with MF on similar patients. For upper endoscopy, the procedural success rate was 98.2% for CAPS vs. 98.7% for MF (p=0.82), while for colonoscopy, the success rate was 98.9% for CAPS vs. 98.8% for MF (p=0.90). Colonoscopic polyp detection rate was 54.5% for CAPS and 59.3% for MF (p=0.31). For CAPS, the mean procedure time was 12.5 minutes for upper endoscopies, 25 for colonoscopies and 39.4 for double procedures; the corresponding times for MF were 11.3, 24.8 and 40.7 minutes respectively (p>0.05 for all). For CAPS, the mean recovery time was 26.4 vs. 39.1 minutes for MF (p<.001). For CAPS, 1 patient (0.01%) required mask ventilation for desaturation, 4 (0.02%) experienced asymptomatic hypotension or desaturation that did not require any intervention other than reduction in the propofol rate, and 5 (0.02%) suffered marked agitation due to undersedation. For MF, 5 patients (0.02%) had asymptomatic hypotension or desaturation, and 8 (0.03%) suffered marked agitation from undersedation. No subject suffered any severe adverse event such as intubation, unanticipated hospitalization, permanent injury or death. Conclusions: Compared to MF, CAPS resulted in significantly shorter recovery times, although procedure times were similar. Procedural success rates and polyp detection rates were high and comparable. Both groups had few adverse events and no serious adverse events. In low-risk patients, CAPS appears to be a safe, effective and efficient means of providing moderate sedation for upper endoscopy and colonoscopy.

Tu1018

The Adenoma to Polyp Detection Rate Quotient Varies Among Different Patient Populations: Implications for the Quality Metrics of Colonoscopy

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Background: The adenoma detection rate (ADR) is the primary quality indicator for colonoscopy. The risk of interval colorectal cancer is inversely related to the endoscopist's ADR. However, ADR calculation is a time-consuming process that requires a combination of endoscopic and histopathologic data collection. The adenoma to polyp detection rate quotient (APDRQ) has been used as a conversion factor to estimate ADR from polyp detection rate (PDR). However, it is unclear whether this conversion factor could be precisely calculated from a case-mix or may vary in colonoscopies with different indications. Aims: To create and compare conversion factors that accurately estimate the ADR from the PDR in 2 different screening populations, average risk patients (AVR) and patients with a positive fecal immune test (FIT-positive). Methods: This was a retrospective analysis of colonoscopies performed by 6 gastroenterologists in a single center from January 2004 to July 2015. First time colonoscopies on AVR and FIT-positive patients were included. ADR, PDR and APDRQ was calculated for each endoscopist. Average APDRQs for average risk patient population (AVR-APDRQ) and FIT-positive population (FIT-APDRQ) were used as conversion factors to estimate ADRs and FIT-ADRs of each endoscopist from the corresponding AVR-PDRs and FIT-PDRs. The main outcome measures were the strength of the relationship between the estimated ADRs and the actual ADRs determined by Pearson's correlation coefficient (r), and the average estimated-actual differences. Results: We included 3686 colonoscopies performed on AVR and 3962 colonoscopies performed on FIT-positive patients. The average AVR-APDRQ and FIT-APDRQ were 0.72 and 0.87, respectively. The correlation between the estimated AVR-ADRs and the actual AVR-ADRs was 0.93 (95% CI, 0.70-1.00; p = 0.007) whereas the correlation between the estimated FIT-ADRs and the actual FIT-ADRs was 0.97 (95% CI, 0.83-1.00; p = 0.002). Conclusions: The application of a conversion factor to the PDR can accurately estimate the ADR. The accuracy is higher if the conversion factor is targeted on specific subgroups of patients and applied to expert endoscopists (≥ 5 years of experience, > 500 colonoscopies/year).

Tu1019

Indicators for Quality Improvement: An Analysis of First Case Start Time on Interventional Endoscopy Unit Efficiency

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Background: First-case start time (FIRST) has been traditionally emphasized as an important process measure when evaluating efficiency in the operating room setting. However, the impact of (FIRST) on efficiency in an interventional endoscopy unit (IEU) has not been clearly defined. Aim: Evaluate the effect of delays in FIRST on IEU efficiency metrics. Methods: The prospectively collected endoscopy unit metrics database at our tertiary care academic medical center was reviewed for procedures performed in the IEU for 6 months. Parameters included hospital-mandated metrics available from the database. First-case start time delay was defined as any time the first patient of the day entered the endoscopy room after the scheduled time. The FIRST on-schedule group (FIRST-OS) included all patients who underwent procedures on days in which FIRST was not delayed whereas FIRST delayed (FIRST-D) was defined as those days in which FIRST occurred after the scheduled time. Impact of FIRST delay (FIRST-D) was assessed on the following efficiency metrics: (1) Room throughput, defined as the total number of patients who underwent endoscopic procedures per room/day; (2) Room total time (TT), which was defined as the total time (min) elapsed in the IEU that day. Regression analyses were performed to evaluate the effect of FIRST on throughput and TT per day. In a subgroup analysis, effect of increasing lengths of delay in FIRST (1-5, 6-10, 11-15, 16-20 and >20 minutes) was also evaluated. Results: 1421 patients (52.5% male; median age 63 years [range 14 – 91 years]) underwent a total of 1635 endoscopic procedures in two interventional endoscopy rooms with a total of 247 first cases. FIRST was delayed 60% (148/247). There were no statistically significant differences in baseline characteristics (age, sex, BMI, Charlson comorbidity index score, inpatient vs. outpatient and endotracheal intubation status) between FIRST-OS and FIRST-D groups. There was no significant difference in room throughput (FIRST-OS 5.7 cases/day vs. FIRST-D 5.6 cases/day; p= 0.82) or TT (FIRST OS 466.8 minutes/day vs FIRST-D 467.2 minutes/day, p=0.93). Linear regression analysis showed that FIRST-D did not affect the number of cases per day (p-value = 0.325) or TT per day (p-value = 0.468) (Figure 1). There was no significant difference in room throughput or TT between FIRST-OS and FIRST-D; irrespective of the amount of time FIRST was delayed. Conclusion: First-case start time did not affect room throughput or total time in our interventional endoscopy unit. Though first-case start time has been conventionally emphasized as a quality measure, attention should be directed towards identifying and evaluating other operational metrics in the endoscopy unit.

Table 1

	First Case		
Patient Characteristics	**FIRST-OS**	**FIRST-D**	**p value**
N	99	148	
Age, mean ± SD, year	61.9 ± 14.1	61.6 ± 14.3	0.82
BMI, mean ± SD, kg/m2	27.8 ± 5.4	27.5 ± 7	0.24